Tertiary Education for the Knowledge Society

VOLUME 2

SPECIAL FEATURES: EQUITY, INNOVATION, LABOUR MARKET, INTERNATIONALISATION

By Paulo Santiago, Karine Tremblay, Ester Basri and Elena Arnal

OECD

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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Foreword

In April 2004, the OECD Education Committee embarked on a comprehensive international review of tertiary education policy, the OECD Thematic Review of Tertiary Education. Its goal was to help countries share innovative and successful initiatives and to identify policy options to maximise the contribution of tertiary education to national economic and social objectives. In addition to this publication, the Review generated 24 reports by participating countries, 14 reports by external review teams (released as a publication series, *OECD Reviews of Tertiary Education*) and several research papers (all available on the OECD Web site at *www.oecd.org/edu/tertiary/review*). This OECD project provides probably the most comprehensive analysis ever undertaken of tertiary education policy issues at international level.

OECD work helps countries to learn from one another. It can also highlight issues and explore policy options that may be difficult to raise in national debates. Both of these elements clearly underpin this report and the work behind it. The active engagement of Member and Partner economies has been crucial to the process. The 24 participating countries committed substantial resources and opened their tertiary education policies to external review and debate. This collaborative approach enabled countries to learn more about themselves and to add to the broader knowledge base by sharing evidence on the impact of policy reforms and the circumstances under which they work best.

The project benefited substantially from the involvement of organisations representing students, tertiary education institutions, academics, researchers and employers. Their representatives served on national steering committees, prepared written submissions, met with review teams and participated in conferences and workshops. The project also benefited from the involvement of the Business and Industry Advisory Committee to the OECD and the Trade Union Advisory Committee to the OECD and other international organisations interested in tertiary education policy, including the European Association for Quality Assurance in Higher Education, the European Commission, the European Investment Bank, the European Students' Union, the European University Association, Eurydice, the International Association of Universities, the International Network of Quality Assurance Agencies in Higher Education, UNESCO, UNESCO-CEPES (European Centre for Higher Education), UNESCO's International Institute for Educational Planning and the World Bank.

Appendix A (in Volume 2 of this report) details the many people and organisations who contributed to the project as national co-ordinators, members of country review teams, and authors of country background reports and commissioned research papers – more than 150 people in all. In addition, the project benefited from the input of hundreds of others through national steering committees, consultations for country background reports and country review visits, and the 150 tertiary education institutions visited by the OECD review teams. We thank them all for their valuable contributions to the collective knowledge base.

The project was carried out by the Education and Training Policy Division of the OECD's Directorate for Education under the leadership of Abrar Hasan (until his retirement) and Deborah Roseveare (since June 2007). Paulo Santiago and Karine Tremblay were responsible for the project and preparation of this report. A partnership was established with OECD's Directorate for Science, Technology and Industry (DSTI), whereby Ester Basri of DSTI took responsibility for the area of research and innovation. A number of other colleagues contributed to both the project and this report (see *Acknowledgements* below). A larger group of colleagues within the OECD provided advice at key stages. In particular, close collaboration was established with the work of the Programme on Institutional Management in Higher Education (IMHE) on *Supporting the Contribution of Higher Education Institutions to Regional Development*, the work of the Centre for Educational Research and Innovation (CERI) on the *Future of Higher Education*, the developmental work on indicators on tertiary education, and the work by OECD's Department of Economics on *The Policy Determinants of Investment in Tertiary Education*.

This report was released in Lisbon on 3 April 2008 at an international conference jointly sponsored by the OECD and the Ministry of Science, Technology and Higher Education of Portugal through the Foundation for Science and Technology, and locally organised by the *Instituto Superior de Ciências do Trabalho e da Empresa*, a public university based in Lisbon.

The OECD intends to maintain the momentum of its work on tertiary education and to build on the *Thematic Review of Tertiary Education* and this report.

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6. Achieving Equity

6.1 Introduction

Equity is increasingly prominent in countries' tertiary education policies. More attention is being focused on learners with more limited opportunities to access and succeed in tertiary education due to circumstances unrelated to their ability to benefit from tertiary education. This Chapter analyses equity in tertiary education. It defines what equity at tertiary education level entails, recognising that it is affected by inequities in previous levels of education. It provides an overview of contextual developments affecting equity in tertiary education and reviews current equity trends. It also offers an overview of the range of factors which affect equity in tertiary education, reviews available empirical evidence, and illustrates policy initiatives in participating countries. The Chapter concludes with a set of policy options for countries to consider. Equity issues related to approaches to funding tertiary education are discussed in Chapter 4 and are only briefly mentioned in this Chapter. In addition, the Chapter focuses on equity *in* tertiary education and only briefly addresses equity *through* tertiary education (or the *social mobility* effects of tertiary education).

6.2 Defining equity in tertiary education

A recent OECD Review of Equity in Education (OECD, 2007a) defines "equity in education" as follows:

> *"Equity in education has two dimensions. The first is fairness, which implies ensuring that personal and social circumstances – for example gender, socio-economic status or ethnic origin – should not be an obstacle to achieving educational potential. The second is inclusion, which implies ensuring a basic minimum standard of education for all – for example that everyone should be able to read, write and do simple arithmetic. The two dimensions are closely intertwined: tackling school failure helps to overcome the effects of social deprivation which often causes school failure."*[1]

It is clear that equity in tertiary education is affected by inequities in preceding levels of education. Individuals are disadvantaged *vis-à-vis* participation in tertiary education if their prior educational opportunities have resulted in their not having the educational pre-requisites to gain admission or not having the belief or knowledge that tertiary education is an option for them, even though they may have the ability to undertake tertiary education. There could be any number of reasons for this, including non-completion of

1. The second dimension of "inclusion", as presented in this definition, appears to have more relevance for educational levels preceding tertiary education.

secondary school, the quality of schooling received, family aspirations, socio-economic status, or health issues.

This Chapter deals with equity in tertiary education, which we associate to the following definition:

> *Equitable tertiary systems are those that ensure that access to, participation in and outcomes of tertiary education are based only on individuals' innate ability and study effort. They ensure that the achievement of educational potential at tertiary level is not the result of personal and social circumstances, including of factors such as socio-economic status, gender, ethnic origin, immigrant status, place of residence, age, or disability.*

This Chapter assumes that *equity in tertiary education* deals not only with equity *within* tertiary systems but also with mechanisms of tertiary education policy to *redress* the effects of past unequal educational opportunities and those which seek to grant *equal opportunities in the labour market* upon completion of tertiary education. A general equity objective in tertiary education is to achieve a student population that closely reflects the composition of society as a whole.

Equity of what?

The Chapter will distinguish between: *(i) equity of access* which relates to equality of opportunities to enter tertiary education and to access programmes at different levels and with distinct qualities; and *(ii) equity of outcomes* which relates to opportunities to progress and complete tertiary studies and also to achieve particular returns to tertiary education.[2] There is also a distinction between the concepts of *equality of opportunities* and *equity*. Whilst *equality of opportunities* refers to the opportunities to access tertiary education and the subsequent treatment the individual receives within tertiary education system, *equity* focuses on the conditions for acquiring operational skills that ensure the individual's employability and the success or failure of tertiary education to provide them.

Equity for whom?

A number of personal and social circumstances can be at the origin of inequalities. The dimensions considered in this Chapter are:

- Family socio-economic background (*e.g.* parental education, income);
- Gender;
- Immigrants;
- Minorities (*e.g.* cultural, ethnical);
- Place of residence (*e.g.* remote locations);
- Age (*e.g.* mature students);
- Disability.

2. The European Commission makes a distinction between equity in *access*, in *treatment* and in *outcomes* and also considers equity of *participation* (Commission of the European Communities, 2006).

6.3 Equity *through* tertiary education

This Chapter is predominantly devoted to equity *in* tertiary education, *i.e.* equity issues which bear a relation to the delivery of tertiary education itself (access to, participation in and outcomes of tertiary education from an individual point of view). The focus is on policies which can make tertiary systems as equitable as possible. This Section, by contrast, looks at the role of tertiary education policy as a potential instrument to improve equity outcomes in society in more general terms: equity *through* tertiary education. This includes the room for tertiary education policy to affect social mobility or, more narrowly, intergenerational income mobility and the extent to which it can reduce income disparities across particular groups.

6.3.1 Role in intergenerational income mobility

Social mobility and intergenerational income mobility are issues of great policy relevance which have received much attention in the literature

In the research literature, the term social mobility is defined in many different ways depending on the research's field of study. Economists mainly consider income or earnings mobility while sociologists analyse mobility across class and occupations (Checchi *et al.*, 1999). D'Addio (2007) defines social mobility as follows:

> *Social mobility refers to the extent to which, in a given society, individuals' social status changes either within the life-course (intra-generational) or across generations (intergenerational).*

D'Addio (2007) also defines intergenerational mobility as "the extent to which key characteristics and life experiences of individuals differ from those of their parents." She provides three main reasons why governments are interested in intergenerational mobility (d'Addio, 2007):

- The ways resources are allocated across generations may influence overall social welfare defined over the entire income distribution of different generations;
- Intergenerational mobility may improve equity by reducing economic inequality, promoting social justice and achieving a more equitable allocation of resources; and
- Intergenerational mobility may be an instrument for achieving greater economic efficiency, in the sense of ensuring that no factors constrain the full utilisation of individuals' talents.

There is an extensive literature on intergenerational mobility. The main findings as summarised by d'Addio (2007) are:

- The extent of intergenerational earnings mobility depends on individuals' and households' characteristics and varies over the income distribution (*i.e.* mobility is lower at both the top and the bottom of the distribution). Various studies also show that countries where both income inequality and rewards to education are higher, display lower intergenerational earnings mobility.
- Evidence of intergenerational immobility extends to other outcomes such as occupational status, wealth, welfare receipt and personality traits.

- Education is a major contributor to intergenerational income mobility and educational differences tend to persist across generations (see below).
- Early and sustained investment in children and families can improve social mobility, with key roles played by early childhood education, care and health (see below).

Education plays a major role on intergenerational income mobility but…

A review of the existing literature on intergenerational mobility in OECD countries by d'Addio (2007) concludes that the effect of education on the intergenerational transmission of income is large and significant. Blanden *et al.* (2007) provide evidence that education has a dominant role in determining the level of intergenerational income mobility. The review by d'Addio (2007) also concludes that educational systems and policies may also affect the extent of intergenerational income mobility. For example, early streaming of students, based on their academic ability, seems to considerably reduce mobility across generations.

… early childhood and compulsory education are likely to be more influential than tertiary education

The literature suggests that policies targeted at levels preceding tertiary education may be more effective in effecting social mobility than policies at the tertiary level (d'Addio, 2007). The author suggests that a strategy based on a greater investment in children holds greater promise of breaking the cycle of intergenerational disadvantages because of its effects in reducing child poverty and contributing to child development. On the basis of the evidence reviewed, she suggests that interventions targeted at improving childhood outcomes are the most desirable: "Most important, getting good quality care in early childhood, pre-school and school is the essential tool for promoting intergenerational mobility". Similarly Machin (2006a) concludes that "over the years, a substantial body of evidence has accumulated that testifies to the importance of programmes targeted to *pre-school* children from disadvantaged background. There is less agreement on the effects of programmes targeting disadvantaged individuals in a later stage of their lifecourse." Using a model of intergenerational human capital transmission applied to the case of the United States, Restuccia and Urrutia (2004) assess the relative roles of early and college education in intergenerational persistence of earnings. Their model indicates that an increase in public resources devoted to early education has a larger impact on earnings mobility than does an increase in college subsidies. They find that approximately one-half of the intergenerational correlation in earnings is accounted for by parental investment in education, in particular early education.

Tertiary education policy needs to ensure that tertiary systems are not inhibiting intergenerational income mobility

The evidence given above suggests that there is a case not to use tertiary education policy to generate intergenerational income mobility. Policy intervention with such goal is likely to be more effective if targeted at lower levels of education. However, as much as education can be an escalator out of social disadvantage, it can also reinforce inequalities. Since participation in tertiary education enhances employment prospects and income as an adult, tertiary systems have the potential to reinforce inequalities

accumulated in prior years of education (Machin, 2006a). Hence, as much as tertiary education policy is likely to have little effect on improving intergenerational income mobility, it needs to ensure equity *in* tertiary education (*e.g.* access policies) so that inequalities from preceding levels of education are not accentuated and intergenerational income mobility is not inhibited. For instance, Blanden *et al.* (2007) provide evidence that the growing imbalance in the access to higher education by family background as higher education expanded in the United Kingdom is partly driving the decline in intergenerational mobility in the United Kingdom for cohorts of individuals born in 1958 and 1970. As Keep and Mayhew (2004) put it "Given the present social-class composition of higher-education entry, there is a danger that further expansion, unless accompanied by a fundamental redistribution of access opportunities, will lead to a decline in social mobility."

6.3.2 Role in reducing earnings disparities across groups

A number of studies suggest that disparities in earnings across groups (*e.g.* by gender, ethnicity) are reduced by the presence of tertiary level qualifications. That is, controlling for all other factors, differences in earnings for instance between males and females tend to be lesser when individuals have tertiary level qualifications than when they hold lower qualifications. In the case of gender differences, part of the reduction in disparities might be explained by the fact that women with higher qualifications have greater engagement with the labour market. Maani and Maloney (2004), examining the returns to post-school qualifications in New Zealand using individual-level income data covering the period 1997-2002, show that access to work for women has a greater effect on the reduction in disparities than the effect of a degree on hourly earnings. Nair (2007) provides further evidence that the disparity in earnings due to gender and ethnic group narrow for those with higher levels of study. For example, the earnings disparities among different ethnic groups (such as Māori and Pasifika) are most noticeable at the lower levels of study and the differences narrow considerably for those who studied at a higher level.

6.4 Contextual developments affecting equity in tertiary education

Inequities in tertiary education are, to a great extent, dictated by inequities in preceding levels of education

Much of the inequities found in tertiary systems are rooted in factors experienced earlier in life, and are usually traced back to preceding levels of education. Much of the unequal access to tertiary education is, in fact, related to the inability to achieve the necessary qualifications as a result of a given disadvantage (Wößmann and Schütz, 2006; Commission of the European Communities, 2006; Marcenaro-Gutierrez *et al.*, 2007). Access to tertiary education is dictated mostly by prior attainment in pre-tertiary education and, as illustrated later in the Chapter, existing education systems have not generally succeeded in breaking the link between performance and children's socio-economic background.

In some countries equity issues related to the inability to acquire the necessary qualifications might be more important than, for instance, affordability at the time of attendance. The inability of systems to grant equal *eligibility opportunities* for tertiary education might actually lead to undesired effects of equity policies designed within the scope of tertiary education. In fact, policies that aim to increase participation in tertiary

education in an effort to enhance equity might end up raising inequity overall because those in a position to benefit (*i.e.* who acquired the necessary qualifications) might come disproportionally from better-off families (Machin, 2006b).

These facts illustrate the need to distinguish between the factors which qualify young people to access tertiary education and those which predispose them to participate.

Expansion of tertiary education has had implications for equity

The expansion of tertiary systems has opened up more places in tertiary education institutions (TEIs), and these should enhance the ability of disadvantaged students to attend, at least in *absolute* terms but not necessarily in *relative* terms. An important empirical question is whether expansion led to the reduction of inequalities in the access to tertiary education.

Up until recently, research studies seemed to indicate that expansion had not significantly reduced social class inequalities in access to tertiary education. Shavit and Blossfeld (1993), analysing the relative chances of different social groups attaining a specific education level in 13 countries, conclude that only two countries – the Netherlands and Sweden – achieved a significant equalisation among socio-economic groups. Other studies which concluded that class inequalities in access to tertiary education have remained relatively stable in recent decades include Halsey (1993) for the British case and Kivinen *et al.* (2001) for the Finnish case. Clancy and Goastellec (2007) argue that it is necessary to take account of changes both in relative and absolute levels of participation of disadvantaged groups (rather than concentrating exclusively on relative changes). They explain that relative changes take account of the extent to which education is a "positional good" while absolute changes point to the significance of improvement in participation of any particular group irrespective of how other groups have fared. This literature has suffered from data limitations, as datasets permitting to look at time trends in access to tertiary education across a number of dimensions of "social disadvantage" are not readily available.

A recent empirical study (Shavit *et al.*, 2007), which analysed student cohorts completing tertiary education in the 1990s (and in some cases in the 1980s) in 15 countries, challenges the established understanding regarding the relationship between expansion and equity. The study concludes that in general expansion has been accompanied with an overall decline in inequality of enrolment. They offer a new interpretation for existing empirical results in this area. They argue that when a given level of education expands, increasing inequality should be expected at the next educational level given the increased heterogeneity of the population eligible to access the next level. They then suggest that when inequality in an expanding system is stable rather than increasing, the system should be considered as increasingly inclusive because it allows larger proportions of all social strata to attend. In only one country, the Russian Federation, in their sample is there evidence of increasing inequality; all of the others either exhibit stable odds, or in the case of four countries (Israel, Italy, Japan and Taiwan) declining odds, and thus increasing inclusiveness (as reported by Clancy and Goastellec, 2007).[3] The authors defend that expansion is itself a form of inclusion, even when odds ratios are stable.

3. The other ten countries in the study are Australia, the Czech Republic, France, Germany, Korea, the Netherlands, Sweden, Switzerland, the United Kingdom and the United States.

Koucký *et al.* (2008) provide similar results looking at the expansion of tertiary education systems in 23 European countries during the 1950-2007 period, using three rounds of the European Social Survey.[4] They find that overall the level of inequity of access to tertiary education in Europe has been declining in the last fifty years but at different speeds both across countries and different periods of time. While the reduction of inequalities was very marked from the 1950s to the 1970s in most European countries and reached its lowest point over the 1980s, inequalities then began to grow in some countries, reaching again the level of the seventies and becoming flat at the turn of the century. This study, however, reveals considerable differences between the countries under review which fall into three more or less distinct groups. The course of inequalities in East European countries (EAST) is markedly different – they were close to average values till the 1970s, in the 1980s grew quite steeply till the turn of the century and became flat afterwards, distinctly higher than average values and those of other groups of countries. The courses of inequalities of other countries more or less follow the course of average values but considerably differ in magnitude, and can be divided again into two groups: inequalities which are distinctly smaller and their course is consistently flatter (NORTH), and those which are moderately greater (SOUTH-WEST).

The diversification of tertiary education systems raises a number of new equity challenges

Expansion is accompanied by differentiation of tertiary systems which, in turn, leads to a change of the nature of inequities. In most countries, the expansion of tertiary education has been accomplished mostly by expanding places in new, lower-status TEIs (leading to a stratification of the tertiary system by quality tiers); the creation of new subsystems, often more vocationally-oriented; the expansion of the private sector; and, sometimes, discriminatory fee policies whereby some students are fully publicly subsidised while others pay the full cost of tuition for the same education programmes. The implication is that disadvantaged students may gain access predominantly to lower-status TEIs or be disproportionally among those required to pay tuition fees (either in the private or public sectors). Inequities in tertiary education become subtler and more difficult to analyse, as a result.

Leathwood (2004) analyses the socio-economic profile of student bodies of six British universities situated at different levels of a spectrum with high status, research-led elite TEIs at the top and newer universities, with far lower levels of funding and prestige at the bottom. The study indicates that the student profiles of these TEIs are very different, with privately educated, white, middle class students particularly over-represented in the elite universities, and working-class, minority ethnic, and to some extent, women students concentrated in those TEIs with far lower levels of funding and prestige.

Shavit *et al.* (2007) note that expansion creates new opportunities, but possibly of diminished value. They argue that the link between expansion and differentiation

4. The European Social Survey was conducted biannually in three rounds up to 2006/2007: ESS-1 (2002/2003), ESS-2 (2004/2005) and ESS-3 (2006/2007). Relative to the course of the Inequality Index, the 23 countries participating fall into three distinct groups: East (the Czech Republic, Estonia, Hungary, Poland, the Slovak Republic, Slovenia and Ukraine); North (Denmark, Finland, Germany, Ireland, the Netherlands, Norway, Sweden and the United Kingdom) and South-West (Austria, Belgium, France, Greece, Luxembourg, Portugal, Spain and Switzerland).

suggests a process of diversion but they note that if lower-tier opportunities bring students into tertiary education who otherwise would not have attended, then it may represent inclusion. They also observe that there are potential mixed effects of the expansion of the private sector. On the one hand, the greater presence of private providers in tertiary systems might increase inequality, presumably due to family differences in the ability to pay. On the other hand, privatisation stimulates growth and expands opportunities, which is associated with lower levels of inequality.

Demographic developments intensify the need to place a focus on equity issues in some countries

Demographic developments in some countries pose new challenges for educational systems, including at tertiary level. For instance, in the Netherlands the main source of demographic growth and the driver of future educational expansion is immigration. The number of inhabitants of "non-Western" origin, principally from Northern Africa and the Middle East, is 10% overall but exceeds 30% in the four largest cities of Amsterdam, Rotterdam, the Hague and Utrecht. In these cities 51% of the population aged 0-14 are "non-Western". Inevitably, this group must figure largely in any policy consideration concerning tertiary education and poses issues in relation to social and cultural integration and the most effective use of human capital. In New Zealand, population is projected to grow by around 12% over the next 20 years, a growth that appears to be particularly concentrated in the Māori and Pasifika populations because of their younger age structure, and in Asian populations because of migration. This will result in a more ethnically diverse population, which in turn poses a challenge for the education system, as up to now educational outcomes for Māori and Pasifika people have been below average. This has been recognised by the New Zealand government and incorporated in the overall development strategy for tertiary education.

Countries tackle equity issues with different cultural traditions

As explained by Clancy and Goastellec (2007), each society has one legitimised category, which is dominant in framing the way in which social diversity is defined and equity is assessed. These categories are idiosyncratic of nations, each one defining those that make sense in the context of national history. In countries such as Australia, Mexico, New Zealand and the United States ethnical diversity is significant among the population and hence the ethno-racial dimension is typically among the main categories used to assess social inequities. In other countries, ethno-racial identities are restricted to the private domain and the reading of social diversity focuses on socioeconomic background (*e.g.* Japan, Czech Republic, Portugal, Spain). Yet in other countries such as Iceland and Norway, egalitarian values are ingrained within society to the extent that the belief that individuals are treated alike makes the collection of data on the basis of the socio-economic background a low priority. Other categories such as gender, disability, or region of residence are more common across countries in accounting for diversity.

As a result, equity policies differ across countries in relation to the historical definition of legitimised identities (Clancy and Goastellec, 2007). For example, reflecting the assumption that differences by socio-economic status are minor, tertiary education policy in countries such as Iceland and Norway stresses universal arrangements and student aid does not build on need-based or targeted approaches. It draws on low entry barriers, low participation costs and good regional distribution of TEIs. By contrast, Australia identifies six equity groups as the target of specific policies: people from socio-

economically disadvantaged backgrounds; Aboriginal and Torres Strait Islander people; women, particularly in non-traditional courses and post-graduate study; people with a disability; people from non-English speaking backgrounds; and people from remote areas.

6.5 Trends in equity in tertiary education

In most countries there is little information to assess the extent of inequities in tertiary education

In most countries, there is a general lack of knowledge about the extent to which equity in tertiary education is a problem as a result of the lack of critical data such as the socio-economic background of students in tertiary education, that of those accessing publicly-funded places or that of those who benefit from student support programmes. In these countries, equity issues in terms of access and completion are largely unidentified because, for instance, data by ethnicity, income, or parental education are not compiled on a systematic basis. An additional complexity is that it is difficult to find good proxies for socio-economic background so its impact on access to and outcomes of tertiary education can be empirically assessed. This hinders analysis of equity issues and makes initiatives to improve equity difficult to evaluate. As Clancy and Goastellec (2007) note "While there is good comparative data available on the elimination of quantitative inequalities in the access for women to higher education and also on the extent of (persisting) generational inequalities, we remain very poorly informed on the changes in social group inequalities and on changing inequalities by ethnic groups and by disability."

Some countries, however, in recognition of the centrality of equity issues within tertiary education policy, compile systematic information on the background of students in tertiary education. For instance, in Australia, definitions, performance indicators and reference values for each identified "equity group" (see Section 6.4) were developed in 1994 and set out in the publication *Equity and General Performance Indicators in Higher Education* (Martin, 1994). The indicators used to monitor performance in this area at the institutional level are:

- access (the proportion of the equity group among commencing domestic students);
- participation (the proportion of the equity group enrolled among domestic students);
- retention (the proportion of equity group students who re-enrol at an institution in a given year); and
- success (the mean student progress rate for the previous year for the equity group).

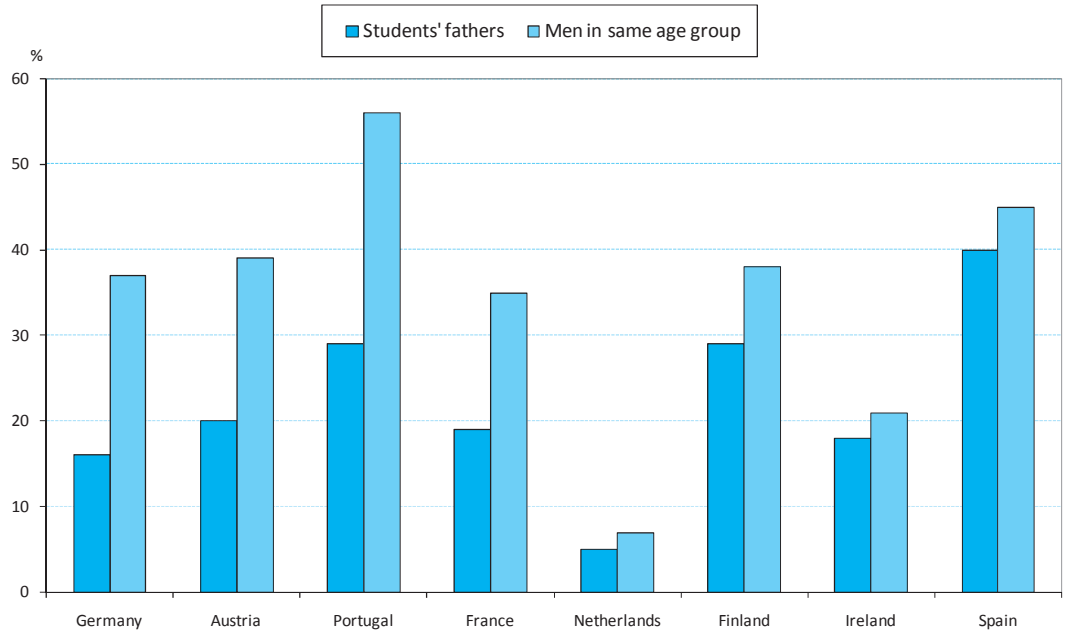
There is strong evidence that access to and participation in tertiary education is associated with the socio-economic background of students

Available data strongly suggest that access to and participation in tertiary education is more restricted for students with a socio-economic disadvantage, measured either by family income level, parental education or parents' occupational status. Figures 6.1 and 6.2 illustrate participation in tertiary education in relation to occupational status of students' fathers and educational status of students' fathers, respectively. Information is

based on a survey of tertiary education students in a limited number of European countries (Eurostudent, 2005). Figure 6.1 contrasts: *(i)* the proportion of higher education students' fathers from a blue-collar background; to the *(ii)* proportion of men of corresponding age group as students' fathers (40-to-60-year-olds) in the overall population from a blue-collar background. Data suggest that, in all surveyed countries, individuals whose 40-to-60-year-olds fathers have a blue collar background are under-represented in tertiary education. Austria, France, Germany and Portugal exhibit the highest levels of inequality while Finland, Ireland and Spain exhibit the lowest levels of inequality.

Figure 6.1. Occupational status of students' fathers

Proportion of higher education students' fathers from a blue-collar background and proportion of men of corresponding age group as students' fathers (40-to-60-year-olds) in the overall population from a blue-collar background



Countries are ranked in ascending order of the ratio of the proportion of higher education students' fathers from a blue-collar background to the proportion of men of corresponding age group as students' fathers (40-to-60-year-olds) in the overall population from a blue-collar background.

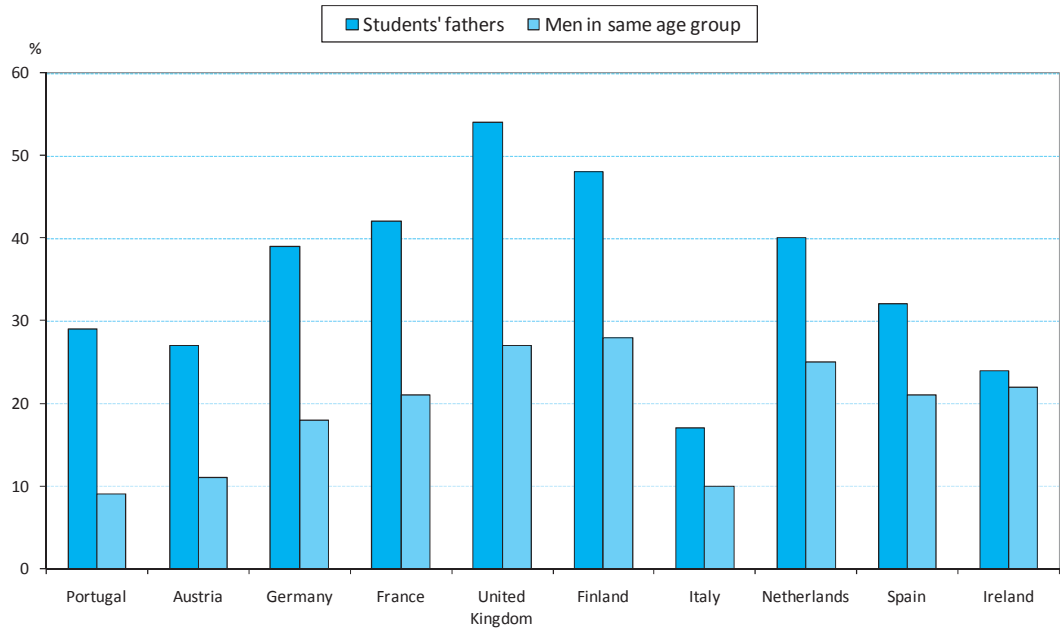
Note: The reference period differs across countries and is comprised between 2002 and 2004. The definition of "blue-collar background" might differ across countries.

Source: Eurostudent 2005, as published in OECD, 2007b.

A similar conclusion emerges from data displayed in Figure 6.2 which contrasts: *(i)* the proportion of higher education students' fathers with higher education; to the *(ii)* proportion of men of corresponding age group as students' fathers (40-to-60-year-olds) in the overall population with higher education. Data suggest that, in all surveyed countries, individuals whose 40-to-60-year-olds fathers have higher education are over-represented in tertiary education. Austria, France, Germany and Portugal, again, exhibit the highest levels of inequality while Ireland, Italy, the Netherlands and Spain exhibit the lowest levels of inequality.

Figure 6.2. Educational status of students' fathers

Proportion of higher education students' fathers with higher education and proportion of men of corresponding age group as students' fathers (40-to-60-year-olds) in the overall population with higher education



Countries are ranked in descending order of the ratio of the proportion of higher education students' fathers with higher education to the proportion of men of corresponding age group as students' fathers (40-to-60-year-olds) in the overall population with higher education.

Note: The reference period differs across countries and is comprised between 2002 and 2004. Data for the United Kingdom refer to England and Wales and also refer to the parent (male or female) with the highest income.

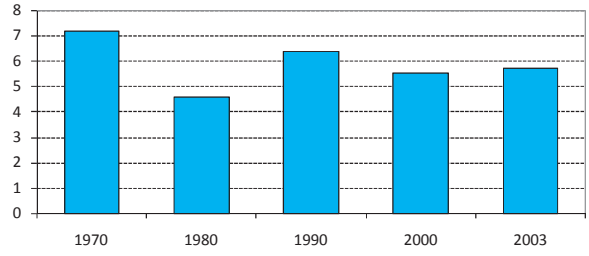
Source: Eurostudent 2005, as published in OECD, 2007b.

Koucký *et al.* (2008), using three rounds of the European Social Survey, assess inequality in the access to tertiary education over the 1950-2005 period for a set of 23 European countries. The measures used to characterise the socio-economic background of students are the father's occupation, the father's education, the mother's occupation and the mother's education. They find compelling evidence of the association between access to tertiary education and socio-economic background. For the period 1990-2005, they find that the odds ratio of attending tertiary education between a student whose father has the highest occupational status (as classified by the International Socio-Economic Index of Occupational Status) and a student whose father has the lowest occupational status is over 2.5 in Austria, Czech Republic, Poland, Portugal, Spain and Switzerland. This odds-ratio is lowest (below 2.0) in Finland, Greece, Netherlands, Norway and Sweden. These results are consistent with an examination of the relationship between father's occupation and tertiary study carried out with data from the 1998 Second International Survey of Adult Literacy (Matějů *et al.*, 2003). The authors found that, for all countries analysed, persons with fathers from a professional background were more likely to have participated in tertiary education by the age of 35 than persons with fathers not from a professional background, with odds ratios of 4.0 in Poland, 3.9 in Hungary and 3.1 in the Czech Republic, substantially higher than those of either the United States (2.0) or Finland (1.4).

Figure 6.3 presents research findings from six countries, as reported in Clancy and Goastellec (2007), two of the examples (Finland and Norway) drawing from countries' Country Background Reports prepared for the Review. Each example displays, for a single country, trends over time of a given admission or participation odds ratio between two socio-economic groups (defined by income level, social class, or parents' education level). Data provide indications that inequalities appear to have been reduced over time in most instances but do persist in quite a visible way in all of the countries displayed.

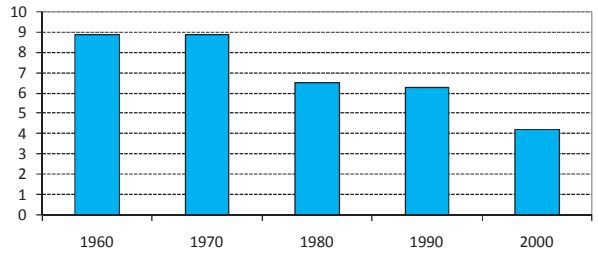
Figure 6.3. Access to and participation in tertiary education by students' socio-economic background in selected countries

College participation by family income: odds ratio top/bottom income quartile, United States, 1970-2003



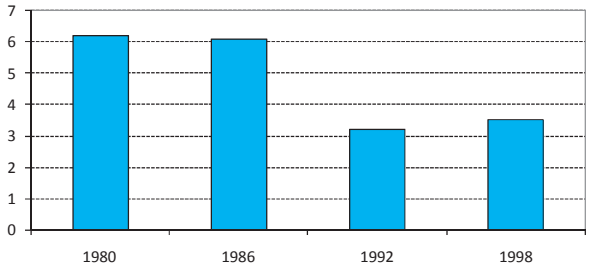
Source: Mortenson, 2005 (as reported in Table 3 of Clancy and Goastellec, 2007).

Higher education by parental social class: odds ratio white collar/blue collar, United Kingdom, 1960-2000



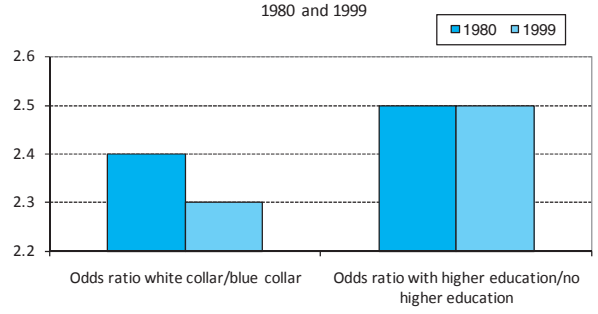
Source: DES, 2003; ONS, 2004 (as reported in Table 3 of Clancy and Goastellec, 2007).

Admission to higher education by socio-economic group: odds ratio 6 highest/5 lowest socio-economic groups, Ireland, 1980-1998



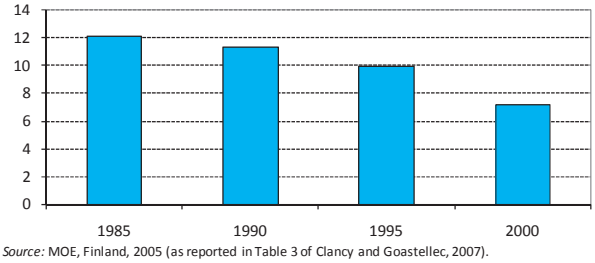
Source: Clancy, 2001 (as reported in Table 3 of Clancy and Goastellec, 2007).

Admission to higher education by parents' social class, Australia, 1980 and 1999



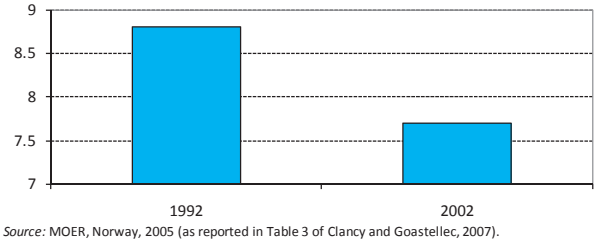
Source: Marks *et al.*, 2000 (as reported in Table 3 of Clancy and Goastellec, 2007).

Participation in higher education by fathers' educational level: odds ratio higher education/primary education only, Finland, 1985-2000



Source: MOE, Finland, 2005 (as reported in Table 3 of Clancy and Goastellec, 2007).

Participation in higher education by parents' education level: odds ratio higher education/compulsory education only, Norway, 1992 and 2002



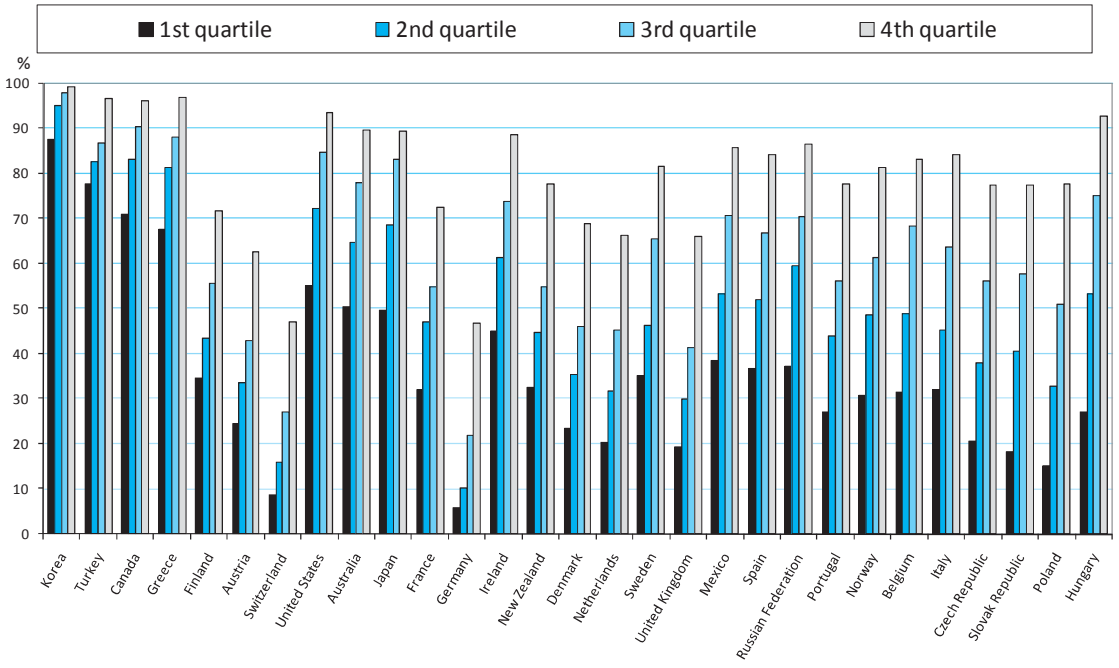
Source: MOER, Norway, 2005 (as reported in Table 3 of Clancy and Goastellec, 2007).

Socio-economic background also impacts on the aspirations for tertiary studies of secondary students

Figure 6.4 displays the aspirations for tertiary studies of 15-year-olds by quartile of the PISA[5] student's economic, social and cultural status index. This index includes the highest International Socio-Economic Index of Occupational Status of the parents or guardians, the highest level of education of the parents converted into years of education, an index of the educational resources in the home, and the number of books at home. The figure shows a clear association between aspirations to tertiary education at the age of 15 and the student's socio-economic background. It is striking that, in all countries, aspirations for tertiary studies are greater for 15-year-olds living in more advantaged families. The variation of aspirations for tertiary studies across socio-economic classes is greater in the Czech Republic, Hungary, Poland, and the Slovak Republic. By contrast, aspirations are less differentiated by socio-economic classes in Canada, Finland, Greece, Korea and Turkey.

Figure 6.4. Aspirations for tertiary studies of 15-year-olds

By quartile of the student's economic, social and cultural status PISA index, 2003



Countries are ranked in ascending order of the difference between aspirations of the 1st and 4th quartiles.

The ***index of economic, social and cultural status*** was derived from the following PISA (Programme for International Student Assessment) variables: *i)* the highest socio-economic index of occupational status of the father or mother; *ii)* the highest level of education of the father or mother converted into years of schooling; and *iii)* the number of books at home as well as access to home educational and cultural resources, obtained by asking students whether they had at their home: a desk to study at, a room of their own, a quiet place to study, a computer they can use for school work, educational software, a link to the Internet, their own calculator, classic literature, books of poetry, works of art (*e.g.,* paintings), books to help with their school work, and a dictionary. For further information see OECD (2004a).

Source: OECD PISA Database, 2003.

5. Programme for International Student Assessment.

More disadvantaged students are over-represented among those students who are not eligible to access tertiary education

A number of young people are excluded from tertiary education because they do not meet the necessary qualifications. These include early school-leavers and students who complete given tracks of secondary education which do not give direct access to tertiary education. According to a study by Groenez *et al.* (2003), in the Flemish Community of Belgium an average of 15.4% of young people aged 18-25 did not complete secondary education in the period 1992-1999. An additional 11.5% do attain a degree of vocational secondary education but without completing the extra third year required to gain access to tertiary education. Overall, an average of 26.9% of young people did not attain the qualifications to become eligible for tertiary education during the period analysed. The study also reveals that young people from socio-economic disadvantaged families are over-represented among the young people not eligible for tertiary education. For example, the proportion of students whose mother's highest educational attainment is primary education or less who did not complete secondary education is 29.2%, and the proportion of students in this category completing vocational education but with no access to tertiary education is 20.7%, both figures well above the corresponding population averages. If we consider students whose father's occupational status is "unskilled manual worker", the equivalent figures are 31.1% and 22.2%, again well above the population averages (Groenez *et al.*, 2003).

When gaining access to tertiary education, more disadvantaged students enrol in greater proportions in lower-status TEIs and more vocationally-oriented TEIs

There is evidence that when more disadvantaged students gain access to tertiary education, they enrol in greater proportions in lower-status TEIs and more vocationally-oriented TEIs. For example, Groenez *et al.* (2003) provide evidence that, in the 1990s in the Flemish Community of Belgium, students from disadvantaged families were over-represented in the non university sector (university colleges, *hogescholen*). While the average proportion of graduates from the university colleges over the period 1992-1999 was 72.3%, it stood at 84.5% for graduates whose mothers' highest educational attainment was primary education and 96.0% for graduates whose fathers' occupational status was "unskilled manual worker". Analysing the case of Portuguese tertiary education, Martins *et al.* (2005) found that, in 2004, while the proportion of students from a family in the two lower income brackets was 58.9% in the polytechnic sector, it stood at 42.1% and 37.2% in public universities and private universities, respectively. Similarly, 2003 survey data from Chile reveal that while 42.3% of students attending tertiary Technical Training Centres were from families in the two lowest income quintiles, they made up only 23.3% of the student population attending universities which are part of the Council of Rectors.

For the case of the United Kingdom, Chevalier and Conlon (2003), using cohorts of graduates in 1985, 1990 and 1995, provide evidence that students from a disadvantaged background were less likely to study at "elite" universities and Conlon (2002) gives evidence that, for a cohort of individuals born in 1958 (followed in the National Child Development Study), students whose fathers belonged to a lower social class were more likely to study for a vocational qualification rather than an academic qualification. In Sweden, data show that the proportion of students with a working class background is greater in shorter programmes leading to vocational degrees such as social care, vocational therapy, nursing or teaching (with over 25% of total enrolments) than in longer

more "prestigious" programmes such as architecture or medicine (with less than 10% of total enrolments). This socioeconomic bias is also visible in doctoral studies. In 2002-03, among students starting doctoral studies, 12% were from a working class background while 74% had a white-collar background (Högskoleverket, 2005).

Female participation in tertiary education has improved significantly in recent decades but the gender gap persists in post-graduate programmes

Female participation in tertiary education has steadily increased in recent decades, a trend reflected in 2005 tertiary attainment rates greater for females in the 25-34 age group in most countries (see Figure 2.6 in Chapter 2). Figures 6.5a to 6.5c show net entry rates by gender in 2005 for tertiary-type A programmes, tertiary-type B programmes and advanced research programmes, respectively. It is striking that net entry rates in tertiary-type A programmes are greater for females in all countries except Germany, Japan, Korea, Mexico (where parity exists) and Turkey (see Figure 6.5a). In some countries such as Estonia, Iceland, New Zealand, Norway, and Sweden the gender gap in participation is favourable to females by at least 25 percentage points. In tertiary-type B programmes, women remain dominant in most countries. Only in Chile, Denmark, Ireland, Mexico, Switzerland and Turkey are net entry rates greater for males (see Figure 6.5b).

In some countries, such as Korea, the causes of relatively low female participation appear rooted in traditional views of women. In general, participation of Korean women outside the home has been lower than in other OECD countries: the labour force participation rate of women is about 49%, much lower than the OECD average of 65%, and the employment rate of women with tertiary education is 57%, among the lowest levels in OECD countries. Women constitute only 34% of individuals in highly skilled positions compared to about 50% in Australia, Germany and Sweden, and 54% in the United States; men are dominant in senior corporate positions (94% of all individuals), senior civil service positions (90%), and in university faculty positions (86%) (OECD, 2005a).

Expansion of female participation in post-graduate programmes has been less impressive. In most countries for which data are available, net entry rates in advanced research programmes are higher for males (see Figure 6.5c). The exceptions are Australia, Estonia, Iceland, Italy, New Zealand, Spain and Sweden. Nonetheless female participation in doctoral programmes has been increasing in most countries. For instance, in the Netherlands, the percentage of women in doctoral programmes has increased from 18% in 1990 to 41% in 2005. Given the favourable trend in women's participation in under-graduate tertiary education, it can be hoped that female representation, both in post-graduate programmes and in due course in leadership positions in academia and in society at large will also improve satisfactorily over time.

Figure 6.5. Net entry rates in tertiary programmes by gender, 2005

Figure 6.5a. Net entry rates in tertiary-type A programmes by gender, 2005

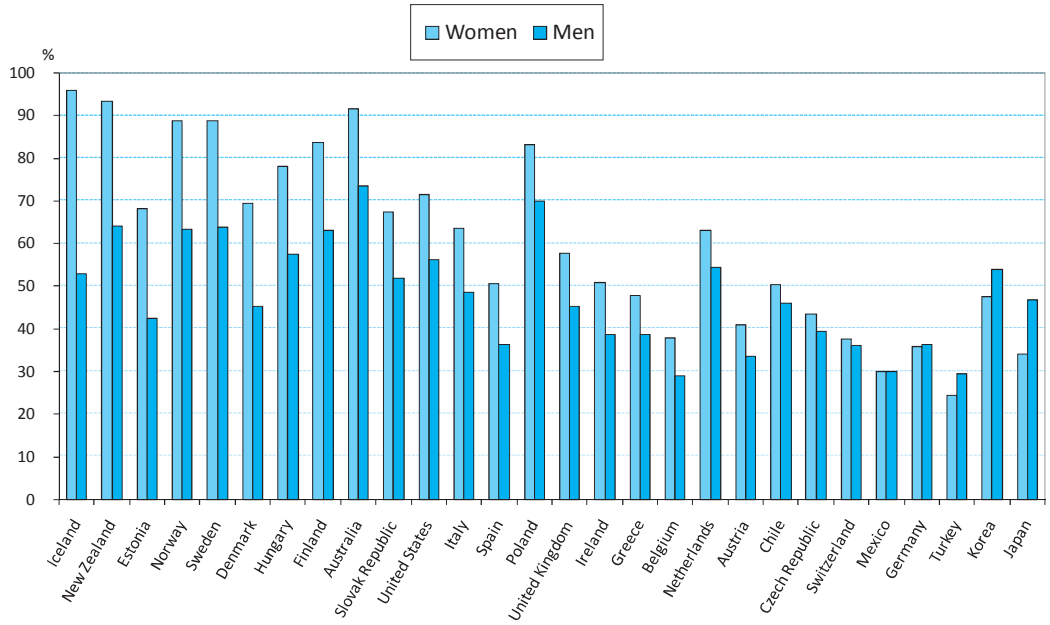


Figure 6.5b. Net entry rates in tertiary-type B programmes by gender, 2005

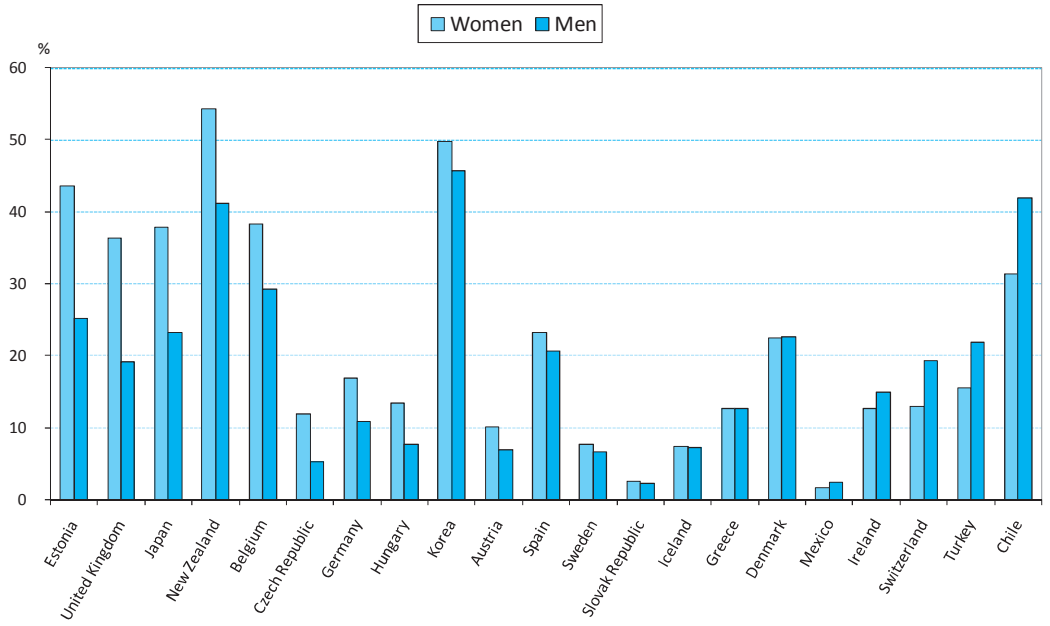
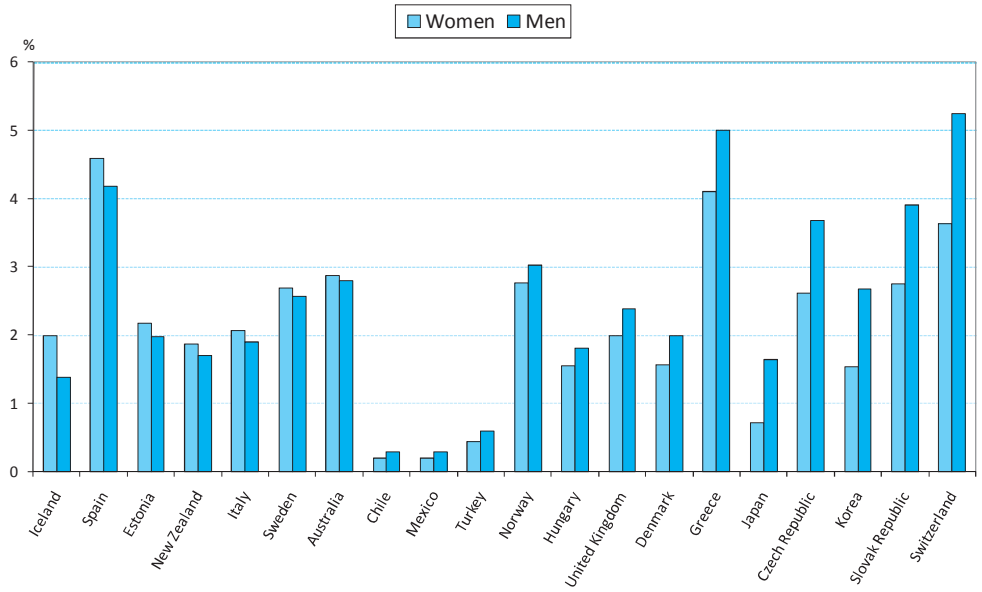


Figure 6.5c. Net entry rates in advanced research programmes by gender, 2005



Countries are ranked in descending order of the gender difference in net entry rates (entry rates for women minus entry rates for men).

The net entry rate of a specific age is obtained by dividing the number of first-time (new) entrants of that age to a specific type of tertiary education by the total population in the corresponding age group (multiplied by 100). The overall net entry rate for each tertiary level is calculated by summing the rates for each single year of age at that level. The *net entry rate* represents the proportion of people in a synthetic age-cohort who enter a given level of tertiary education at some point in their lives. In the case where no data on new entrants by age are available, **gross entry rates** are calculated. Gross entry rates are the ratio of all entrants, regardless of their age, to the size of the population at the *typical age of entry*. Gross entry rates are more easily influenced by differences in the size of population by single year of age.

Notes: Data for Belgium exclude the German-speaking Community of Belgium. Entry rates for Chile, Estonia, Japan, Korea and the Russian Federation are calculated as gross entry rates. Entry rates for tertiary-type B programmes in Austria, Germany and Poland and for tertiary-type A programmes in Italy are calculated as gross entry rates. Entry rates for Ireland include full-time entrants only.

Source: OECD, 2007b.

Females remain under-represented in some areas such as technology and engineering and over-represented in other areas such as teaching and nursing

There are substantial differences in fields of study by gender. Figures 6.6a-6.6d display the percentage of tertiary-type A and advanced research qualifications awarded to females in four different fields of study. In the areas of health and welfare, the proportion of qualifications awarded to females is above 50% in all countries for which data are available and is particularly high in Denmark, Estonia, Finland and Iceland (Figure 6.6a). By contrast, female qualifications in mathematics and computer science represent less than 50% of all qualifications awarded in all countries with particularly low numbers in Belgium, the Netherlands, the Slovak Republic and Switzerland (Figure 6.6b). In the field of humanities, arts and education women are dominant in all countries and more so in Estonia, Greece, Iceland and Italy (Figure 6.6c). Finally in the fields of engineering, manufacturing and construction, women constitute a minority of tertiary graduates, in particular in Austria, Japan, the Netherlands and Switzerland (Figure 6.6d). While these figures may arise from genuine differences in subject and career choice, they are also likely to stem from gender stereotyping. This will in turn have implications for gender differences in graduate employment and earnings, and so for gender inequity throughout life.

Figure 6.6. Percentage of tertiary-type A and advanced research qualifications awarded to females in selected fields of study, 2005

Figure 6.6a Percentage of tertiary-type A and advanced research qualifications awarded to females in the fields of Health and Welfare, 2005

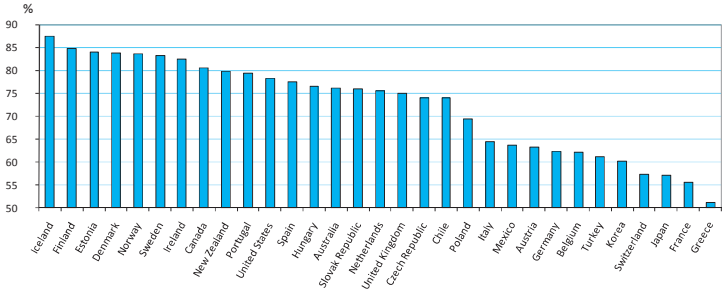


Figure 6.6b Percentage of tertiary-type A and advanced research qualifications awarded to females in the fields of Mathematics and Computer Science, 2005

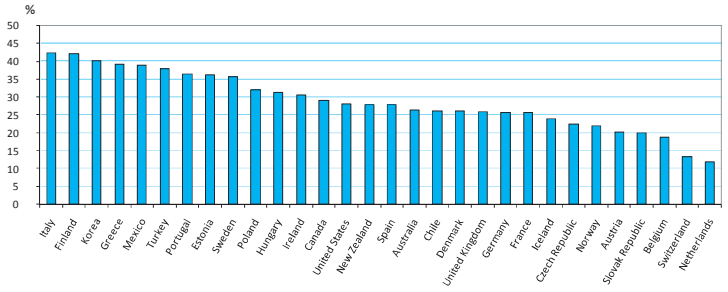


Figure 6.6c Percentage of tertiary-type A and advanced research qualifications awarded to females in the fields of Humanities, Arts and Education, 2005

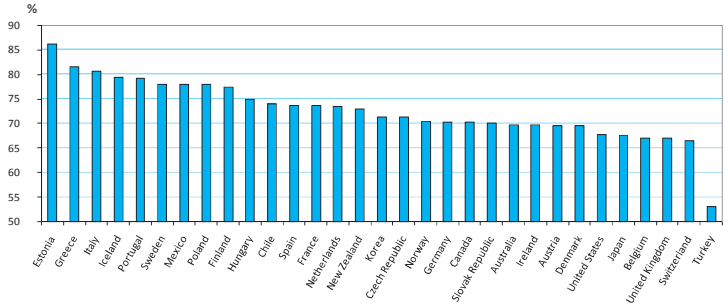
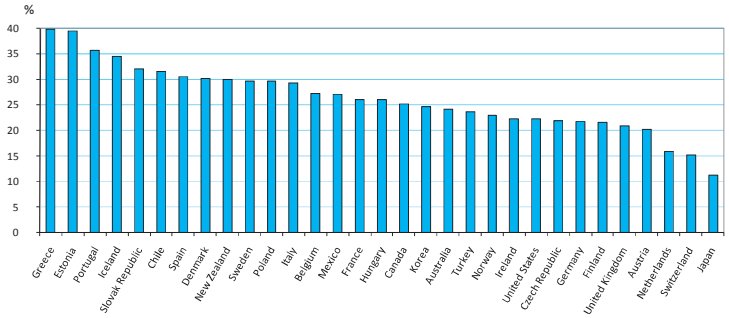


Figure 6.6d Percentage of tertiary-type A and advanced research qualifications awarded to females in the fields of Engineering, Manufacturing and Construction, 2005



Countries are ranked in descending order of the percentage of tertiary-type A and advanced research qualifications awarded to females.

Notes: Data for Belgium exclude the German-speaking Community of Belgium. The year of reference for Canada and Finland is 2004.

Source: OECD, 2007b.

It is interesting to note that, in the large majority of countries, male participation in non-traditional areas of study (or in tertiary education altogether) has not emerged as a policy concern. In this respect, it is interesting that the Australian government, in its review of equity groups in higher education in 2003-2004, decided against monitoring and setting targets for participation of males in non-traditional areas of study, specifically, nursing and teaching, because low participation rates for men in non-traditional areas of study were deemed to relate to labour market choices rather than issues of educational disadvantage.

In some countries tertiary education degrees of women seem to be undervalued by the labour market

There is evidence, in some countries, that tertiary education degrees of women are undervalued by the labour market. In Spain, women's earnings are below men's earnings for all levels of educational attainment and age groups. In 2005, the average annual salary of women in the 20-29 age group who attained, respectively tertiary vocational education, first-cycle of university education, and either the second or third cycles of university education was 22.6%, 19.2% and 15.4% lower than the corresponding average annual salary of men in the same age and qualifications categories. Differences were greater for older age groups.

Analysing the case of Sweden, Berner (2002) assesses why women's tertiary education degrees appear to be undervalued on the job market compared to men's, even though there is an official "equality ideology" and a quite broad "equality policy" in the country. She finds that women received their tertiary degrees in areas which are traditionally dominated by women and where the salaries are low and the working conditions are poor. This is related to the building up of the Welfare State in the 1960's where, since men were already employed in predominantly the private production sector, women took the newly available jobs in the public sector. She notes that, recently, women have invested in previously male dominated careers, which is beginning to improve equitable treatment in the labour market. She adds that inequity problems remain in relation to statistical discrimination and male networks which prevent women from acquiring the full economic benefits from their tertiary education.

Some countries face challenges in making tertiary education accessible to students with an immigrant background

A number of countries face the challenge of integrating immigrants in their educational systems, including tertiary education. For instance, in Norway, while the participation rate in tertiary education for individuals without an immigrant background was 25% in 2002, the rate for first generation immigrants without Norwegian background was 11%. However, remarkably, the participation rate for persons born in Norway with two foreign-born parents attained 23% for the same year. The completion rates for 30-34 year-olds provided similar indications: they reached 36% for individuals without an immigrant background against 20% for first generation immigrants and a notable 39% for persons born in Norway with two foreign-born parents. In Australia, the participation rate for people from non-English speaking backgrounds[6] increased until 1995 reaching 6%

6. Students from non-English speaking backgrounds are defined as students born overseas who arrived in Australia less than 10 years prior to the enquiry and who live in a home where a language other than English is spoken.

(compared with the reference population of 5%) while in 2006 the group comprised just under 4% of the domestic student population.

Participation by non-western minorities is also a significant issue in the Netherlands. On the positive side, it should be noted that total participation is increasing, both in research-intensive universities and universities of applied science. In 2004, non-Western non-native Dutch students represented 13.4% and 8.2% of the intake of universities of applied science and research-intensive universities, respectively. Although non-western students are enrolling in greater numbers in the Dutch tertiary education system, their success rates in graduating are markedly lower than those of the native Dutch (Wolff and Crul, 2003; Severiens *et al.*, 2006). In the universities of applied science, for the cohort beginning in 2000, the gap after five years was 20 percentage points. At the research-intensive universities it was 10 percentage points. The trend in the gaps seems steady, meaning that progress, if any, is slow. It is noteworthy, however, that fewer non-western minorities are leaving their studies. For example, at the research-intensive universities, the proportion of non-western students who leave after five years without a qualification has fallen from 20% to 15% over the past six cohorts (*Centraal Bureau voor de Statistiek*).[7]

The inclusion of ethnical minorities poses serious challenges in some countries

Some countries are ethnically very diverse. For example, Mexico is a multicultural nation with at least 62 different ethnic groups who talk more than 80 languages with various dialects. It happens that the inclusion of some ethnical minorities poses serious challenges in Mexico. In the mid 2000s, indigenous students represented only 1% of the tertiary education population while they represented about 10% of the overall population. In other countries such as the Czech Republic only a trace of those students enrolled in the tertiary education system – an estimated 0.02% of total enrolment – is comprised of Roma students, while they represent between 2 and 3 % of the overall population. The near-absence of Roma students from tertiary education is rooted in the fact that less than 5 percent are estimated to complete secondary studies.

In Canada Aboriginal student enrolment rates are growing substantially faster than those of other demographic groups, albeit from a very low base. Nevertheless, retention and success rates for Aboriginal students remain much lower than those of their non-Aboriginal counterparts (Malatest, 2004). By contrast, New Zealand has been successful with the high level of engagement that the Māori people have had within tertiary education over the last fifteen years. Since 2002 Māori students have had the highest tertiary participation rate of any ethnic group in New Zealand – 23.6% in 2004 against a country average of 14.3%. However, Māori people are concentrated in the lower levels of the tertiary education pathways.

There has been an improvement in the geographical accessibility to tertiary education

In some countries, there has been a significant improvement in the geographical accessibility to tertiary education. For example, Finland has been very successful in this respect through regional expansion of the university system and the creation of polytechnic institutions throughout the country. Twenty municipalities have a university

7. For an indication of retention performance of equity groups (including students with an immigrant background) in Australia, Ireland, the Netherlands and the United States see van Stolk *et al.* (2007).

(or campus) providing degree studies and polytechnics are now established in 88 different localities. Open University studies can be pursued in a variety of units within the education network widely spread around the country. In total, 80 out of 431 Finnish municipalities are "university or polytechnics towns". Similarly, Norway has also been very successful in improving the geographical accessibility to tertiary education. The expansion of tertiary education in Norway in the 1960s and the 1970s led to the establishment of TEIs in all counties. As a result, participation rates of students living in rural areas (22% in 2002, an improvement relative to the 10% of 1992) caught up with those of students living in urban areas (24% in 2002 and 20% in 1992). The expansion of tertiary education in Poland has also been closely linked with the establishment of TEIs in remote areas of the country. The number of tertiary students coming from rural areas doubled between 2002 and 2005, from 10% to 20% of the total population of tertiary students. This is to a great extent related to the creation of new TEIs, in particular private vocational TEIs, in smaller cities and towns across Poland, whose foundation mostly took place in the 1990s. Today TEIs are established in over 100 cities and towns, in all provinces of the country.

However, challenges remain in some countries. In the Russian Federation, tertiary education is 1.7 times more accessible for residents of towns with capital status than for village residents (Voznesenskaya *et al.*, 2004). In Australia, estimates from 2004 indicated that for every 10 urban people who attend university, six non-urban/isolated Australians on a *per capita* basis could be expected to do so. The isolated group is one of the most under-represented groups in Australian higher education and also experiences poor retention rates.

There are increasing opportunities in tertiary education for more mature students but their participation remains limited in some countries

Another positive development has been the expansion of the participation of more mature students in most countries. For instance, in Estonia, the proportion of students aged 26 and older increased from 15.3% in 1995 to 34.1% in 2005. In New Zealand, the average age of tertiary students has increased from 27.6 years in 1994 to 30.9 in 2003. In Iceland, the five years from 2000 to 2004 have seen a remarkable shift in the pattern of social demand by mature students. In 2000, enrolments of the younger age groups (24 years and under) accounted for 45% of the whole; those aged 30 and above, 28%. Five years on the corresponding statistic stood at 37% for both groups. Similarly, in Spain in 2004-05 over a third (35.5%) of Spanish university students were above 24 years of age, while in 1999-2000 this proportion was 26.5%.

In part, the growing participation of more mature students reflects new opportunities offered to adults to undertake tertiary studies. For instance, in New Zealand, the provision for the admission on the basis of non-formal training (the recognition of non-credentialed prior learning, part of the National Qualifications Framework assessment model) and the access to the student support system for individuals of all ages has greatly benefited the participation of adults in tertiary education.

In other countries, such as Portugal, older students are significantly under-represented. Until recently students over 25 years of age and without formal qualifications could enter tertiary education by sitting in special entrance examinations. However, the number of students using this alternative entrance road was very limited,

representing only 1.1% of total first year enrolments in 2004/05.[8] In Korea, of all university enrolments (tertiary-type A programmes) in 2006, only 14.1% were 25 or older.

In some countries going to tertiary education is seen as mostly for young people leaving school, and not something seen as open to older people seeking a "second chance". In this context, participation of more mature students is hindered by a number of factors which vary across countries:

- Often no special admission paths exist for more mature students and entry is based on an entrance examination and school performance. Access is made more difficult when specialist courses to prepare older people for the entrance examination are not available.
- Sometimes the funding of the system favours school-leavers. Student support systems may not be accessible for older individuals or students attending on a part-time basis, and fees remission might be on the basis of performance in the entrance examination.
- Mature age students may prefer and need to study part-time, combining work and family responsibilities with study. However, offerings of institutions might generally assume full-time participation that is difficult for adults already in employment. In cases where some teaching is provided in the evening or at weekends, students might be expected to pursue the same number of courses per year as full-time students.

Students with disabilities remain under-represented in tertiary education

The profile of students with disabilities varies widely across countries depending on the definition of disability used: while in France most students with disabilities in tertiary education have a physical or a sensory impairment, in the United Kingdom they mostly have an unseen disability such as dyslexia, a learning difficulty or a mental illness and in Germany mainly a chronic illness (OECD, 2003).

Participation of students with disabilities in tertiary education has expanded in most countries. In the United Kingdom for instance, the number of students in tertiary education with a known disability increased from 2% of the student population to 5.4% between 1994 and 2003 while in France such figure has increased by a factor of ten since 1981. In Sweden, participation in tertiary education by students with a disability grew by 125% between 1993 and 1999 while in New Zealand it grew 185% between 1998 and 2003 to reach 5% of all students in 2003. In Australia, students with disabilities comprised 4% of all higher education students in 2006, up from 2% in 1996.

However, students with disabilities remain under-represented within tertiary education. For instance, in New Zealand, students aged 15 to 44 with disabilities participated at about a quarter of the rate of people aged 15 to 44 who did not have disabilities. In Poland, in 2004, disabled students accounted only for 0.48% of the tertiary student population (compared to 0.26% just two years before). In Austria, as in many OECD countries, students with disabilities tend to be older compared to non-disabled

8. In 2006 the Portuguese Government approved a new regime that simplifies and promotes the access to higher education to those over 23 years. In 2006-07, around 10 850 mature students gained access to tertiary education through this scheme.

students (Wroblewski and Unger, 2003). In the United Kingdom, the acceptance rate of students with disabilities (80.4%) was in 2005 slightly lower than that for non-disabled students (81%) especially for those having a sensory impairment (79.1%), a mental health problem (74.7%), an unseen disability (79.0%) or multiple disabilities (77.2%) (data from the *Higher Education Statistics Agency* – HESA). In addition, students with a disability tend to access shorter programmes compared to their non disabled colleagues or degrees that do not combine general and vocational subjects (such as arts or social sciences courses) and that therefore do not provide them with valuable work experience. In the United States, young people in the general population are about four and a half times more likely to take a 4-year university degree than young people with disabilities (Wagner *et al.*, 2005).

Students with disabilities are also less likely to be successful in their tertiary studies than their non disabled peers. In the United Kingdom, students with disabilities have fewer chances to access post-graduate degrees, especially those presenting dyslexia, blindness, an autistic syndrome and multiple disabilities (HESA). In France, the students with disabilities who are the least likely to access post-graduate courses present health problems, a psychological disorder or a temporary incapacity (Ebersold, 2007). These difficulties may be due to the severity of impairment: students with multiple disabilities, emotional disturbances or mental retardation tend to be less likely to access tertiary education and to succeed than other students with disabilities. They may also be ascribable to modes of funding that misjudge the impact of evolving disorders on the pace at which students progress as well as the cost of time wasted in poor accessibility and/or accommodation. These difficulties may also be contingent on the absence of support or support being inappropriate to students' needs and rhythms. In the United States, 22% of students with disabilities attending tertiary education in 2001 did not receive the necessary services (NCES, 2005). In Ontario, Canada, 44% of students with disabilities indicate that their income from all sources is insufficient to cover educational services and/or equipment costs and that they face a significant pressure that can jeopardise their ability to remain enrolled (OECD, 2003).

In most countries there is little emphasis on equity of outcomes

In most countries, equity policies have traditionally emphasised equity of access over equity of outcomes. Typically less accent is placed on student progression throughout tertiary study, with little by way of special support and follow-up measures to assist those students who experience the greatest difficulty, whether this is primarily academic or socio-economically-based. In these cases students' progress is not closely monitored and students whose disadvantaged background has been identified receive no particular support. In addition, considerably fewer data are available on equity of outcomes – *e.g.* completion rates by under-represented groups in tertiary education.

This is changing in a number of countries. For instance, in Norway, as a result of the *Quality Reform*, an increasing focus on equity of outcomes emerged. More emphasis is being placed on student progression throughout their tertiary studies with special support and follow-up measures to assist those students who reveal more difficulties. Similarly, in Mexico, a new stress on equity of outcomes is reflected in the wide availability of tutoring programmes in TEIs: typically, students' progress is closely followed by a teacher and students whose disadvantaged background has been identified (*e.g.* recipients of means-tested scholarships) are entitled to specific support.

6.6 Factors affecting equity in tertiary education and country policy responses

6.6.1 Funding-related factors

Equity issues in tertiary education which relate to the funding of tertiary education were discussed in Chapter 4. This included, in particular, the equity concerns raised by approaches to funding tertiary education systems (*e.g.* whether funding approaches are regressive, whether cost-sharing is more equitable) and the issue of liquidity constraints faced by students at the time of attendance associated with a discussion of the financial support to students. Below, the analysis focuses on factors with an impact on equity in tertiary education which bear no relation to approaches to funding tertiary education.

6.6.2 Family background

The impact of family background on schooling performance is well established

The most solidly based finding from research on school learning is that the largest source of variation in student achievement is attributable to differences in what students bring to school – their abilities and attitudes, and family and community background (OECD, 2007a; OECD, 2005b). Educational inequalities linked to family background tend to persist (Feinstein, 2004). The likelihood of staying on after the compulsory school-leaving age is linked to family background and social disadvantage in many countries (Machin, 2006a).

Family background is also a strong influence on tertiary education participation

There is also strong evidence that family background affects participation in tertiary education. Results in Saarela and Finnaes (2003) suggest that family background appears to be a crucial determinant of tertiary education attendance in Finland (with declining importance in recent years) but appears to have a stronger impact on the transition from compulsory school to upper secondary school. Lauer (2003), using the German Socio-economic Household Panel and the *Formation et Qualification Professionnelles* survey, finds that parental education affects significantly the probability to enrol in tertiary education in both Germany and France. Gayle *et al.* (2002) use the Youth Cohort Study of England and Wales (with young people born in 1969 and 1970) to find evidence that parental education and family's social class influence a young person's chance of studying for a tertiary degree.

Butlin (1999) uses the 1995 School Leavers Follow-up Survey to show that in Canada secondary school graduates with at least one university-educated parent had higher odds of attending university, when controlling for factors such as gender, family type, school grades, academic problems in primary school, and class participation. Knighton and Mirza (2002), examining access to post-secondary education in Canada using the first wave of the Survey of Labour and Income Dynamics (which followed 31 000 Canadians aged 15 years and older, from 1993 to 1998), find evidence of a combined effect of parents' education and household income on post-secondary participation. In addition, they find that parents' education had a strong effect on whether post-secondary participants pursued university rather than a non-university institution. Results by Maani (2006), examining choice of TEI by young adults born in Christchurch (New Zealand) in 1977, provide strong support for the hypothesis that family income is associated with the

type of tertiary education attended, where the probability of university attendance increases significantly with parental income, even when controlling for personal academic ability and performance.

Parental income might be more of an influence through its long-term effect on cognitive and noncognitive ability rather than through short-term credit constraints

Parental income in the child's schooling years is a strong predictor of tertiary education attendance (Black and Sufi, 2002; and Cameron and Heckman, 2001, for the case of the United States; Machin and Vignoles, 2004, for the case of the United Kingdom). The impact of parental income might occur through the effect of credit constraints facing families during the typical age of tertiary education attendance or through the long term factors that promote cognitive and noncognitive ability during childhood and adolescence. Both Carneiro and Heckman (2002) and Cameron and Heckman (2001) find strong evidence, for the case of the United States, that the long term factors reflected in individuals' ability are the major determinants of the family income – tertiary education attendance relationship. Both research studies conclude that parental background and family environment are more influential than liquidity constraints in participation in tertiary education in the United States.

Results by Maani (2006), who examines higher education choices of young adults born in Christchurch (New Zealand) in 1977, support the findings above. This study indicates that, if people continue at school at age 16, participation in tertiary education was not significantly influenced by parental income. Rather, it is largely influenced by academic performance at secondary school, peer influence and intentions expressed at age 16 to attend university or polytechnic. Parental income is, by contrast, an important determinant of academic performance. A study by Maani and Kalb (2007), using panel data from New Zealand, finds that academic performance is influenced by many personal and family factors, including parental income in adolescent years. This indicates that parental income has an indirect influence on participation in tertiary education through academic performance at secondary school.

6.6.3 School factors

The organisation of schooling has an impact on opportunities for tertiary education study

There is evidence that highly segmented or "tracked" systems of secondary education – *i.e.* those that separate students into distinct tracks of preparation at an early age, as distinct from those that are comprehensive – have the effect of widening inequalities in entry to tertiary education.[9] Systems with high levels of segmentation show a stronger relationship between family background and student achievement (with consequences for tertiary enrolment). This is because systems of education that sort and segment students allow inequalities in family circumstances to combine with peer and instructional inequalities to produce wider variation in secondary achievement, and more unequal opportunities for entry into tertiary education.

9. It should be noted that segmentation may take the form of: *(i) school tracking* when students, from an early age, are grouped into different school types, typically by academic ability; or *(ii) class tracking* when students are grouped into distinct classes within similar schools, typically also by academic ability.

In a number of countries such as Austria, the Czech Republic, Germany, Hungary and the Netherlands the school tracking of students occurs at an early age. For instance, in the Netherlands, during secondary school, beginning at 12 years, students are streamed into three hierarchically ordered groups on the basis of academic potential: the VWO, the stream constituting the pathway to research intensive universities (though some go to the universities of applied science); the HAVO which provides students for the universities of applied science (HBOs/*hogescholen*) or tertiary-level vocational training (MBOs); and the VMBO which prepares students solely for MBO tertiary training. In total about 60% of students enrolled in upper secondary education are in vocational programmes; and at the level of tertiary education about two thirds of all students are enrolled in the HBOs rather than the research-intensive universities.

Studies have investigated whether early tracking has an effect on the relationship between school performance and family background. Hanushek and Wöβmann (2006), using six international student assessments covering 26 countries, show that early tracking reinforces educational inequalities. Schütz *et al.* (2005) reach similar results. They show that family background is a strong influence on student achievement in class tracking countries such as the United States and the United Kingdom and in school tracking countries such as Germany and Hungary, and considerably more so if tracking takes place at an early age. Argys *et al.* (1996a, 1996b) and Betts and Shkolnik (2000) provide evidence that class tracking accentuates inequities in secondary school performance in the United States.

Other studies provide evidence that family background is a strong determinant of the track a student follows. Dustmann (2004) and Schnepf (2003) find a strong effect of parental background on the access to the high ability track in Germany (*Gymnasium*). Münich (2005) predicts that parental education is the most powerful determinant of access to the high-ability track in the Czech Republic. For instance, growing up with a mother who has attained tertiary education increases the probability of being enrolled in a *gymnasium* by 31% *vis-à-vis* a student whose mother has only primary education. Similarly, Riley (1997) shows that, in the United States, sorting into high-level math and science classes is highly correlated with parental income.

Uneven distribution of teacher quality and school resources influences opportunities to access tertiary education

Inequalities in the access to tertiary education are also influenced by differences in the quality of schooling or the distribution of schooling resources. Critical factors are those involving teachers and teaching, likely to be the most important influences on student learning of those variables which are potentially open to policy influence (OECD, 2005b). There is evidence that in countries experiencing general teacher shortages, students in schools in remote or disadvantaged areas tend to find themselves in classes with the least experienced and qualified teachers. Teachers who work in schools with high concentrations of disadvantaged students often experience higher rates of attrition and turnover, which raises concerns about the continuity of educational programmes in such schools (OECD, 2005b).

Other school factors may hinder opportunities to reach tertiary education

OECD (2007a) identifies a number of other school issues which raise concerns about equity of opportunities for more disadvantaged groups, including:

- The risks to equity of school choice;
- Potential dead ends in upper secondary education;
- Limited instruments for second chances to gain from education;
- Limited support to help those who fall behind at school;
- Often weak links between schools and families;
- Potential absence of special provisions for special groups such as migrants and minorities; and
- Limited provision of early childhood education.

6.6.4 Peer effects

There is a large body of evidence that shows that students benefit from being exposed to able peers (Hoxby, 2000; Hanushek *et al.*, 2003; McEwan, 2003; Robertson and Symons, 2003). Peer influence is likely to be large in relation to tertiary education enrolment, not only through peer effects on own achievement throughout school education but also through the peers one is exposed to at the time of the enrolment decision. Ayalon and Addi-Raccah (2003), using longitudinal data on all Israeli students who completed secondary school in 1991, find empirical evidence that students who attend schools with a greater proportion of more academic able students and/or students from better-off families are more likely to enrol in tertiary education. Similarly, Martin *et al.* (2005), analyzing institutional data on 1999 admissions to the University of California, find evidence that the socioeconomic and racial composition of the applicant's school influences the probability of admission. Brooks (2003) draws on a qualitative, longitudinal study in the United Kingdom to suggest that while families have a strong influence on young people's conceptualisation of tertiary education, friends and peers play an important role in informing decisions about what constitutes a "feasible" choice.

6.6.5 Articulation between secondary and tertiary education

One clear challenge countries face as a result of the diversification of tertiary education is the nature of the articulation with secondary education. In terms of equity this is pressing in light of the fact that disadvantaged groups tend to enrol in larger proportions in vocational tracks of upper secondary education. This calls for particular attention to the links between non-academic tracks in upper secondary school and non-university sector provision in tertiary education, including bridging education programmes, designed to assist students in developing the skills necessary for success in tertiary education. Effectively, institutional diversity within tertiary education is to be closely associated with curricular diversity in upper secondary school and with the recognition of tracks beyond the academic as valid for access to tertiary education (see Chapter 3, Section 3.5.1).

In Norway, and unlike many other OECD countries, the upper secondary vocational track offers students feasible pathways into tertiary education. This can occur in two ways: either by the young person completing an upper secondary vocational programme and then doing a supplementary one-year course of general education; or by transfer from a vocational programme to a general education track part way through upper secondary schooling. Data from the University of Oslo, the biggest and oldest in the country, indicated that in the 2004-05 academic year, 15% of all new students had come through

one of these routes. Furthermore, the proportion of applicants from these routes was only slightly less than the proportion admitted. This is a good indicator of the likely impact upon social mobility of the upper secondary pathways reforms that took place in Norway in the mid 1990s. Other countries with similar policies are Iceland and Sweden. Ekström (2003) studied changes in the Swedish secondary education system and the related effects on admission to tertiary education. The author looked at the 1991 school reform, which added an extra year of education for those in the upper secondary vocational education programmes (from 2 to 3 years). She finds that the reform had positive effects on enrolment in tertiary education, which was one of the objectives of the reform.

In Portugal, the *New Opportunities* programme, launched in 2007, represents an important recognition of the need to draw in a wider range of learners and to cater for their varying needs in innovative ways. Of particular note are the strategies for double certification (general and professional) for initial vocational training courses, the objective of increasing from 22% to 50% the proportion of technological programmes available to upper secondary students by 2010, and building bridges between general, technical and professional streams.

6.6.6 Organisation of tertiary education

The ability of the tertiary education system to accommodate demand has equity repercussions

As seen in Section 6.4, the expansion of tertiary education widens opportunities for all groups of students. If the tertiary education system limits entry to qualified students (as a result of capacity limitations) and therefore does not accommodate demand for tertiary education, individuals from disadvantaged backgrounds are more likely to be among the individuals excluded. Psacharapoulos and Tassoulas (2004) illustrate this for the case of Greece, where the number of available places in public TEIs is restricted and entrance is based on a national examination. Analyzing the entire population of secondary education graduates taking the 2000 national secondary school examination, they find that poor districts, evening schools, and public secondary schools are associated with lower achievement (and therefore more limited access to tertiary education). This further leads to greater proportions of disadvantaged students entering the non-university sector.

Equity objectives are likely to advance if available programmes fit the interests of a wide range of students

An indication of the need to diversify tertiary education is that its pool of prospective students in the secondary system is larger and increasingly more diverse than before. It is also more varied with respect to social backgrounds, academic preparation, and aims. Further diversification of tertiary systems creates opportunities for more disadvantaged groups who may not otherwise gain (or wish to gain) access to the more traditional academic forms of tertiary education.

An example of the expansion of opportunities in tertiary education is the creation of the Technological Universities subsystem in the early 1990s in Mexico, TEIs which offer 2-year vocational-oriented tertiary-level degrees. These have had a positive impact in expanding access for the most vulnerable individuals and regions. They are located in lower-middle to low income areas, where 50 to 60% of families earn the equivalent or less than three minimum wages with the consequence that 90% of their students represent the first generation to access tertiary education. In New Zealand, in line with the diverse

organisational nature of the system, the student population is diverse as well. Of the half million students, 68% study at sub-degree certificate and diploma level (2-year degrees or courses of shorter duration), 25.6% at bachelor's level and a small proportion (6.4%) at the post-graduate level.

Pierson and Wolniak (2003) conclude that the establishment and growth of the two-year community colleges have had a dramatic impact on the character of post-secondary education in the United States. They suggest that the existence of two-year colleges has substantially increased both the access to tertiary education as well as the social mobility of numerous individuals whose education might otherwise have ended with secondary school. However, they indicate that a major critique in the literature on the two-year college posits that, while it may function to guarantee equality of opportunity for access to tertiary education, in relation to four-year colleges and universities, it has not provided equal opportunity in terms of the outcomes or benefits of higher education.

Financial incentives for TEIs to advance equity objectives are a possible instrument

Special provisions in mechanisms to allocate public funds to TEIs

The great majority of countries use special provisions in mechanisms to allocate public funds to TEIs as a means to encourage the enrolment of students from under-represented groups (see Table 6.1) – the exceptions are Greece, Iceland, Norway and Spain. Six systems – Australia, Flemish Community of Belgium, Croatia, New Zealand, the Russian Federation and the United Kingdom – provide extra-funds to TEIs per enrolled student from an under-represented group (typically through a funding premium per each student). In Australia, a funding premium per student is given to the TEIs which attract students from low socio-economic backgrounds; students from rural and isolated areas with a low socio-economic background; and students with a disability. In New Zealand a premium per enrolled Māori or Pasifika student is given to TEIs. In the Flemish Community of Belgium and the United Kingdom, TEIs receive additional funding per student from lower socio-economic groups and per student with a disability. Special funds to assist with the participation of students with disabilities are provided in the Netherlands (as part of block grants) and in Sweden (upon application). In Northern Ireland, a special project provides funds for TEIs to develop their own strategies and approaches to facilitate access to tertiary education by under-represented groups, including partnerships with schools whose graduates exhibit low levels of participation in tertiary education.

In addition, a number of countries – Australia, Chile, China, Czech Republic, Japan, Mexico, Poland and the Russian Federation – provide TEIs with special funds to be distributed as grants to students from under-represented groups. The targeted groups are students from low socio-economic backgrounds (Australia); students from rural and isolated areas with a low socio-economic background (Australia, Chile, China); indigenous students (Australia, Chile, China, Mexico); ethnic minorities (Roma students in the non-university tertiary sector of the Czech Republic), orphans and students with no parental care (Russian Federation), and students enrolled in particular regions (TEIs in the region of Hokkaido in Japan). In Australia, the Czech Republic (for the university sector), Estonia (for students whose mother tongue is not Estonian), Japan, New Zealand (for students with disabilities), Portugal, the Russian Federation and England, special funds are provided to TEIs for the development of an appropriate environment for students with special needs. In Korea and Poland, TEIs located in disadvantaged areas receive extra funding. In Finland, TEIs receive particular funds to enhance equal opportunities.

Table 6.1. Equity in tertiary education: measures targeted at under-represented groups, 2007

	Special provisions in mechanisms to allocate public funds to TEIs used to encourage the enrolment of under-represented groups of students	Under-represented groups of students who benefit from a targeted grant scheme	Do special selection provisions exist in public TEIs to improve the participation of some groups of under-represented students?	Are there supporting programmes in public TEIs specifically targeted at under-represented groups during the course of studies?
Australia[1]	**(1) Extra funds to TEIs per student from under-represented groups** (students from low socio-economic backgrounds; low socio-economic students from regional and remote areas; and disabled students) (only public TEIs)[2] **(2) Special funds to TEIs to distribute as grants to students from under-represented groups** (students from low socio-economic backgrounds; low socio-economic students from regional and remote areas; and low socio-economic Indigenous students) (only public TEIs) **(3) Special funds to TEIs to develop an appropriate environment for students with special needs** (only public TEIs)	**Socially disadvantaged students, geographically-disadvantaged students** (A small number of private institutions benefit from these special provisions)	**Yes, at the discretion of TEIs and generally used** (students from low socio-economic backgrounds, regional and remote areas, non-English speaking backgrounds, Indigenous Australian backgrounds and disabled students)	**Yes** (only eligible TEIs) (students from low socio-economic backgrounds, regional and remote areas, non-English speaking backgrounds, educational disadvantage associated with gender and disabled students) **Yes, at the discretion of TEIs and generally used** (students from low socio-economic backgrounds, regional and remote areas, non-English speaking backgrounds, Indigenous Australian backgrounds, women in non-traditional areas of study and disabled students)
Belgium (Flemish Community)	**Extra funds to TEIs per student from under-represented groups** (lower socio-economic groups and disabled students)	**None**	**No**	**Yes, at the discretion of TEIs and generally used** (incentives with public funds)
Chile	**Special funds to TEIs to distribute as grants to students from under-represented groups** (indigenous groups and students from remote areas)	**Socially-disadvantaged students, geographically-disadvantaged students** (in public and private institutions)	**Yes, at the discretion of TEIs and generally used** (disabled students) **Yes, at the discretion of TEIs but rarely used** (indigenous groups)	**Yes, at the discretion of TEIs but rarely used** (indigenous groups)
China	**Special funds to TEIs to distribute as grants to students from under-represented groups** (indigenous groups and students from rural areas)	**Socially-disadvantaged students** (in public institutions only)	**Yes, at the discretion of TEIs and generally used** (indigenous groups, disabled students)	**Yes, imposed by national framework on all TEIs** (disabled students)
Croatia[3]	**Extra funds to TEIs per student from under-represented groups** (Disabled students, socially-disadvantaged students, citizens from the city of Vukovar, and Roma people)	**Disabled students, socially-disadvantaged students, citizens from the city of Vukovar, and Roma people**	**Yes, imposed by national framework on all TEIs** (Roma people) **Yes, at the discretion of TEIs and generally used** (disabled students)	**Yes, at the discretion of TEIs but rarely used** (disabled students)
Czech Republic	**(1) Special funds to TEIs to distribute as grants to students from an under-represented group** (Roma students) (only at ISCED 5B level); **(2) Special funds to TEIs to develop an appropriate environment for students with special needs** (only at ISCED 5A level)	**Socially-disadvantaged students** (Roma students) (only at ISCED 5B level), **students with special needs**	**No**	**No**
Estonia	**Special funds to TEIs to develop an appropriate environment for an under-represented group** (students from non-Estonian speaking backgrounds)	**Students with special needs and students from non-Estonian speaking backgrounds**	**Yes, at the discretion of TEIs and generally used** (disabled students)	**Yes, at the discretion of TEIs and generally used** (students from non-Estonian speaking backgrounds) **Yes, at the discretion of TEIs but rarely used** (disabled students)
Finland	**Special funds to TEIs to develop an appropriate environment for students with special needs**	**None**	**No**	**No**
Greece	**None**	**Socially-disadvantaged students**	**Yes, imposed by national framework on all TEIs**	**No**
Iceland	**None**	**None**	**No**	**No**
Japan	**(1) Special funds to TEIs to distribute as grants to students from under-represented groups** (only TEIs in the region of Hokkaido) (private institutions benefit from these special provisions) **(2) Special funds to TEIs to develop an appropriate environment for students with special needs**	**Socially-disadvantaged students**	**Yes, at the discretion of TEIs but rarely used** (indigenous groups, disabled students, descendants of repatriated people from China)	**Yes, at the discretion of TEIs** (disabled students)
Korea[4]	**Extra funds to TEIs located in disadvantaged areas**	**Socially-disadvantaged students** (in public and private institutions), **geographically-disadvantaged students** (in public institutions only)	**Yes, at the discretion of TEIs and generally used**	**Yes, imposed by national framework on all TEIs** (disabled students) **Yes, at the discretion of TEIs but rarely used** (indigenous groups)
Mexico	**Special funds to TEIs to distribute as grants to students from an under-represented group** (indigenous groups)[5]	**Socially-disadvantaged students**	**Yes, at the discretion of TEIs but rarely used**	**Yes, imposed by national framework on all TEIs** (students receiving means-tested grant)
Netherlands[6]	**Funds included in the block grant for students with special needs**	**None**[7]	**Yes, at the discretion of TEIs and generally used** (immigrant populations)	**Yes, at the discretion of TEIs and generally used**
New Zealand	**(1) Extra funds to TEIs per student from under-represented groups** (Māori, Pasifika) (only public TEIs) **(2) Special funds to TEIs to develop an appropriate environment for students with special needs** (disabled students) (only public TEIs)	**Socially-disadvantaged students** (Māori and Pasifika) (in public and private institutions)	**Yes, at the discretion of TEIs but rarely used** (may include Māori, Pasifika and other factors relating to disadvantage)[8]	**Yes, at the discretion of TEIs and generally used** (may include Māori, Pasifika, disabled students, migrants and refugees, students from lower socio-economic backgrounds *etc.*)[9]

Table 6.1. **Equity in tertiary education: measures targeted at under-represented groups, 2007** (continued)

	Special provisions in mechanisms to allocate public funds to TEIs used to encourage the enrolment of under-represented groups of students	Under-represented groups of students who benefit from a targeted grant scheme	Do special selection provisions exist in public TEIs to improve the participation of some groups of under-represented students?	Are there supporting programmes in public TEIs specifically targeted at under-represented groups during the course of studies?
Norway[10]	**None**	**None**	**Yes, imposed by national framework on some TEIs**[11]	**Yes, at the discretion of TEIs but rarely used** (study programmes with extra language training and monitoring aimed at immigrant students)
Poland	**(1) Special funds to TEIs to distribute as grants to students from under-represented groups** **(2) Extra funds to TEIs located in disadvantaged areas**	**Students with special needs** (in public and private institutions)	**No**	**Yes, at the discretion of TEIs and generally used** (disabled students)
Portugal	**Special funds to TEIs to develop an appropriate environment for students with special needs**	**Students with special needs**	**Yes, at the discretion of TEIs but rarely used**	**Yes, at the discretion of TEIs but rarely used**
Russian Federation[12]	**(1) Extra funds to TEIs per student from under-represented groups** (students with special needs, orphans, students without parental care) (only public TEIs) **(2) Special funds to TEIs to distribute as grants to students from under-represented groups** (orphans and full-time students without parental care) (only public TEIs) **(3) Special funds to TEIs to develop an appropriate environment for students with special needs** (only public TEIs)	**Socially-disadvantaged students** (orphans, students without parental care); **geographically-disadvantaged students** (students living in remote areas and hard climatic conditions, students which suffer from radiation disaster); **students with special needs** (disabled students)	**Yes, imposed by national framework on all TEIs** (orphans, students without parental care aged up to 23, disabled students, students aged up to 20 with one disabled parent)[13]	**Yes, at the discretion of TEIs and generally used** (disabled students, orphans, students without parental care)
Spain	**None**	**None**	**Yes, at the discretion of TEIs but rarely used**	**No**
Sweden	**Specific funds available to TEIs upon application for disabled students**	**None**	**Yes, imposed by national framework on all TEIs** (under-represented gender)	**Yes, imposed by the national framework on all TEIs** (disabled students)
Switzerland	**Targeted funds** (project specific funding)	**Under-represented gender**	**No**	**Yes, imposed by national framework on some TEIs** (Support of gender equity in universities and universities of applied sciences)
United Kingdom (Eng.)[14]	**(1) Extra funds to TEIs per student from an under-represented group** (students from lower socio-economic groups) (only public TEIs) **(2) Special funds to TEIs to develop an appropriate environment for students with special needs** (only public TEIs)	**Students with special needs** (in public institutions only)	**No**	**Yes, at the discretion of TEIs and generally used**
United Kingdom (N.Ir.)[14]	**(1) Extra funds to TEIs per student from under-represented groups** (students from disadvantaged backgrounds, disabled students) **(2) Special project funds to TEIs** specifically aimed at allowing them to test their strategies and approaches to making access to tertiary education available to under-represented groups, and to develop partnerships with schools with traditionally low levels of participation in tertiary education	**Socially-disadvantaged students, disabled students**	**No**	**No**
United Kingdom (Scot.)[14]	**Extra funds to TEIs per student from under-represented groups** (socially disadvantaged students, disabled students)	**Socially-disadvantaged students, disabled students**	**Yes, at the discretion of TEIs but rarely used**	**Yes, at the discretion of TEIs and generally used**
United Kingdom (Wal.)[14]	**Extra funds to TEIs per student from an under-represented group** (socially disadvantaged students, disabled students)	**Disabled students, students from Communities First areas** (*i.e.* students studying through the medium of Welsh), **Care Leavers** (*i.e.* children who were previously in the care of local authorities)	**Yes, at the discretion of TEIs and generally used**	**Yes, at the discretion of TEIs and generally used**

Definitions: This table addresses existing national policies targeted at encouraging the enrolment of under-represented groups of students in under-graduate programmes.
Under-represented groups of students refers to students who belong to specific groups who are under-represented in tertiary education. Though the situation varies across countries, such groups may include indigenous groups, ethnic minorities, immigrants, students from low socio-economic backgrounds, students living in rural and/or remote areas, and students with special needs (*e.g.* disabled students).
Targeted grants refers to grants that aim at supporting the enrolment of members of under-represented groups. Membership of such a group is an eligibility criterion to apply for the grant. General grant schemes that take into account the membership of an under-represented group in the selection criteria for awarding grants – but not in the eligibility criteria – are not considered (these are considered in Table 4.5 in Chapter 4. See Table 4.5 for the distinction between 'eligibility' and 'selection' criteria). This table considers national-level publicly-funded grant schemes targeted at under-represented under-graduate students attending public or private institutions, except schemes targeted at financially needy students (which are considered in Table 4.5). Grants conferred by institutions with their own funds are not considered.
Special selection provisions refers to the application of criteria other than academic merit in selection procedures.
Supporting programmes refers to institution-level support schemes such as the monitoring of study progress and tutoring programmes.

Notes: *TEI:* Tertiary education institution
1. Information concerns universities only and does not account for the non-university sector.
2. TEIs must be eligible to receive extra or special funds.
3. Croatian Homeland War veterans (and some family members) benefit from a targeted grant scheme and special selection provisions.
4. Children of war veterans that were injured benefit from a merit-based grants scheme.
5. Intercultural universities have the purpose of serving Mexico's indigenous population, while open to other students.
6. Issues covered in this table refer to publicly-subsidised TEIs.
7. Students from low-income families receive more grant funds than other students. Disabled students are eligible for an extra year of grants/loans under the national loans and grants schemes.
8. Special selection provisions only apply to limited entry courses, in particular Medicine, and are developed at the discretion of the TEI (within the constraint of relevant human rights legislation).
9. Supporting programmes are developed at the discretion of public TEIs, however, they are required to do so within the broader framework of the Tertiary Education Strategy, which identifies a number of groups that face educational disparities that TEIs should address.
10. Disabled students receive assistance through the social security and TEIs are required to develop an appropriate environment for students with special needs within the broader framework of the government action plans.
11. Male applicants receive extra entrance points for veterinary and animal care studies, whereas female applicants receive extra entrance points for informatics and engineering, agricultural, and maritime studies.
12. War veterans benefit from a targeted grant scheme and special selection provisions.
13. Admissions at public TEIs for under-represented students are on a non-competitive basis. But students must pass entrance examinations.
14. Issues covered in this table refer to publicly-subsidised private TEIs. All higher education institutions in the United Kingdom are legally private independent bodies with a charitable status, most of which are publicly funded.

Source: Derived from information supplied by countries participating in the project. The table should be interpreted as providing broad indications only, and not strict comparability across countries.

Box 6.1. Higher Education Equity Programmes in Australia

The goal of the current higher education equity policy in Australia is to remove barriers to access to higher education for all Australians, with a particular focus on assisting groups experiencing significant educational disadvantage. The higher education equity policy is based on the assumption that there are factors or characteristics which, for certain social groups, inhibit access to and ability to succeed in higher education. A range of equity programmes are in place.

Higher Education Equity Support Programme (ESP)

The allocation of ESP funds to eligible TEIs by the Department of Education, Employment and Workplace Relations (DEEWR), is based upon a formula which takes into account the universities' number of domestic students from a low socio-economic background and students from regional and remote areas; and the retention and success ratios for these groups. For 2008, DEEWR allocated, AUD 11.474 million under the ESP to eligible providers. Institutions have flexibility to target assistance where most needed to enhance access and participation of students from low socio-economic backgrounds, students from regional and remote areas, students with a disability and students from non-English speaking backgrounds. In addition, providers may implement measures that assist in overcoming educational disadvantage associated with gender. To receive ESP funding, TEIs must meet minimum eligibility criteria, including:

- run outreach programmes to attract equity group students;
- offer specialised support services for enrolled equity group students;
- offer Commonwealth Scholarships; and
- offer a complementary institutional equity scholarship programme.

Commonwealth Scholarships Programme

The Commonwealth Scholarships Programme (formerly known as the Commonwealth Learning Scholarships) was introduced in 2004 as part of the Australian Government's higher education reform package, *Our Universities: Backing Australia's Future*. The programme assists eligible students from low socio-economic status backgrounds, who are enrolled in Commonwealth supported places in under-graduate and associate degree courses, as well as, in the case of Indigenous students, enabling courses. There are two categories of scholarships: Commonwealth Education Costs Scholarships, valued at AUD 2 162 a year in 2008, assist students with general costs associated with higher education. Commonwealth Accommodation Scholarships, valued at AUD 4 324 a year in 2008, assist students from regional and remote areas, who have to relocate to attend university, with their accommodation costs. Both scholarships are indexed annually. In addition, from 2008 funding will be provided to award 1 000 Indigenous Access Scholarships a year to assist Indigenous Australians wanting to access higher education, particularly those who need to relocate from regional and remote areas to undertake an approved higher education enabling course or under-graduate course. In 2008, these scholarships are valued at AUD 4 080 (indexed annually). Over the five year period, 2005-2009, the Australian Government will have allocated around AUD 476 million to eligible higher education providers to provide over 153 000 Commonwealth Scholarships to eligible students.

Indigenous Support Programme

Commonwealth grants to higher education providers include allocations from the Indigenous Support Programme to meet the special needs of Indigenous Australian students and to advance the goals of the National Aboriginal and Torres Strait Islander Education Policy. Activities supported through this programme include the establishment of Indigenous Support Centres, assistance with study skills, personal counselling and cultural awareness activities. To be eligible to receive Indigenous Support Programme grants in any one year, providers must demonstrate that they have:

- implemented strategies for improving access, participation, retention and success of Indigenous students;
- guaranteed the participation of Indigenous people in decision-making processes; and
- developed an Indigenous employment strategy.

Funds are distributed based on a formula of student participation, student progress and the number of award courses completed. Higher education providers are required to provide an annual Indigenous Education Statement. This takes the form of a report on their annual expenditure of Indigenous Support Programme funds, including the amount provided to an Indigenous Support Centre, and progress in achieving the goals of the National Aboriginal and Torres Strait Islander Education Policy.

The *Higher Education Disability Support Programme* is described in Box 6.5.

Targeted grant schemes

Most countries have developed publicly-funded grants schemes targeted at under-represented under-graduate students (see Table 6.1). Exceptions are the Flemish Community of Belgium, Finland, Iceland, Norway, Spain and Sweden. A large number of countries run grants schemes targeted at socially-disadvantaged students: Australia, Chile, China, Croatia (including for Roma people and students from the city of Vukovar), the Czech Republic (for Roma people in the non-university sector), Greece, Japan, Korea, Mexico, New Zealand (for Māori and Pasifika people), the Russian Federation (for orphans and students with no parental care), Northern Ireland, Scotland and Wales (for students studying through the medium of Welsh and children who were previously in the care of local authorities). Students with special needs are also provided with targeted grants schemes in some countries: Croatia (students with a disability), the Czech Republic, Estonia (students with a disability and students whose mother tongue is not Estonian), the Netherlands (students with a disability are eligible for an extra year of grants or loans), Poland, Portugal, the Russian Federation (students with a disability; students involved in a radiation disaster) and the United Kingdom. Australia, Chile, Korea and the Russian Federation (including students living in areas with hard climatic conditions) have also developed targeted grants schemes for geographically-disadvantaged students. In Switzerland, a grant scheme is available for the under-represented gender. Finally, in the Netherlands, students from low-income families have access to supplementary grants (in addition to the basic grants described in Chapter 4).

Box 6.1 describes equity programmes in Australia in more detail.

Availability of tertiary education in remote areas impacts on participation levels

A number of studies provide evidence that participation levels in tertiary education are related to the availability of tertiary education provision within the vicinity of the place of residence. Frenette (2006) shows that, in Canada, students living "out of commuting distance" from a university are far less likely to attend university than students living "within commuting distance", the effect being particularly marked for students from lower-income families. Frenette (2003) reaches the same conclusions but further finds that students living near a non-university institution only, are more likely to attend a non-university institution than are those living near both a university and a non-university institution. Andres and Looker (2001), using two longitudinal surveys of Canadian youth, find that in both British Columbia and Nova Scotia, students in rural areas have lower expectations and attainments compared to other students, even when parental background, gender and academic stream are controlled.

James (2001) examines the relatively low tertiary education participation rate of people living in rural or isolated Australia. His results suggest tertiary education participation for people in rural and isolated areas may be affected less by distance from university campuses than by socioeconomic circumstances and the influences of rural social and cultural contexts. Socioeconomic effects are generally more pronounced and pervasive than any effects of location identified by this study.

Research studies conducted in Sweden suggest that distance learning opportunities in remote areas improve the propensity to participate in tertiary education. Dahllöf (2003) studies the relationship between distance-learning centres (under the responsibility of the municipalities and physically detached from a university campus) and the propensity to attend a TEI, and Roos (2003) focuses on providing the profile of the users of distance-

learning services, and how their family commitments and career objectives are combined, and whether they have had good or bad experiences with distance learning. They find that many would not have been able to study at tertiary level without the distance-learning centre, this being particularly the case for women and for students coming from "non-academic" homes.

Countries have adopted a range of strategies to improve the accessibility to tertiary education in remote areas. Box 6.2 provides the example of distance learning and lifelong learning centres in Estonia, Iceland and Switzerland. In China, the Ministry of Education launched in 2001 *the Scheme of Counterpart Support to TEIs in Western Regions*, through which 14 well-known universities such as Peking University or Tsinghua University are required to provide support to 14 universities in western regions including Xinjiang Shi He Zi University and Qinghai University. In responding to the needs of TEIs in western minority regions, key universities provide support focusing on curriculum development, faculty development, improvement of management practices, and improvement of learning and teaching conditions. Measures include staff exchange, academic staff of western regions received in supporting TEIs for post-graduate studies, short-term consulting services, and collaboration in research.

Alternatives types of tertiary provision respond to particular cultural needs

One approach to increase the number of indigenous people attending and completing tertiary education is to create new TEIs, designed and controlled by Indigenous Peoples themselves. Such is the case of the Wānanga in New Zealand, which are Māori based, developed and controlled institutions of tertiary education, grounded in Māori philosophies, stories, culture, language, and history. Other examples include the Batchelor College in Australia, the First Nations University of Canada (among many other indigenous TEIs), *Universidades Interculturales* in Mexico, the Sámi University College in Norway, and the tribal colleges in the United States (see Box 6.3).

Malatest (2004) summarises the literature and concludes that when indigenous students are given control of their own programmes or TEIs, there have been higher rates of success in indigenous enrolment and graduation. He explains that there is strong support for existing indigenous TEIs. He further reveals that factors said to have contributed to these institutions' success at attracting and retaining indigenous students include the high level of indigenous staff and the support of other indigenous students. As documented in Malatest (2004), Barnhardt (1991) identified major themes in indigenous educational institutional goals or practices around the world, which encompass the following: commitment to community; integration of functions; sustained local leadership; participation of Elders; spiritual harmony; use of local languages; traditional ways of knowing; traditional teaching practices; congenial environment; and participatory research.

Box 6.2. Distance learning and lifelong learning centres in Estonia, Iceland and Switzerland

Estonia

In Estonia, the main TEIs now provide courses using distance or e-learning delivery. A particular relevant initiative is the creation, in 2002, of the Estonian e-University Programme, bringing together the State, the business community, the University of Tartu, Tallinn University of Technology and partly publicly funded under the Estonian IT Foundation. This consortium seeks to facilitate e-learning opportunities for Estonians, including those in more remote areas. A complementary initiative is the opening of 10 regional learning centres across the country, typically based at university campuses, vocational schools or public libraries. Those learning centres serve as study centres and provide teleconferencing facilities. The e-University Programme and the regional centres have engaged in collaboration to facilitate access to quality education in remote areas.

For more information: *www.euser-eu.org/ShowCase.asp?CaseTitleID=781&CaseID=1684&MenuID=110*
www.e-uni.ee/Minerva/2.2.2.html

Iceland

In Iceland, all seven TEIs provide distance learning programmes and courses. Student enrolments in distance education nearly tripled between 2000 and 2003 and represented approximately 17% of all enrolments in Iceland's system of tertiary education in 2004 with the University of Education and the University of Akureyri with the largest share. In 2004, over half of the students at the University of Education were enrolled in distance learning programmes (35% for the University of Akureyri). In 1978 this university was the first institution to establish distance learning programmes, and in 1993 it launched a distance learning Bachelors degree programme for primary school teachers. This was a response to the shortage of teachers in remote areas of the country.

Whilst both these two universities are dual mode establishments, combining both on-site teaching with distance education, the task they fulfil differs considerably. For the University of Education, distance teaching follows a centre-periphery model, with national standards being projected into the region. For the University of Akureyri, however, distance teaching works from periphery to centre within the region and is tied in with eight Lifelong Learning Centres. Each of these centres is located in small communities, distributed across the country, and whilst independent of the University, is linked to it via Internet and video conferencing facilities.

The government's rural development plan is to strengthen the distance learning and continuous education opportunities. High expectations are attached to the work of education/lifelong learning centres as an addition to the Icelandic educational system, *e.g.* to ensure equal rights to education, regardless of where people live, and to militate against population drain from the regions.

For more information: *http://starfsfolk.khi.is/salvor/basics/khi-dised.htm*
http://english.unak.is/?d=4&m=page&f=viewPage&id=196

Swizerland: The Swiss Virtual Campus

The Swiss Virtual Campus (SVC) promotes learning over the Internet at the Swiss Institutions of Higher Education (Universities, Universities of Applied Sciences, Swiss Federal Institutes of Technology). Students are no longer tied to a programme of lectures with set times and locations; they can acquire knowledge whenever and wherever they choose. Subject specialists as well as experts on education and didactic methods ensure high course quality outside the framework of conventional lectures. Multilingual modules and cooperation between institutions of higher education take account of the special conditions in Switzerland. Competence Centres are set up to support project development. At the moment there are 82 courses online, covering a wide spectrum of disciplines.

SVC is not aiming to transfer entire courses of study to the Internet. On the contrary, compulsory online courses are intended to supplement existing lectures and training programmes. In general, each project should develop a course that can be followed via Internet that includes teaching material, exercises, seminars or practical work as well as online or direct aids and assessment (self-assessment and examinations). The courses developed should be part of a curriculum of the participating universities. SVC courses are then mostly developed from existing courses, by the same professors which are teaching presence courses and in the same organisational context.

At the political and organisational level the programme is also firmly rooted into the existing university structures, since it is managed by the Swiss University Conference and the involved universities are expected to co-finance the projects and to take the responsibility for use and maintenance of the courses.

For more information: *www.virtualcampus.ch*; Lepori and Rezzonico (2003).

Box 6.3. Indigenous TEIs in Australia, Mexico, Norway and New Zealand

Australia: Batchelor Institute of Indigenous Tertiary Education

Established on 1 July 1999 by the Batchelor Institute of Indigenous Tertiary Education Act 1999, the Institute is controlled and run by Indigenous Australians and specialists in working with Aboriginal and Torres Strait Islander students from across Australia, and especially remote communities, to develop an Indigenous approach to mainstream disciplines and careers. The Institute offers higher education and vocational education and training courses, ranging from apprenticeships and certificates to doctorates, and providing pathways in a number of fields critical for Indigenous Australians. There are over 3 000 enrolled students from all parts of the country.

The Institute's teaching and research activities affirm Indigenous Australians' aspirations for self-determination and employment; and are underpinned by a "both ways" philosophy which enables exploitation of Indigenous traditions of knowledge and Western academic disciplinary positions in cross-cultural contexts.
For more information: *www.batchelor.edu.au*

Mexico: *Universidades Interculturales*

Mexico, as of 2004, created the *Universidades Interculturales* (Intercultural Universities) which are grounded on indigenous philosophies, languages and histories (Schmelkes, 2005). They open up new opportunities for exchange between indigenous and non-indigenous communities. As of 2006, five intercultural universities had been created. They are located in regions with high densities of indigenous population, although open to students of any origin. The number of students in total was 1 281 during the 2004-05 academic year, equivalent to about 0.05% of total tertiary education enrolment in the country. The main areas of study offered include indigenous languages and culture, alternative tourism, sustainable development, intercultural communication, law and agroecology.

Intercultural universities grant a means to respond to the needs and aspirations of indigenous communities, influential to the ongoing development of all Mexicans. They are seen as a pathway to empowerment, less dependency, and more active engagement and participation of indigenous populations in planning, policy and research. They are part of a strategy for sustainable development, with a focus on building human and social capacity in areas such as education and research. This is seen as a major development in responding to the labour market needs of indigenous populations. For more information: *www.redui.org.mx*

Norway: Sámi University College

Established in 1989 in Guovdageaidnu/Kautokeino in Finnmark county (north of Finnish and Swedish Lapland), Sámi University College (SUC) (*Sámi allaskuvla* in Sámi language and *Samisk høgskole* in Norwegian) is an integral part of the Norwegian tertiary education system and its mission is to serve the needs of the Sámi population in terms of higher education and research in Sámi language and Sámi language development, pre-school and general teacher education, journalism and sustainable development, including reindeer studies. Most programmes are at the Bachelor's level. Courses in Sámi literature and traditional crafts (*Duodji*) are also provided. The main language of teaching, research and administration is Sámi. The Nordic Sámi Institute (NSI) is, as of 2005, part of SUC. Its mission is, through research, to strengthen and develop Sámi language, culture and social life seen in a pan-Sámi perspective.

SUC had 57 staff and 173 students in 2007. It provides full and part time studies, tailor-made courses and other flexible provision to suit the needs of lifelong learning. Although most of the students are Norwegian, there are also students from Finland, Sweden and Russia (the total Sámi population is estimated at around 70 000, with 40 000 in Norway, 20 000 in Sweden, 7 500 in Finland and 2 000 in Russia). Several other Norwegian TEIs offer study programmes aimed at the Sámi population. For more information: *www.samiskhs.no*

New Zealand*:* Wānanga

Wānanga are Māori centres of tertiary learning, which acquired their status as TEIs in the last decade. They offer study at all levels, from foundation education to post-graduate study and research where *ahuatanga Māori* (Māori tradition) and *tikanga Māori* (Māori custom) are an integral part of the programme.

There is a growing Māori education stream with semi-independent status. At the pre-school level, there are *kohanga reo* and there are also *kura kaupapa Māori*, schools that teach in *te reo Māori* and that teach with Māori pedagogy as its base. This has led to the creation of Wānanga, indigenous TEIs. There are three Wānanga recognised as public TEIs, while a number of iwi (tribal) groups have established Private Training Establishments. The three Wānanga had 32 000 full-time equivalent students (70 000 students in total) in 2004, about 14% of total enrolments in tertiary education.

Wānanga have made a substantial contribution to the advancement of *Mātauranga Māori* (Māori knowledge). They respond to a particular need in New Zealand society and are a means to provide aspirations to indigenous communities in harmony with their culture.
For more information: *www.twoa.ac.nz ; www.wananga.ac.nz ; www.twor.ac.nz*

Making information about the benefits (and costs) of tertiary education available to disadvantaged students is likely to make a difference

As a result of a given disadvantage, some students might be ill-informed about the benefits and costs of tertiary education (Barr, 2004). This is particularly the case for those students who live in an environment which does not stimulate their participation in educational activities, as when the educational background of parents is weak. In these conditions, students might underestimate the net benefits of tertiary education and decide not to undertake tertiary studies. Usher (2006), in a review of the literature on grants and their impact on access to education, argues that in North America, those from lower socio-economic groups have shorter-term decision-making horizons and hence, do not give appropriate weight to medium term returns. Leach and Zepke (2005) summarise the literature on student decision-making by prospective tertiary students. They conclude that two key factors within schools – teachers and career guidance staff – affect decisions and predispositions for tertiary education, particularly for non-traditional students. They stress that a number of studies has identified subject teachers as "positive influencers" for low socio-economic status students. Moreover, they provide evidence on the positive role of career guidance in providing information and advice which makes a difference in the decision on whether or not to enrol in tertiary education. Models of career guidance are suggested by a recent OECD review (OECD, 2004b).

In England, the *Aimhigher programme* jointly organised by the Department for Innovation, Universities and Skills, the Higher Education Funding Council for England and the Skills Council (*www.aimhigher.ac.uk*) aims to widen participation in tertiary education and to increase the number of young people who have the abilities and aspirations to benefit from it. It provides materials to inform young people about the benefits and opportunities of higher education, especially young people from families who have no tradition of higher education. The representative bodies for universities and colleges, and the Funding Bodies, have also established a complementary Web site, HERO (*www.hero.ac.uk*), which provides full details of higher education learning and research opportunities at universities and colleges throughout the United Kingdom.

Facilitating transfers between different types of TEIs within tertiary systems is likely to enhance equity

Transfers between different types of TEIs, and in particular between vocationally-oriented TEIs and academic TEIs, have the potential to enhance equity in the system. More disadvantaged students are more likely to attend vocational tracks of secondary education and, if they access tertiary education, to attend vocationally-oriented TEIs. If transfers were enhanced, then these students might have a better chance of earning higher-level degrees, which provide access to better and higher-earning occupations. In addition, more disadvantaged students are more likely to enter lower-status TEIs compared to those from better-off families, and increased options for transfer would help them move to higher-status TEIs. Formal arrangements for inter-institutional transfer across tertiary education sectors have the potential to promote equality of opportunity by allowing for a flow of students likely to help them achieve their educational and occupational goals (see also Chapter 3, Section 3.5.3).

Inter-institutional transfers across tertiary education sectors tend to be limited in most systems. For example, Curtis (2006) shows that in Australia transfer between the vocational education and training (VET) tertiary sector and the higher education system is relatively modest at around 10% of all enrolments in the two sectors. Transfers between

courses within the sectors are three times as high as movement between the sectors. In addition, transfer from the VET sector to the higher education system is shown to be approximately 50% greater than the transfer from higher education to VET. Field (2004) analysing sector articulation and credit transfer in Scottish tertiary education, reveals that few who achieve a tertiary qualification in further education subsequently progress to degree level study and those who do progress to a degree course mainly enter lower-status TEIs.

Andres (2001) analyses transfer arrangements from community college to university in British Columbia using a sample of students who accomplished the transfer. The findings reveal that although the majority of students in this study support transfer as a viable and even preferable route to university degree completion, they identify the following obstacles to a successful transfer: difficulty gaining access to useful information; problems understanding transfer policies, practices, and procedures; and declines in grades following transfer to university.

Targeted support within TEIs during the course of studies can contribute to improve equity of outcomes

The growing proportion of disadvantaged students enrolled in tertiary education makes the ongoing issue of their retention and programme completion an increasingly important concern in tertiary education. Support targetted at disadvantaged students within TEIs during the course of studies (*e.g.* induction programmes, remedial education, tutoring services) might be effective in improving completion rates of disadvantaged students. Presently, however, there is little evidence about the effects of institutions' support programmes on student outcomes. The difficulty lies in the fact that activities labelled as "institutional support programmes" are very diverse and the outcomes are highly dependent on the particular circumstances in which those programmes are developed.

Some studies evaluate particular initiatives in individual TEIs. Guthrie and Guthrie (1988) evaluate California State University's *Summer Bridge* and *Intensive Learning Experience* (ILE) programmes, which are remedial/developmental programmes providing basic skills instruction, orientation, and advice to entering students at risk of dropping out. The Summer Bridge programme is a 3- to 6-week residential programme for incoming students. The programme provides instruction in English and mathematics, academic advising, counselling, and orientation to the university experience. The ILE programme offers remediation in English and mathematics via a full academic year of writing and/or mathematics in small classes, along with academic advising. The study concludes that: both programmes enrolled high percentages of under-represented minorities and underprepared students; retention rates for Summer Bridge students were higher than those for students in the overall institution; and retention of ILE students varied widely by campus programme and ethnic group.

Ackermann (1990) assessed the effects of the *Freshman Summer Program/Transfer Summer Program* (FSP/TSP) on the academic, personal, and social development of under-represented and low-income students during their first year at the University of California, Los Angeles. Data from 265 students suggest that summer bridge programmes can help facilitate students' transition and adjustment to university life and improve their academic performance and persistence rates. The author further concludes that FSP/TSP proved that a strong curricular component can help teach students how to participate and succeed in an academic environment. There was also evidence that the programmes

helped under-represented and low-income students adjust and adapt to university life and helped them become members of the campus community. Ramirez (1997) looked at the impact of supplemental instruction on students in a large urban university. The study indicates that supplemental instruction has a substantial impact on performance and retention for special-admit students and under-represented/under-prepared students. Opp (2002) uses regression analysis to identify factors which improve retention rates of a particular disadvantaged group (students of colour) in two-year community colleges in the United States. He concludes that initiatives that enhance faculty-student and peer interactions lead to greater completion rates for students of colour.

Supporting programmes specifically targeted at under-represented groups during the course of studies (such as the monitoring of study progress and tutoring programmes) are available in public TEIs of most countries shown in Table 6.1. Countries where such programmes are not available are the Czech Republic, Finland, Greece, Iceland and Spain. In some instances where these programmes exist, they are imposed on public TEIs by the national framework. This is the case for students with a disability in China, Korea and Sweden. In Mexico, TEIs are under the obligation of offering special tutoring programmes to all recipients of a means-tested grant.

Supporting programmes during the course of studies targeted at under-represented groups are at the discretion of TEIs in some countries (Table 6.1). In some instances, such discretion is generally used by TEIs. Such is the case of Australia, the Flemish Community of Belgium, Estonia (support to students who are not proficient in the Estonian language), the Netherlands, New Zealand (may include, for instance, Māori, Pasifika, students with disabilities, migrants and refugees, students from lower socio-economic backgrounds), Poland (for students with disabilities), the Russian Federation (in the case of orphans, students without parental care, and students with a disability); and the United Kingdom (except Northern Ireland). Such discretion is rarely used in Chile (in relation to indigenous groups), Croatia (in relation to students with disabilities), Estonia (in relation to students with disabilities), Korea (for indigenous groups), Norway (extra language training and monitoring aimed at immigrant students) and Portugal.

6.6.7 Selection procedures

Country approaches to entrance procedures into tertiary education

Table 6.2 illustrates some features of student entrance procedures in participating countries. More specifically, it describes what entity takes responsibility for determining: the number of students entering TEIs; the minimum admission requirements; and student selection criteria when there are more applicants than places in a given degree or programme.

There is great variety of approaches regarding what entity sets the number of entering students

The entity which decides how many students can enter individual public TEIs differs across participating countries (see Table 6.2). In about half of the countries, public TEIs determine the number of entering students but subject to guidelines or limitations imposed by government authorities. This is the case when the government: limits the number of places being publicly financed (Australia, Croatia, Iceland, Korea, Mexico, Portugal, Russian Federation and Sweden); defines the target number of degrees for a

3-year period (universities in Finland); requires approval (national universities and public university corporations in Japan; and Spain); or limits the growth of government-financed places (New Zealand). In a few cases – China, the Czech Republic (following negotiation with TEIs), the polytechnic sector in Finland (following negotiation with TEIs), Greece, for public universities in Japan (which excludes national universities and public university corporations) and Switzerland – the number of students entering public TEIs is defined by government authorities (at the local level in Japan). In another group of countries, TEIs determine the number of entering students (typically with the exception of some programmes such as medicine or dentistry): Flemish Community of Belgium, Chile, Estonia, the Netherlands, Norway and Poland. In the United Kingdom, publicly-subsidised private TEIs decide on the number of places subject to the limited number of government-financed places (in Wales, the Welsh Assembly government decides on the number of students entering TEIs).

Admission requirements are established by government authorities in most countries

In most countries, criteria established by government authorities define the minimum requirements a student needs to meet to enrol in tertiary education, both in the public and private sectors. In half of the countries shown in Table 6.2, government authorities exclusively determine minimum admission requirements to enter public TEIs. In the New Zealand (for universities only) and Portugal, public TEIs are authorised to define supplementary criteria. Public TEIs have more discretion over the definition of minimum admission requirements in two other groups of countries: *(i)* in Croatia, Iceland, Japan, Mexico, Poland and Switzerland these requirements are defined by TEIs but in line with national criteria; and *(ii)* in Australia, Chile and New Zealand (for institutions other than universities), public TEIs exclusively determine minimum admission requirements. The picture changes slightly for private TEIs. In eight of 22 countries, admission requirements are still exclusively determined by government authorities. Private TEIs establish their own requirements but in line with national admission criteria in Croatia, Iceland, Japan, Mexico, Poland, Portugal and Switzerland. Private TEIs have full discretion to define admission requirements in Australia, the Flemish Community of Belgium (for private TEIs not under the public responsibility), Chile (but private TEIs which belong to the Council of Rectors set the same admission criteria as public TEIs), the Netherlands, New Zealand, Sweden (but, in most cases, TEIs follow national guidelines) and the United Kingdom.

In most countries, TEIs have a considerable degree of discretion over student selection criteria

As regards student selection criteria for admission decisions when there are more applicants than places available in a given degree or programme, TEIs have a considerable degree of discretion in most countries shown in Table 6.2. For public TEIs, only in Greece, Norway, Spain and Sweden are TEIs required to strictly follow rules defined exclusively by government authorities. In Portugal, public TEIs are allowed to develop criteria supplementary to those defined by government authorities. In about a third of the remaining countries, public TEIs define their selection criteria exclusively (Australia, Croatia, Czech Republic, Estonia, Finland and Japan); in the remaining two-thirds, TEIs determine their selection criteria but in line with national criteria (Chile, China, Iceland, Korea, Mexico, the Netherlands, New Zealand, Poland, the Russian Federation and Switzerland). As regards private TEIs, the degree of discretion over

selection criteria is much greater. In most countries, private TEIs exclusively determine their selection criteria. Exceptions exist when private TEIs are to define their selection criteria in line with national criteria (China, Korea, New Zealand, Poland, Portugal and Switzerland) or when they need to follow criteria established by government authorities to which they can supplement their own criteria (in certain fields of study in Norway).

Issues with entrance procedures

Relying exclusively on academic results raises equity issues

Merit is never pure: as illustrated earlier, in every school system the opportunity to acquire the highest grades is not equally distributed. "Merit" at the time of entrance into tertiary education is not only the result of intellectual ability and study effort but also the consequence, for instance, of the access to good schools and stimulating teachers, the benefit of a supporting family, or the affordability of private tutoring. As a result, the well established influence of the socio-economic background on school achievement raises equity concerns about entrance/selection procedures into tertiary education which are exclusively based on academic results such as when selection is undertaken through high-stakes national examination procedures or on the basis of secondary school grades.

A good illustration of this is the widespread use of private tutoring in some countries to prepare students for entrance examinations into tertiary education, which is a means through which family income shapes access to tertiary education. In Korea, with the exception of some TEIs, the College Scholastic Aptitude Test (or CSAT), a national-level entrance examination into tertiary education, apparently counts for 70% of the overall selection for colleges and universities, with the student's high school record contributing only 10%. The competition to get into the "best" universities is fierce, and secondary school students typically work an additional four to six hours per day in tutoring schools (if their parents can afford them) to improve their score on the CSAT. It is apparently not unusual for middle-income parents to spend 30% of their earnings on tutoring schools for high school students. Choi *et al.* (2003) found that 56% of secondary school students and 19% of vocational students had private tutoring in 2003, spending an annual sum equivalent to 17% of the average annual salary. The same phenomenon is visible in the Russian Federation. The proportion of students from highly educated families taking private tutoring in schools is considerably greater (55.4%) than that for students from poorly educated families (30.1%) (Voznesenskaya *et al.*, 2004).

National-level entrance examinations have some positive aspects

Some countries have introduced either a uniform secondary school-leaving examination or a uniform entrance examination across the country as the basis for admission to tertiary education. The major advantage of this approach is to provide clear expectations about the standards required for entry and avoid situations of favouritism either at the secondary school given the subjectivity of secondary school grades or at the tertiary institution at the moment of the selection.

Table 6.2. Student entrance procedures, under-graduate programmes, 2007

	Who decides the number of students entering individual public TEIs?	Who decides on the minimum admission requirements to		Who decides on student selection procedures in…	
		… public TEIs?	… private TEIs?	… public TEIs?	… private TEIs?
Australia[1]	TEIs, but subject to government limitations (limited number of government-financed places)	TEIs	TEIs	TEIs	TEIs
Belgium (Flemish Community)	*a*[2]	Government authorities	TEIs (private TEIs that are not under public responsibility)	Medicine: Government authorities; Fine arts, performing arts and music: TEIs; Other: no selection	TEIs (private TEIs that are not under public responsibility)
Chile	TEIs in all programmes	TEIs	TEIs[3]	TEIs (according to national entrance examination score and high school grades)[4]	TEIs
China	Government authorities	Government authorities	Government authorities	TEIs in accordance with national criteria	TEIs in accordance with national criteria
Croatia	TEIs, but subject to government limitations (limited number of government-financed places)	TEIs in accordance with national criteria	TEIs in accordance with national criteria	TEIs	TEIs
Czech Republic	Government authorities[5]	Government authorities	Government authorities	TEIs	TEIs
Estonia	TEIs in all programmes	Government authorities	Government authorities	TEIs	TEIs
Finland	Polytechnics: Government authorities (after negotiations between the Ministry and institutions); Universities: TEIs, but subject to government limitations (target number of degrees for a 3-year period)	Government authorities	Government authorities	TEIs	TEIs
Greece	Government authorities	Government authorities	*a*	Government authorities	*a*
Iceland	TEIs, but subject to government limitations (limited number of government-financed places)	TEIs in accordance with national criteria	TEIs in accordance with national criteria	TEIs in accordance with national criteria	TEIs
Japan	National universities, public university corporations and private institutions: TEIs, but subject to government limitations (national government approval required); Public universities: Local governments, but subject to national government limitations (national government approval required)	TEIs in accordance with national criteria	TEIs in accordance with national criteria	TEIs	TEIs
Korea	TEIs, but subject to government guidelines or limitations	Government authorities	Government authorities	TEIs, but subject to government guidelines	TEIs, but subject to government guidelines
Mexico	TEIs, but subject to government guidelines or limitations	TEIs in accordance with national criteria (mandatory national entrance examination)	TEIs in accordance with national criteria	TEIs in accordance with national criteria	TEIs
Netherlands[6]	TEIs in all programmes (except some programmes such as medicine)	Government authorities	Government authorities	Programmes with numerus clausus: TEIs in accordance with national criteria; Other: No selection	Programmes with numerus clausus: TEIs in accordance with national criteria; Other: No selection
New Zealand	TEIs, but subject to government limitations (limited levels of growth each year in number of government-financed places)	Universities: Government authorities with supplementary requirements defined by TEI; Other: TEIs	TEIs	TEIs in accordance with national criteria	TEIs in accordance with national criteria
Norway	TEIs in all programmes (except some programmes in the health sector- *e.g.* nursing, medicine, physiotherapy)	Government authorities	Government authorities	Government authorities	Government authorities with supplementary criteria defined by TEI; TEIs (depending on field of study)
Poland	TEIs in most fields/programmes (except programmes in the health sector- *e.g.* medicine, nursing, physiotherapy, public health, dentistry,obstetrics)	TEIs in accordance with national criteria	TEIs in accordance with national criteria	TEIs in accordance with national criteria	TEIs in accordance with national criteria
Portugal	TEIs, but subject to government limitations (limited number of government-financed places)	Government authorities with supplementary requirements defined by TEI	TEIs in accordance with national regulations	Government authorities with supplementary criteria defined by TEI	TEIs in accordance with national criteria
Russian Federation	TEIs, but subject to government limitations (limited number of government-subsidised places)	Government authorities	Government authorities	TEIs in accordance with national criteria	TEIs
Spain[7]	TEIs, but subject to government guidelines or limitations (government approval required)	Government authorities	Government authorities	Government authorities	TEIs
Sweden	TEIs, but subject to government limitations (limited number of government-financed places)	Government authorities (TEIs in some cases)	TEIs (TEIs follow national guidelines in most cases)	Government authorities (only in exceptional cases may TEIs deviate from national selection procedures)	TEIs (in most cases, TEIs follow national selection procedures)
Switzerland	Government authorities	Government authorities (TEIs in accordance with national criteria)	Government authorities (TEIs in accordance with national criteria)	Government authorities (TEIs in accordance with national criteria)	Government authorities (TEIs in accordance with national criteria)
United Kingdom[8]	*a*	*a*	TEIs	*a*	TEIs

Definitions: This table refers to procedures to admit students into programmes at ISCED level 5 in public and private tertiary education institutions.
Students entering refers to students not enrolled in the same degree in the concerned TEIs in the previous academic year.
Minimum admission requirements refers to the requirements a student needs to meet in order to enrol in tertiary education. These typically include elements such as a school-leaving certificate, a national-level school-leaving examination or an institutional-level entrance examination.
Student selection procedures refers to the criteria used to decide which students are admitted in a given degree/programme when there are more applicants than places available in that degree/programme.

Notes: *a* : Information not applicable because the category does not apply; *TEI*: Tertiary education institution
1. Information concerns universities only and does not account for the non-university sector.
2. There are no limitations regarding the number of students entering individual TEIs.
3. Private TEIs that are part of the Council of Rectors set the same requirements as public TEIs. Other private TEIs set their own admission requirements, but some use the national entrance examination as well.
4. The Council of Rectors which includes 25 TEIs sets the minimum score level at the national entrance examination.
5. There is a negotiation between the Ministry and higher education institutions on the annual increase of students.
6. Issues covered in this table refer to publicly-subsidised TEIs. No information is provided for independent private institutions.
7. Issues covered in this table are the responsibility of regional authorities and concern universities only. Vocationally-oriented institutions are not taken into account.
8. Issues covered in this table refer to publicly-subsidised private TEIs. All higher education institutions in the United Kingdom are legally private independent bodies with a charitable status, most of which are publicly funded. Publicly-subsidised private TEIs are able to decide on the numbers of places subject to government limitations (limited number of government-financed places). In Wales, the Welsh Assembly Government decides on the number of students entering TEIs and the minimum admission requirements.

Source: Derived from information supplied by countries participating in the project. The table should be interpreted as providing broad indications only, and not strict comparability across countries.

Institutional say in student selection is desirable but involves some complexity

Institutions will actively seek out the best possible students. A more direct interaction through personal interviews and visits to TEIs by candidates is likely to improve the match between applicants and institutions' profiles. If TEIs have greater control over their own admissions policies, then they might develop specialties that would give prospective students more options from which to choose (Box 6.4 provides the example of practices in Croatia). However, having TEIs play a non-regulated role in student selection might involve some complexity; for instance, there is the possibility of favouritism in student selection or the use of non-desirable selection criteria such as ability to pay.

Box 6.4. Institutional say in selection procedures in Croatia

In Croatia, TEIs themselves determine the criteria for student selection. Institutions establish entry criteria, which include not only the secondary school certificate, but also the entrance examination and a minimum number of points for entry that must be achieved by the candidate at the entrance examination. Institutions also establish additional criteria for candidate selection such as an additional number of points for knowledge of specific subjects attained during secondary school, for successes at national and international competitions of academics or sports, for children of Croatian citizens abroad, or for children of war veterans. The list of additional criteria depends on the entry policy of each TEI in the system.

Alternative entry arrangements are potentially instrumental in assisting equity objectives in tertiary education

Admission policies are increasingly being considered as an instrument to assist equity objectives in tertiary education. There is a trend from the priority given to "inherited merit" in the admission process through more commitment to formal equality, towards the use of alternative entry arrangements, including affirmative action for selected under-represented groups (Clancy and Goastellec, 2007). Some countries have now introduced alternative pathways into tertiary education with the objective of increasing the diversity of the student population. For instance, in Norway, the *Competence Reform* of the late 1990s permits the admission to tertiary education to individuals aged 25 and above on the basis of a person's formal, non-formal and informal training. In Sweden, students can also enter tertiary education with no secondary-school leaving certificate but through results in the Swedish Scholastic Assessment Test.[10]

A diverse range of approaches exist across countries in relation to special selection provisions in public TEIs which seek to improve the participation of some groups of under-represented students. In about half of the countries shown in Table 6.1, the development of these special provisions is left at the discretion of the public TEI. In a number of countries such discretion is generally used. This is the case of Australia (for students from low socio-economic backgrounds; students from regional and remote areas; students with a disability; students from non-English speaking backgrounds; and indigenous Australian students); China (for indigenous groups and students with a disability); Chile, Croatia and Estonia (for students with a disability); the Netherlands (for immigrant populations); Korea and Wales. In other countries TEIs rarely use their discretion to develop special selection provisions. Such is the case of Chile (for indigenous groups); Japan (*e.g.* for indigenous groups, students with a disability, descendants from people repatriated from China); Mexico; New Zealand (may include

10. For this particular route, among under-represented groups, the evidence points to enhanced opportunities essentially for mature students (Berggren, 2007).

Māori and Pasifika people and other factors relating to disadvantage); Portugal; Spain and Scotland. In a small number of countries, special selection provisions for under-represented groups are imposed on public TEIs. This is the case in Croatia (for Roma people), Greece, Norway (for under-represented gender in some fields of study), the Russian Federation (in the case of orphans, students without parental care aged up to 23, students with a disability, students aged up to 20 with one disabled parent), and Sweden (under-represented gender). Finally, in the Flemish Community of Belgium, the Czech Republic, Finland, Iceland, Poland, Switzerland, England and Northern Ireland, no special selection provisions exist in public TEIs to improve the participation of under-represented groups.

Another entrance arrangement in place in some countries is affirmative action which refers to a positive discrimination policy intended to improve the access to tertiary education of under-represented groups, and whose motivation is to redress the effects of past unequal educational opportunities. This is commonly achieved through targeted recruitment programmes, by "preferential treatment" given to applicants from an under-represented group and in some cases through the use of quotas. China and Spain are among the countries which have affirmative action policies in place. In China, the government provides more funded places in provinces and autonomous regions in western areas that are heavily populated by ethnic minorities so as to ensure their growth rate is higher than the national average level. In the process of admission, preferential policies adopted include admitting minority students under lower cut off scores and giving preference to minority students when candidates have similar admission scores. In Spain, autonomous regions must reserve a certain percentage of places on all courses leading to official university degrees for the following student groups:

- Students over 25 years of age: 1% to 3% of the places on all courses to obtain official university qualifications.
- Students who have completed a higher vocational education course: 7% to 30% of the places, depending on the degree course.
- Students with an officially accredited disability rating of at least 33%: 3% of the available places.

Fischer and Massey (2007) use the National Longitudinal Survey of Freshmen (NLSF) to analyse the effects of affirmative action on tertiary education outcomes for the 1999 cohort of first-year students in 28 selective colleges and universities in the United States. They test the validity of two charges levelled by critics of affirmative action: that it undermines minority performance by placing academically unprepared students into competitive schools without the required skills and abilities and that it stigmatises all minorities as academically challenged and intellectually weak to produce added psychological pressure that undermines academic performance. They find no evidence to sustain the first hypothesis. If anything, individual students with entrance scores below the institutional average do better than other students, other things equal. They do, however, find evidence consistent with the second hypothesis, although the effect is not particularly strong compared with other determinants of academic success.

Broader selection criteria might reduce inequalities of access

Basing admissions on a wide variety of entrance criteria, rather than relying so heavily on single measures such as results on school-leaving or university entrance examinations might reduce inequalities of access (*e.g.* by reducing the impact of

tutoring). For example, admission processes could consider: the variety of experiences of students during secondary schools, including their extra-curricular activities; non-academic accomplishments; several exams measuring different aspects of competence in place of a single exam score – consistent with the idea that multiple exams would be more reliable than a single exam; or a variety of factors like interviews, essays and recommendations. There might be several advantages including greater validity and reliability of entrance decisions as well as greater equity as the influence of socio-economic background on academic achievement might be less prevalent. Greater weight is given to characteristics which are harder to measure – enthusiasm, commitment and fitness to specific programmes – but which may be better predictors of success.

6.6.8 Factors impacting on the participation of students with disabilities

Since the early 1990s, most OECD countries have adopted non-discrimination legislation and human rights codes of practice requiring TEIs to ensure physical accessibility for students with disabilities and to give them the same opportunities in terms of access, treatment and outcomes as those provided to other students. This, in many cases, has translated into the need for TEIs to include provision for students with disabilities into their strategic plans and holding them accountable for any form of discrimination.

Policies targeted at students with disabilities have great impact on participation levels

At the policy level, since access to tertiary education generally depends on qualifications and skills acquired at upper secondary level, participation of students with disabilities in tertiary education depends on inclusion policies that ensure access to the general education curriculum. For example, special schools rarely enable access to grades reflecting high academic achievement and countries with developed special school systems or special class systems tend therefore to put students with disabilities at a disadvantage. This approach might explain why in Germany in 2000, of those students in tertiary education reporting a disability, most have a chronic illness (81%) while very few report an impairment (2%) (OECD, 2003).

Participation in tertiary education by students with disabilities is facilitated by policies which give TEIs responsibility over meeting individuals' educational needs. Countries having adopted this perspective such as Canada, the United Kingdom and the United States expect the TEIs to develop awareness of the variety of needs of students with disabilities and to take initiative in developing strategies to meet them. Tertiary enrolment rates of students with disabilities in these countries are generally higher than those in countries with a medical-based approach to disability such as France, Germany or Switzerland. In Switzerland, 2.2% of students enrolled in tertiary education reported a disability in 2003 (Hollenweger *et al.*, 2005) while in the United States 10.4% of students did so (NCES, 2005).

Participation depends also on modes of funding that empower students instead of solely aiding them and that encourage TEIs to create a supportive educational environment for all students. The support given to students is more cost-effective when modes of funding address individual needs to achieve successful participation instead of being limited to address incapacities due to impairment or an injury. Support is often more effective if initiatives include, for example, adaptability of curricula and promote the overall engagement of students with disabilities. The commitment of TEIs seems to

be stronger in countries, such as the United Kingdom, where ring fenced funding encourages TEIs to continuously improve their level of accessibility and raise attainment of students with disabilities. This funding approach takes accessibility as a continuous process encompassing physical, pedagogical and social dimensions in need of permanent improvement.

Specially-designed institutional strategies are an important vehicle to ensure the success of students with disabilities in tertiary education

At the institutional level, participation is facilitated by the existence of an office in charge of assisting students with disabilities, including with admission and accommodation issues, as part of a holistic educational approach to support students with disabilities. These services are instrumental in improving the transition between secondary and tertiary education and in providing students with advice on financial and curriculum resources. They may also assist students in overcoming their reluctance to identify themselves as disabled for fear of stigmatisation or labelling.

Participation depends on admission and support strategies of individual TEIs. Those TEIs that have incorporated provisions for students with disabilities into their institutional policy are more likely to be effective in assisting students with disabilities than those TEIs which lack an explicit policy. More successful TEIs also rely on specialist staff with appropriate qualifications and ensure that awareness of special needs for students with disabilities encompass the whole range of staff members.

Participation is also contingent on transition policies and strategies to improve the move between secondary and tertiary education, progress within tertiary education as well as employment opportunities following graduation. The idea is to account for future prospects with regard to achievement, employment as well as to inclusion into society when considering individual transition plans. Holistic approaches include building bridges between secondary education and tertiary education and articulating employment, health and education issues. This entails cooperation with secondary or vocational TEIs as well as with employers, families and the whole community.

Further, students may also benefit from the access to human and technical resources in TEIs. In terms of physical accessibility, these may be accessible classrooms, adapted transportation to and from the institution and on campus. In terms of accessing the curriculum and educational achievement, additional resources may include alternative communication possibilities (sign/oral interpreters and assistants) and formats (enlarged readings, Braille materials), software or hardware, personal assistance (tutors, note-taking reader, and personal attendant), taped lectures, or examination accommodations (extended time, breaks, reader, modified response format, alternate schedule, and scribes). Special initiatives to promote the participation of disabled students in Australia and Sweden are described in Box 6.5.

Box 6.5. Special initiatives to promote the participation of disabled students in Australia and Sweden

Australia

Since 2005, disability funding has been consolidated into the *Higher Education Disability Support Programme* (DSP). The programme recognises that, while universities are responsible for meeting the needs of students with disabilities, the provision of support for some students with high cost needs is a significant and growing cost to universities. In 2007, AUD 7 million were allocated under the programme which now comprises three components:

- Additional Support for Students with Disabilities (ASSD) which provides funding towards the cost of educational support services and/or equipment for students with disabilities who have high cost needs;
- Performance-based Disability Support Funding, a formula-driven allocation to encourage providers to implement strategies to attract and support students with disabilities; and
- Funding for the Australian Disability Clearinghouse on Education and Training.

The Regional Disability Liaison Officer (RDLO) initiative, previously funded through the Higher Education Disability Support Programme has been merged with the Disability Coordination Officer programme to form the National Disability Coordination Officer (NDCO) Programme. NDCOs offer information, coordination and referral services for people with a disability who are interested in, or enrolled in, post-school education and training. The new NDCO programme commenced on 1 January 2008.

Sweden

In Sweden, each TEI must use 0.3% of the public funding it gets (except for doctoral studies) to provide support to disabled students (*e.g.* sign language interpretation and help with taking notes). The State contributes additional funding for expenses not covered by the ear-marked funds. In 2004 the cost of this support was almost SEK 67 million, of which around 70% went to cover the costs of sign language interpretation. The TEIs employ staff to coordinate measures to benefit disabled students. In 2004, 4 500 students contacted these officials and of this number, 3 500 were granted compensatory support. In addition, the Swedish Scholastic Assessment Test has been modified in order to enable candidates with dyslexia and visual impairments to take it.

6.7 Pointers for future policy development

The policy suggestions that follow are drawn from the experiences reported in the Country Background Reports, the analyses of external review teams, and the wider research literature. Not all of the policy implications apply equally to all reviewed countries. In a number of cases many or most of the policy suggestions are already in place, while for other countries they may have less relevance because of different social, economic and educational structures and traditions. The implications also need to be treated cautiously because in some instances there is not a strong enough research base across a sufficient number of countries to be confident about successful implementation. Rather, the discussion attempts to distil potentially useful ideas and lessons from the experiences of countries that have been searching for better ways to achieve equity in tertiary education. However, some common themes are evident in the country reforms now underway, namely that policy intervention is needed at earlier stages of education, targeted actions and selective funding may be necessary, the principle of equal treatment may not always be valid, greater diversity of programme provision may be beneficial, and the broadening of selection criteria and alternative pathways into tertiary education may be required.

Assess the extent and origin of equity issues

A coherent and systematic approach to equity would in the first instance assess where equity problems arise: whether they are related to income constraints faced by families and insufficient student support; whether they are related to inequity of opportunities at the school level; whether they are linked to admissions issues; or whether they are related to other barriers such as the lack of knowledge about the benefits of tertiary education. This requires the systematic collection of data such as the socioeconomic background of the tertiary student population, completion rates by family background, regional flow of students, student's part-time work, or the social and economic conditions of student life. The objective would be for the equity framework to use an empirical performance indicator system to monitor access, participation, retention and success of groups identified as disadvantaged. This would inform the development of appropriate policies to reduce inequalities in tertiary education. More effective student tracking and cohort analyses are instrumental in order to examine the social and economic outcomes of tertiary education.

Making tertiary education more equitable requires policy to intervene much earlier

The main reason why access to tertiary education may be inequitable is that young people from disadvantaged backgrounds do not attain the qualifications needed for entry into tertiary education. This factor is likely to play a greater role in the access to tertiary education than the inability for disadvantaged families to afford tertiary education. This means that, to lessen inequality of access to tertiary education, policy needs to intervene at much earlier educational levels. Interventions on these levels may be more effective than at the time of the transition to tertiary education.

Policies to enhance the efficiency and equity of school systems will without doubt improve access to tertiary education. OECD (2007a) proposes a set of policies to improve the fairness and inclusiveness of schools systems. These include limiting early tracking and academic selection; removing dead ends and preventing dropout in upper secondary education; offering second chances to gain from education; providing systematic help to those who fall behind at school; strengthening the links between school and families; and targeting resources at the students with the greatest needs. In view of the equitable access to tertiary education, other initiatives include interventions that aim to shape the aspirations and expectations of young people whose parents have not themselves completed upper secondary or tertiary education (which can be achieved, as described below, through school career guidance); or grants at upper secondary level for students from disadvantaged backgrounds to prevent dropout.

Strengthen career guidance and counselling services at the school level

Students whose parents have lower levels of education underestimate more often the net benefits of tertiary education. To offset this information gap, career guidance and counselling services in schools should strengthen their role in making poorly informed school children (and their parents) aware of the benefits of tertiary education and in raising their attendance aspirations. In this respect it is important to put in place a network of career guidance services at the school level that is adequately staffed and undertaken by individuals with the appropriate training. It is suggested that career guidance place more emphasis in the transition from upper secondary to tertiary education for students from disadvantaged backgrounds. The models suggested by a recent OECD review of

career guidance can be useful in this respect (OECD, 2004b; OECD and the European Commission, 2004). This can be complemented by exchanges between schools and TEIs whereby school children are mentored by tertiary students, preferably from similar backgrounds, school children are given the possibility of visiting TEIs, and institutions offer bridging programmes in the context of their own comprehensive outreach and access initiatives.

Provide opportunities for tertiary education study from any track in upper secondary school

Policy should seek to ensure that it is possible to go on to some type of tertiary education from any track within upper secondary education. In terms of equity this is important given that disadvantaged groups tend to enrol in larger proportions in vocational tracks of upper secondary education. This calls for particular attention to the links between non-academic tracks in upper secondary school and more vocationally-oriented provision in tertiary education, including bridging education programmes, designed to assist students in developing the skills necessary for success in tertiary education. An expansion of tracks from vocational upper secondary education to tertiary education is also likely to enlarge the participation rates of the currently under-represented groups. It should also be an objective of policy that school children are not tracked away from tertiary education paths at an early age (age ten or twelve), when many have not yet had the time to show the ability or inclination to succeed at the higher level. Inequities in systems where school tracking is common would be lessened if barriers between the vocational and academic tracks within secondary school are lowered and the transition between the two is facilitated.

Strengthen the integration of planning between secondary and tertiary education systems

It is essential that the secondary and tertiary education systems engage with one another to jointly address key equity questions of common concern. Issues such as whether the number and type of study places in tertiary education are adequate to accommodate the diverse demand of school graduates, the extent to which the secondary curricula and assessment provide a good basis for successful tertiary study for all school graduates, and whether institutional diversity within tertiary education is closely aligned with curricular diversity in upper secondary school, are key to make the transition between secondary and tertiary education successful for all students.

Diversify the supply of tertiary education to accommodate a more diverse set of learners

An important element in a policy for equity in tertiary education is the diversification of the supply of programmes at the tertiary level to cater for a much wider diversity of learner backgrounds, experiences, aptitudes and aspirations. The increase in student numbers would go along with a rebalancing in favour of vocationally-oriented programmes. This rebalancing would more effectively provide for two new groups of participants: an expanded cohort of school leavers who have undertaken vocationally-oriented studies; and adult learners who seek to upgrade their qualifications, with recognition of their prior learning through experience. A significant area of growth should be first-cycle professionally-orientated programmes and short-cycle vocationally-orientated certificate and diploma programmes. These steps would make tertiary education more accessible to growing parts of the population while improving the status of tertiary vocational education and training.

Consider alternative types of provision to account for the cultural diversity of the population

The development of TEIs with diverse cultural foundations (*e.g.* indigenous TEIs) is to be encouraged. These TEIs respond to a particular need in societies with cultural minorities and are a means to provide aspirations to those communities in harmony with their culture. A danger to avoid is to develop these TEIs from only one perspective and not valuing the other parts of the country's culture. It is imperative that there is an understanding that bridging between the minority and non-minority communities involves exchange in the two directions. Hence, the policy of opening up these TEIs to all citizens, regardless of cultural background, is to be encouraged. Of course, policies to improve the participation of cultural minorities in tertiary education should encompass attendance in the entire system. In this respect, it is essential to recruit more teachers from underserved minority groups as well as academics from these groups into mainstream tertiary education to raise the tertiary education aspirations within these communities. A further channel for improving the aspirations of cultural minorities is to enhance the partnerships between these communities (and the TEIs run by them) and mainstream TEIs. This is likely to enhance the trust and confidence of cultural minorities in mainstream tertiary education.

Improve the access to tertiary education in remote areas by expanding distance learning and regional learning centres

The strategy to improve the coverage of tertiary education in remote regions could be drawn upon distance education, the establishment of learning centres which can provide remote links to TEIs, and in some cases the establishment of regional campuses of urban-based TEIs with provision more concentrated in programmes requiring more practical work and closely related to local needs. Distance learning is an effective means through which students may access lectures and seminars remotely, and converse with their professors. This approach could be used to allow remote access to all courses which do not require practical work. The regional learning centres are a complementary important point of physical linkage between tertiary education and local communities. They serve as study centres and provide teleconferencing facilities. Another possible policy intervention is to increase student support for those living in remote areas, particularly through dormitory provision, to enable more students to study away from home.

Diversify criteria for admission and give a say to TEIs in entrance procedures

Granting institutions a greater say over student admissions can help achieve a more efficient match between their profile and students' characteristics. This might assist TEIs in building their own identity and develop their specialties. However, given the potential undesired effects of such approach (*e.g.* TEIs selecting on the basis of ability to pay), this is better combined with system level guidelines on entrance procedures in tertiary education. These could establish a number of principles TEIs have to respect regarding student selection such as the weight to be given to national-level entrance examinations and/or grades in upper secondary school or the prohibition of using "ability to pay" as a selection criterion.

In the framework of their autonomy over student admissions, TEIs should be encouraged to base their admissions on a wide variety of entrance criteria, rather than relying heavily on single measures such as results on school-leaving or university

entrance examinations. This is likely to reduce inequalities of access as implied by the impact of family background on prior academic achievement (*e.g.* by reducing the importance of extensive tutoring). For example, admissions might be decided more by the variety of experiences of students during secondary schools, including their extra-curricular activities; by accomplishments other than academic accomplishments; by several exams measuring different aspects of competence in place of a single exam score – consistent with the idea that multiple exams would be more reliable than a single exam; or by a variety of factors like interviews, essays and recommendations.

Consider positive discrimination policies for particular groups whose prior educational disadvantage is well identified

Affirmative action or positive discrimination in institutional admission procedures is to be encouraged for those particular groups whose prior educational disadvantage is well identified. This compensates for the more limited educational opportunities offered to some disadvantaged groups prior to entering tertiary education. This is an instance in which the principle of equal treatment is not necessarily valid and where tertiary education plays a role in redressing the effects of past unequal educational opportunities. Positive discrimination arrangements include targeted recruitment programmes, "preferential treatment" translated into lower "cut-off" admission grades, or the provision of quotas for members of specific under-represented groups.

Consider alternative ways of acquiring eligibility for tertiary education

Completing upper secondary school should not be the sole means to become eligible for tertiary education. Alternative ways of acquiring eligibility for tertiary education could include the accreditation of prior learning and work experience for individuals who do not possess a school-leaving certificate; the possibility of passing an examination to test the individual's aptitude for tertiary study (such as a scholastic assessment test); or "bridging programmes" developed jointly with an adult learning institution. These alternative pathways into tertiary education would provide opportunities for those individuals who, as a result of particular circumstances, missed earlier opportunities to gain access to tertiary level studies.

Improve transfers between different types of TEIs within tertiary education

Improving transfers between different types of TEIs, and in particular between vocationally-oriented TEIs and academic TEIs, has the potential to enhance equity in the system. This is because more disadvantaged students, if they enter tertiary education, are more likely to attend vocationally-oriented TEIs. If transfers were enhanced, then these students might have a better chance of earning higher-level degrees, which provide access to better and higher-earning occupations. Some practices and policies could be instrumental in enhancing transfers between different types of TEIs within tertiary education. These include improving information for students about programmes and transfer possibilities; extensive co-ordination of transfer policies and practices; and the development of a system of course credits valid across the tertiary education system. Evaluation and quality assurance schemes would allow for the comparability of degrees from different TEIs.

Provide incentives for TEIs to widen participation and provide extra support for students from disadvantaged backgrounds

TEIs need to be provided with incentives to widen participation by less represented groups and assist those groups with extra support. A possibility worth considering is the creation of a special financial incentive for TEIs to attract less represented groups. This could be achieved, for instance, through a premium in the student component of the funding formula to particular groups of students such as minorities or students with disabilities. As suggested above, institutions could also engage in "affirmative action" in the selection process, in recognition of the prior educational disadvantage faced by some groups of students. Institutions should also be encouraged to develop comprehensive outreach and access strategies, which can include partnerships with disadvantaged schools, bridging programmes and earmarked places.

Institutions could also develop initiatives to support students from disadvantaged backgrounds in their studies progression. Possibly more emphasis should be given to support studies progression by, for instance, extending tutoring services for students with academic difficulties. This could be complemented with a funding incentive to encourage TEIs to graduate more disadvantaged students by increasing the graduation premium for such students (if funding is partly on the basis of the number of graduates).

The overall strategy might also include adapting the learning environment to account for the diversity of the student body, for instance by adjusting the curriculum and the tuition for the entire student population. Initiatives include the development of multicultural competencies among the entire academic staff, seminars and courses on multicultural pedagogy and the training of tutors with multicultural knowledge and communication skills. Targeted funding streams to support special groups (*e.g.* indigenous populations, language minorities, students with disabilities) could also be part of institutional level initiatives.

Encourage TEIs to be more responsive to the needs of adult learners

TEIs need to be encouraged to be more responsive to the needs of adult learners. This would widen their societal role with the new audiences they can reach. A number of initiatives can improve the provision of tertiary education for more mature students. First, information, advice and guidance about returning to learning and to take a degree should be readily available to mature students. Second, access courses both to prepare older people for a return to study and to prepare them to meet tertiary education entrance requirements could be provided. Third, consideration should be given to introducing alternative entrance requirements for mature students. This could be, for instance, on the basis of acquired competencies (rather than academic qualifications). Fourth, the supply of programmes should be made more flexible to account for the particular circumstances of this group. Enrolment on a part-time basis should be facilitated, allowing part-time students to take their degree over a longer period, and with teaching organised to better suit those who are employed or have caring responsibilities. In addition, the range of programmes offered should be wide enough to cover the needs of mature students who are active in the labour market. Finally, as student support systems reach maturity, access to it should be expanded to include individuals of all ages.

Sustain efforts to improve gender parity at all levels of tertiary education and address gender stereotyping in subject choice

In most countries, female participation in tertiary education has improved significantly but the gender gap remains at post-graduate level. The efforts to improve gender parity at all levels of tertiary education should be sustained. In those countries where gender parity has not been achieved at under-graduate level, steps to promote female participation should include career counselling and information at the school level, along with efforts to develop family-friendly policies and shifts in cultural norms about the roles of women. In some countries, male under representation at tertiary level has not received enough attention so far and needs to become a more prominent policy issue.

Gender stereotyping in subject choice is a problem common to all participating countries. Addressing it is difficult, and takes time. Primarily, work needs to be undertaken in schools to encourage girls to pursue the sciences and boys to pursue the more "caring" professions and studies. In this respect, career guidance and counselling can prove valuable. TEIs can also help, by liaising with schools to encourage both boys and girls to undertake less traditional subjects for their gender. These initiatives can be complemented more widely through media campaigns showing women and men in non-traditional jobs.

Grant special provisions for students with disabilities

Effective targeted support needs to be provided to disabled students. This should include improvements in the accessibility to the buildings, resources for TEIs to provide special support for this group of students (*e.g.* sign language interpretation; help with taking notes; dedicated support offices), special entrance procedures and allowances to assist disabled students to face the costs of attendance. Given the links between disability and health issues, achieving equity also requires policies and strategies that take into account the rhythms that may be imposed by the illness or impairment, that articulate education and health issues and that involve external support as well as the family.

Achieving equity is further complicated due to the fact that many students with disabilities do not consider themselves to be disabled and/or refuse to disclose their disability in order to avoid the risk of stigmatisation. As a consequence, to achieve equity and meet students' needs, TEIs have to develop support strategies that avoid any form of labeling and stigmatisation in order to assist students with disabilities in disclosing their disability and ensuring that they have access to their rights.

Countries could also improve their ability to plan and monitor cost effective inclusion policies by including students with disabilities in the collection of data on students' access to and success in tertiary education. This lack of data limits the ability of policy makers to devise policies targeted at students with disabilities and the ability of TEIs to plan and monitor the educational process, improve its quality and ensure students' access to employment and, more generally, to rights.

Countries should consider a life course perspective taking into account individuals' situation over time. This perspective allows for a resource-based approach looking at the enabling or disabling effect of policies with respect to students' skills, situation and prospects. It incites TEIs to focus on process and learning outcomes and to develop cross sectoral strategies as well as their methods to identify and assess the needs of students with disabilities.

Another strategy is to develop distance learning opportunities. Distance learning is a source of accessibility which allows students with disabilities to follow their courses from home, hospital bed or rehabilitation centre, giving them access opportunities which did not previously exist. It is also an essential pedagogical tool for the continuity of the courses of these students and their success, especially when the evolution of certain pathologies (mental conditions, for example) may require interrupting temporarily their course of study or spreading it over time. It also constitutes a social anchor enabling students with disabilities to pursue their education from their region of residence and no longer be deprived of the support of family and friends.

Place more emphasis on equity of outcomes

In most countries, equity policies have traditionally emphasised equity of access. However, gaining access to tertiary education does not guarantee the successful completion of a degree programme. In a number of countries, while progress was achieved in relation to the participation rates of some under-represented groups, success and retention rates for those groups often remained disappointing. There is considerably less knowledge about the obstacles that disadvantaged students encounter to succeed in tertiary education than about the obstacles they encounter prior to accessing tertiary education. In most countries greater emphasis needs to be placed on equity of outcomes with policies more targeted at ensuring the success of students from under-represented groups. This would translate into more emphasis being placed on student progression throughout studies with special support and follow-up measures to assist those students at risk of failure.

References

Ackermann, S. (1990), *The Benefits of Summer Bridge Programs for Underrepresented and Low-Income Students,* paper presented at the Annual Meeting of the American Educational Research Association (Boston, MA, April 16-20, 1990).

d'Addio, A.C. (2007), "Intergenerational Transmission of Disadvantage: Mobility or Immobility across Generations? A Review of the Evidence for OECD Countries", *OECD Social Employment and Migration Working Papers*, No. 52, OECD.

Andres, L. (2001), "Transfer from community college to university: Perspectives and experiences of British Columbia students", *Canadian Journal of Higher Education,* 31 (1).

Andres, L. and D. Looker (2001), "Rurality and Capital: Educational Expectations and Attainments of Rural, Urban/Rural and Metropolitan youth", *The Canadian Journal of Higher Education*, 31 (2).

Argys, L. M., D.I. Rees and D.J. Brewer (1996a), "Detracking America's Schools: Equity at Zero Cost?", *Journal of Policy Analysis and Management*, 15 (4), pp. 623-645.

Argys, L.M., D.I. Rees and D.J. Brewer (1996b), "Tracking in the United States: Descriptive Statistics from NELS", *Economics of Education Review*, 15 (1), pp. 83-89.

Ayalon, H. and A. Addi-Raccah (2003), "Students, Schools, and Post-Secondary Enrollment: A Contextual Approach", *Meeting of RC28 of the International Sociological Association*, Tokyo.

Barnhardt, R. (1991), "Higher Education in the Fourth World: Indigenous People Taking Control", *Canadian Journal of Native Education*, Vol. 18, No. 2.

Barr, N. (2004), "Higher Education Funding", *Oxford Review of Economic Policy*, Vol. 20, No. 2, pp. 264-283.

Berner, B. (2002), "Kunskapssamhällets paradoxer: utbildningens betydelser och könsrelationernas roll" ("The knowledge society's paradoxes: The importance of education and the role of gender relations"), in Lennart Sturesson *et al.* (eds.), *Spänningsfält: Tekniken, Politiken, Framtiden*, Stockholm: Carlsson.

Berggren, C. (2007), "Broadening recruitment to higher education through the admission system: gender and class perspectives", *Studies in Higher Education, 32* (1).

Betts, J.R. and J. L. Shkolnik (2000), "The Effect of Ability Grouping on Student Achievement and Resource Allocation in Secondary Schools", *Economics of Education Review*, 19 (1), pp. 1-15.

Black, S. and A. Sufi (2002), "Who Goes to College? Differential College Enrollment by Race and Family Background", *NBER Working Paper 9310*, National Bureau of Economic Research, Cambridge, MA.

Blanden, J., P. Gregg and L. Macmillan (2007), "Accounting for intergenerational income persitence: noncognitive skills, ability and education", *The Economic Journal,* 117.

Brooks, R. (2003), "Young people's higher education choices: the role of family and friends", *British Journal of Sociology of Education,* 24 (3).

Butlin, G. (1999), "Determinants of Post-Secondary Participation", *Education Quarterly Review*, 5 (3), pp. 9-35.

Cameron, S.V. and J.J. Heckman (2001), "The Dynamics of Educational Attainment for Black, Hispanic, and White Males", *Journal of Political Economy*, 109 (3).

Carneiro, P. and J.J. Heckman (2002), "The evidence on credit constraints in post-secondary schooling", *The Economic Journal,* 112 (482), pp. 705-734.

Checchi, D., A. Ichino and A. Rustichini (1999), "More equal but less mobile? Education financing and intergenerational mobility in Italy and in the US", *Journal of Public Economics,* 74.

Chevalier, A. and G. Conlon (2003), "Does it Pay to attend a Prestigious University?", Institute for the Study of Labor (IZA) Discussion Paper 848, Bonn.

Choi, S-K., Y-B. Kim, H-G. Ryu, H-J. Kim and H-S. Lee (2003), *Analysis of the Realities and Expenditure of Private Education*, Korean Educational Development Institute, Seoul, Korea.

Clancy, P. (2001), *College Entry in Focus: a Fourth National Survey of Access to Higher Education*, Dublin: Higher Education Authority.

Clancy, P. and G. Goastellec (2007), "Exploring Access and Equity in Higher Education: Policy and Performance in a Comparative Perspective", *Higher Education Quarterly*, Vol. 61, No. 2, pp. 136-154.

Conlon, G. (2002), "The Determinants of Undertaking Academic and Vocational Qualifications in the UK", Centre for the Economics of Education Discussion Paper 20, London School of Economics.

Commission of the European Communities (2006), "Efficiency and Equity in European Education and Training Systems", Commission Staff Working Document, SEC(2006) 1096, Brussels.

Curtis, D. (2006), "Inter-sectoral transfers: Sense, status, prevalence and purpose", *NCVER Research Conference*, Mooloolaba, Australia.

Dahllöf, Urban (2003), "Vägar till högre utbildning med länen i Småland som titthål*"* ("Pathways to higher education with the county of Småland as a peep hole"), in L. Kim and P. Mårtens (eds.), *Den vildväxande högskolan*, Nora: Nya Doxa.

DES (Department of Education and Skills) (2003), *Widening Participation in Higher Education*, Department of Education and Skills, London.

Dustmann, C. (2004), "Parental Background, Secondary School Track Choice, and Wages", *Oxford Economic Papers* 56 (2), pp. 209-230.

Ebersold, S. (2007), "Être étudiant et présenter une déficience", in *Quelles trajectoires d'insertion pour les personnes handicapées*?, Échanges santé social, Rennes, ENSP.

Ekström, Erika (2003), *Essays on inequality and education*, Institute for labour Market Policy Evaluation (IFAU), Uppsala, Sweden.

Eurostudent (2005), Social and Economic Conditions of Student Life in Europe 2005: Synopsis of Indicators, Hannover, HIS, Hochshul-Informations-System. *www.his.de/Eurostudent/report2005.pdf*

Feinstein, L. (2004), "Mobility in Pupils' Cognitive Attainment during School Life", *Oxford Review of Economic Policy*, 20, pp. 213-229.

Field, J. (2004), "Articulation and credit transfer in Scotland: taking the academic highroad or a sideways step in a ghetto?", *Journal of Access Policy and Practice,* 1 (2).

Fischer, M. and D. Massey (2007), "The effects of affirmative action in higher education", *Social Science Research,* 36.

Frenette, M. (2003), "Access to College and University: Does Distance Matter?", *Analytical Studies Branch research paper series No. 201*, Statistics Canada, Ottawa.

Frenette, M. (2006), "Too Far to Go On? Distance to School and University Participation", *Education Economics,* 14 (1).

Gayle, V., D. Berridge and R. Davies (2002), "Young people's entry into higher education: quantifying influential factors", *Oxford Review of Education,* 28 (1).

Groenez S., I. van den Brande, I. Nicaise (2003), "Cijferboek sociale ongelijkheid in het Vlaamse onderwijs", *Een verkennend onderzoek op de Panelstudie van Belgische Huishoudens*, Steunpunt LOA 'Loopbanen doorheen onderwijs naar de arbeidsmarkt' (LOA-rapport No. 10), Leuven.

Guthrie, L. and G. Guthrie (1988), *Minority Retention and Achievement: Evaluation of the California State University Summer Bridge and Intensive Learning Experience Programs,* Far West Lab. for Educational Research and Development, San Francisco, CA.

Halsey, A. H. (1993), "Trends in Access and Equity in Higher Education: Britain in International Perspective", *Oxford Review of Education*, 19 (2), pp. 129-150.

Hanushek, E. and L. Wöβmann (2006), "Does Educational Tracking Affect Performance and Inequality? Differences-in-Differences Evidence across Countries", *The Economic Journal*, 116 (March), pp. C63-C76.

Hanushek, E. A., J. F. Kain, J. M. Markman and S. G. Rivkin (2003), "Does Peer Ability Affect Student Achievement?", *Journal of Applied Econometrics*, 18 (5), pp. 527-544.

Högskoleverket (2005), *Universitet och högskolor, Högskoleverkets årsrapport 2005*, Högskoleverkets rapportserie 2005:26R. [Universities and University Colleges – Annual Report of the National Agency for Higher Education 2005]

Hollenweger, J., S. Gürber and A. Keck (2005), *Menschen mit behinderungen an Schweitzer Hochshulen: befunde und empfehlungen*, Rueger, Zürich.

Hoxby, Caroline (2000), "Peer Effects in the Classroom: Learning from Gender and Race Variation", NBER working Paper 7867, National Bureau of Economic Research, Cambridge, MA.

James, R. (2001), "Participation disadvantage in Australian higher education: An analysis of some effects of geographical location and socioeconomic status", *Higher Education,* 42 (4).

Keep, E. and K. Mayhew (2004), "The economic and distributional implications of current policies on higher education", *Oxford Review of Economic Policy,* 20 (2).

Kivinen, O., S. Ahola and J. Hedman (2001), "Expanding Education and Improving Odds? Participation in Higher Education in Finland in the 1980s and 1990s", *Acta Sociologica*, 44 (2), pp. 171–181.

Knighton, T. and S. Mirza (2002), "Postsecondary participation: the effects of parents' education and household income", *Education Quarterly Review,* 8 (3).

Koucký, J., A. Bartušek and J. Kovařovic (2008), "*Inequality and Access to European Tertiary Education during Last Fifty Years*", Education Policy Centre, Charles University, Prague.

Lauer, C. (2003), "Family background, cohort and education: A French-German comparison based on a multivariate ordered probit model of educational attainment", *Labour Economics*, 10, pp. 231-251.

Leach, L. and N. Zepke (2005), *Student decision-making by prospective tertiary students: A review of existing New Zealand and overseas literature*, Report to the Ministry of Education.

Leathwood, C. (2004), "A critique of institutional inequalities in higher education", *Theory and Research in Education,* 2 (1).

Lepori B. and S. Rezzonico (2003), "Models of eLearning: The Case of the Swiss Virtual Campus", Faculty of Communication Sciences, Università della Svizzera italiana.

Maani, S. (2006), "Parental income and the choice of participation in university, polytechnic or employment at age 18: a longitudinal study", *Research in Economic Inequality*, Vol. 13, pp. 217-248.

Maani, S. and G. Kalb (2007), "Academic performance, childhood economic resources, and the choice to leave school at age 16", *Economics of Education Review*, Vol. 26 (3), pp. 361-374.

Maani S. and T. Maloney (2004), "Returns to post-school qualifications: New evidence based on the HLFS Income Supplement (1997-2002)", Report to the Labour Market Policy Group, Department of Labour, New Zealand.
www.dol.govt.nz/publication-view.asp?ID=195

Machin, S. (2006a), "Social Disadvantage and Education Experiences", *OECD Social Employment and Migration Working Papers*, No. 32, OECD.

Machin, S. (2006b), "Education Expansion and Intergenerational Mobility in Britain", in P. E. Peterson, L. Wößmann (eds.), *Schools and the Equal Opportunity Problem*, MIT Press, Cambridge, MA.

Machin, S. and A. Vignoles (2004), "Educational Inequality: The Widening Socio-Economic Gap", *Fiscal Studies*, 25, 2, pp. 107-128.

Malatest, R. (2004), "Aboriginal peoples and post-secondary education: What educators have learned", Report prepared by R.A. Malatest & Associates Ltd. for the Canada Millenium Scholarship Foundation, Montreal.
www.millenniumscholarships.ca/images/Publications/aboriginal_en.pdf

Marcenaro-Gutierrez, O., F. Galindo-Rueda and A. Vignoles (2007), "Who actually goes to university?", *Empirical Economics,* 32.

Marks, G. N., N. Fleming, M. Long and J. McMillan (2000), *Patterns of Participation in Year 12 and Higher Education in Australia: Trends and Issues*, Canberra: Australian Council of Education Research.

Martin, I., J. Karabel and S. Jaquez (2005), "High School Segregation and Access to the University of California", *Educational Policy,* 19 (2).

Martin, L. (1994), *Equity and general performance indicators in higher education, Vol. 1: Equity Indicators*, AGPS, Canberra.

Martins, S.C., R. Mauritti and A. F. Costa (2005), "Condições Socioeconómicas dos Estudantes do Ensino Superior em Portugal", EUROSTUDENT 2005, Direcção Geral do Ensino Superior, Lisboa.

Matějů, P., B. Řeháková and N. Simonová (2003), "Transition to University under Communism and after Its Demise: The Role of Socio-economic Background in the Transition between Secondary and Tertiary Education in the Czech Republic, 1948-1998", *Czech Sociological Review*, 39 (3), pp. 301-324.

McEwan, P. J. (2003), "Peer effects on student achievement: evidence from Chile", *Economics of Education Review*, 22, pp. 131-141.

MOE, Finland (Ministry of Education, Finland) (2005), *OECD Thematic Review of Tertiary Education: Country Background Report for Finland*, Ministry of Education Finland, Helsinki.

MOER, Norway (Ministry of Education and Research, Norway) (2005) *OECD Thematic Review of Tertiary Education: Country Background Report for Norway*, Norwegian Ministry of Education and Research, Oslo.

Mortenson, T. (2005), *Chance for Bachelor's Degree by Age 24 and Family Income, 1970–2003*. *www.postsecondary.org*

Münich, D. (2005), "Estimating the Impact of School Quality, Selection, and Supply on Student's Achievements: Evidence from The Czech Nation-wide Testing of Youth", *mimeo*, Charles University, Prague.

Nair, B. (2007), "Measuring the returns on investment in tertiary education three and five years after study", *Beyond tertiary study* series, Tertiary Sector Performance Analysis and Reporting, Ministry of Education, New Zealand. *www.educationcounts.govt.nz/publications/tertiary_education/measuring_the_returns_on_investment_in_tertiary_education_three_and_five_years_after_study*

NCES (National Centre for Education Statistics) (2005), *Digest of education statistics: 2005*, Washington, D.C.

OECD (2003), *Disability in Higher Education*, Paris, OECD.

OECD (2004a), *Learning for Tomorrow's World: First Results from PISA 2003*, OECD, Paris.

OECD (2004b), *Career Guidance and Public Policy: Bridging the Gap*. OECD, Paris.

OECD (2005a), *Developing Highly-Skilled Workers: Review of Korea*, OECD, Paris.

OECD (2005b), *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*, OECD, Paris.

OECD (2007a), *No More Failures: Ten Steps to Equity in Education*, OECD, Paris.

OECD (2007b), *Education at a Glance: OECD Indicators 2007*, OECD, Paris.

OECD and the European Commission (2004), *Career Guidance: A Handbook for Policy Makers*, OECD/European Communities.

ONS (Office of National Statistics) (2004), *Focus on Social Inequalities*, Office of National Statistics, London.

Opp, R. (2002), "Enhancing program completion rates among two-year college students of color", *Community College Journal of Research and Practice,* 26 (2).

Pierson, C. and G. Wolniak (2003), "Impacts of Two-Year and Four-Year College Attendance on Learning Orientations", *The Review of Higher Education,* 26 (3).

Psacharopoulos, G. and S. Tassoulas (2004), "Achievement at the higher education entry examinations in Greece: A Procrustean approach", *Higher Education*, 47.

Ramirez, G. (1997), "Supplemental Instruction: The Long-Term Impact", *Journal of Developmental Education,* 21 (1).

Restuccia, D. and C. Urrutia (2004), "Intergenerational Persistence of Earnings: The Role of Early and College Education", *American Economic Review,* 94 (5).

Riley, Richard W. (1997), "Mathematics Equals Opportunity", White Paper prepared for U.S. Secretary of Education.

Robertson, D. and J. Symons (2003), "Do Peer Groups Matter? Peer Group versus Schooling Effects on Academic Attainment", *Economica*, 70, pp. 31-53.

Roos, Gunilla (2003), "Lokala studiecentra i Hälsingland – en inkörsport till högre utbildning" ("Local study centers in Hälsingland – a gateway to higher education"), in L. Kim and P. Mårtens (eds.), *Den vildväxande högskolan*, Nora: Nya Doxa.

Saarela, J. and F. Finnaes (2003), "Social Background and Education of Swedish and Finnish Speakers in Finland", *European Journal of Education*, 38 (4), pp. 445-456.

Schmelkes, S. (2005), *Educación Superior Intercultural: El caso Mexicano*, IESALC/UNESCO, Caracas.

Schnepf, S. V. (2003), "Inequalities in Secondary School Attendance in Germany", Working Paper A03/16, Southampton Statistical Sciences Research Institute, Southampton.

Schütz, G., H.W. Ursprung and L. Wößmann (2005), "Education Policy and Equality of Opportunity", CESifo Working Paper 1518. CESifo, Münich.

Severiens, S., G. ten Dam and S. Blom (2006), "Comparison of Dutch ethnic minority and majority engineering students: social and academic integration", *International Journal of Inclusive Education*, Vol. 10, No. 1, pp. 75-89.

Shavit, Y. and H.P. Blossfeld (1993), *Persistent Inequality: Changing Educational Attainment in Thirteen Countries*, Westview Press, Boulder, Colorado.

Shavit, Y., R. Arum and A. Gamoran (with G. Menahem) (eds.) (2007), "Stratification in higher education: a comparative study", Stanford University Press, Stanford, California.

Stolk, C. van, J. Tiessen, J. Clift and R. Levitt (2007), "Student Retention in Higher Education Courses: International Comparison", Technical Report, RAND Europe.

Usher, A. (2006), "Grants for Students: What They Do, Why They Work", Educational Policy Institute, Toronto, Ontario.
http://educationalpolicy.org/pdf/GrantsForStudents.pdf

Voznesenskaya, E.D., G.A. Cherednichenko, O.Y. Dymarskaya (2004), "The accessibility of education as a social problem (differential access to tertiary education and the popular attitude to tertiary education)", in S.V. Shishkin (ed.), *Accessibility of Tertiary Education in Russia*, Independent Social Policy Institute (NISP), Moscow.

Wößmann, L. and G. Schütz (2006), "Efficiency and Equity in European Education and Training Systems", Analytical Report for the European Commission prepared by the European Expert Network on Economics of Education.

Wagner M., L. Newman, R. Cameto, N. Garza and P. Levine (2005), *After High School: A First Look at the Postschool Experiences of Youth with Disabilities: A Report from the National Longitudinal Transition Study-2 (NLTS2)*, United States Office of Special Education Programs SRI International, Menlo Park, California, United States.

Wolff, R. and M. Crul (2003), "Retention students and dropouts in higher education: a qualitative research study on the social and academic integration of ethnic minority students", Expertise Centre for Diversity Policy (ECHO), Utrecht.

Wroblewski, A. and M. Unger (2003), *Studierenden Sozialerhebung, 2002. Bericht zur sozialen Lage der Studienrenden,* HIS, Hochshul-Informations-System.

7. Enhancing the Role of Tertiary Education in Research and Innovation

7.1 Introduction

This Chapter focuses on the role of tertiary education institutions (TEIs) in research and innovation. A central reason for looking at the tertiary education system in an innovation context is that in all OECD countries governments finance not only education infrastructure costs, but also a large proportion of gross expenditure on research and development (R&D), which flows to universities and other TEIs. One rationale for this sizable funding is the direct and indirect support given by the tertiary education sector to the overall innovation effort. This Chapter will therefore analyse the role(s) of tertiary education from a research and innovation perspective. It reviews the empirical evidence and analyses the governance of tertiary education research. Finally, it concludes by outlining policy options for enhancing research and innovation for countries to consider.

7.2 The role(s) of the tertiary education sector in the research and innovation system

TEIs play multiple roles in the knowledge economy, and it is important not to limit the focus of any analysis of their economic roles. Moreover it should be noted that the economic functions of tertiary education – which occur essentially through the effects of human resource development, R&D and knowledge diffusion on technological innovation – are by no means the sole role of the system. Universities in particular support many fields of knowledge that have no economic role to speak of, yet an enormous social and cultural significance. Protecting and fostering such fields, especially as financing and governance systems change, is an increasingly urgent policy challenge. Beyond universities, there are usually systems of non-university institutions engaged in vocational training, often closely linked to industry, and incorporating training related to apprenticeships. The different functions of the tertiary education system in particular national innovation settings may be performed by quite different types of organisations across countries, so that both inter-country and intra-country diversity is common. Moreover, TEIs perform a variety of research (see Box 7.1).

This Chapter focuses on the tertiary education sector's support for innovation. In terms of research and innovation, many current policy frameworks see the tertiary education sector, and universities in particular, essentially as places where new scientific and technological principles are discovered. The issue then becomes, how well these discoveries are transformed into innovations. This kind of focus leads to an emphasis on commercialisation as a problem for tertiary institutions, and a policy focus on intellectual property rights, patenting, and technology transfer from tertiary institutions. However, it is important to remember that the contribution of the tertiary education sector to global knowledge resources is not limited to specific discoveries. There are at least four broad

ways in which tertiary education contributes to the use of knowledge in both economic and social life. These are:

- the building of knowledge bases (primarily through research);
- the creation of capabilities (through teaching and research training);
- the diffusion of knowledge (through interactions with knowledge users); and
- the maintenance of knowledge (inter-generational storage and transmission of knowledge through codification, libraries, databases, *etc*).

These roles are examined in turn below.

Box 7.1. Types of R&D

R&D data are presented in various ways, one of which concerns the "type of research". Although the statistical categories differ slightly across countries, R&D data are usually presented in terms of three main types, namely basic research, applied research and experimental development. It would be misleading to identify these with particular TEIs – that is, to think of universities as doing purely basic research, or vocational TEIs doing applied R&D. The mix tends to be more complicated. Even elite science universities perform considerable amounts of applied R&D, often in collaboration with public or private partners, and other institutions can, and do, undertake fundamental science.

The *Frascati Manual* (OECD, 2002) distinguishes three types of R&D:

Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view.

Applied research is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective.

Experimental development is systematic work, drawing on knowledge gained from research and practical experience, that is directed to producing new materials, products and devices; to installing new processes, systems and services; or to improving substantially those already produced or installed.

It is important to note that the *Frascati Manual* acknowledges there are many conceptual and operational problems associated with these categories because they seem to imply a sequence and a separation which rarely exist in reality. The three types of R&D may sometimes be carried out in the same centre, and there may be movement in both directions.

7.2.1 Building knowledge-bases

The tertiary sector has long been considered the primary producer of new knowledge. This is only partially true, since research institutes and government laboratories (especially related to defence), and some research-intensive companies, play important roles in basic research. Universities, however, are central to the innovation systems of OECD countries. They build knowledge bases through research and associated activities, but this does not consist simply of "breakthrough" or "blue-sky science". The research effort also involves the patient accumulation of knowledge through incremental research, testing, improved measurement, better instrumentation or new uses of research technologies. It also involves non-scientific knowledge generation from the humanities and social sciences. University researchers led the way in the use of computers in research, for example, and this had wide impacts on industrial R&D (Colyvas *et al.*, 2002). Tertiary research may involve such activities as monitoring natural phenomena over long periods or combining existing knowledge in new ways. The research effort also links diverse areas of knowledge, creating wider and more complex multi-disciplinary

knowledge bases. Against this background, research is not only a process of discovery, it is also a process of problem-solving that may not lead to knowledge breakthroughs, but simply expands knowledge in ways that may be of great economic and social importance.

7.2.2 Developing human capital

The theory and applied analysis of human capital formation focuses in part on formal education, and in part on the creation of firm-specific human capital, via vocational or on-the-job training. Teaching has long been a – perhaps *the* – central function of TEIs. Despite the fact that teaching is often held to be closely linked to research, it is arguably quite separate from it (Nelson, 1986; Martin, 2003). From the technological point of view, education has at least two main dimensions: inculcating specific forms of knowledge or skills, via training in sciences or technology related disciplines such as chemical engineering, and developing problem-solving capabilities of a more general character. The latter is particularly important since the dynamics of knowledge imply a need for continual updating and retraining. Technologically speaking, these functions of the tertiary education system occur mainly through science and engineering training, an area that has expanded considerably since the late 19th century, and that continues to grow. However, non science and technology occupations also contribute to knowledge assets, via social sciences and humanities disciplines.

7.2.3 Knowledge diffusion and use

TEIs are not only repositories of knowledge – they are active in spreading knowledge results. The transmission of knowledge is just as significant for innovation as knowledge creation, since it is only via diffusion that new knowledge can have economic and other societal impacts. This can take several forms. First, universities and vocational TEIs publish. They have incentive structures that encourage early and timely publication, and this is a key form of diffusion since many companies monitor such publications, and companies also undertake basic R&D simply to be able to keep up with and use university-based research (Rosenberg, 1990). However they also diffuse knowledge via collaborative research programmes, via consultancies, via joint ventures, and via informal channels. The last of these can often be very important. A number of studies of engineering practice have shown that engineers often retain links with those who have taught them, and that they use these links in seeking solutions to engineering problems that they encounter (Gibbons and Johnston, 1974, was a pioneering study on this). The diffusion of knowledge is not simply a matter of spreading results since it also takes the form of assisting engineers solve problems through ideas about potentially rewarding search paths. TEIs not only spread knowledge, they spread search heuristics, or fruitful ways of searching.

7.2.4 Knowledge maintenance

Knowledge must not only be created, it must be maintained. The tertiary education sector is an important vehicle for storing and maintaining knowledge stocks. This occurs through storage and retrieval systems such as libraries, oral transmission, databases, computing resources and conferences. It should be remembered that much of the knowledge that society uses is not new. Old knowledge does not survive by itself, and it is easy for knowledge to disappear. There are spectacular examples of forms of technological knowledge that disappeared and are then laboriously rediscovered.

Maintaining knowledge can be a resource-intensive activity, and the costs of maintenance are not trivial. This can be a major burden for tertiary education budgets.

7.3 The tertiary education research and innovation environment: The empirical perspective

This Section uses a range of quantitative indicators to analyse research and innovation trends in TEIs. It also draws on the country background reports and country review reports to illustrate policy initiatives that have been implemented in countries taking part in the Review. The Section is structured according to the main roles of the tertiary education sector presented above, namely building knowledge bases, developing human capital and knowledge diffusion.

Before turning to these roles, it is important to note that the social sciences and humanities make an important contribution to research and innovation systems and economic growth, even though much of the current analytical focus (and data) is directed towards science, engineering and technology. The social sciences and humanities contribute towards building knowledge stocks and to training skilled graduates. These graduates make an important contribution to the economy, irrespective of the field of training. For example, understanding indigenous knowledge, national identity and similar concepts are increasingly important strategic goals for governments.[11] Moreover, research in the social sciences and humanities is also essential for solving "technical" problems. Nightingale and Scott (2007) point out that the justification for public funding of the biological sciences is "…largely at odds with the outcomes [because] major causes of illness, such as poverty, lack of education, and poor housing and healthcare are social and political issues that are poorly addressed by the current science-intensive research system." Indeed, solutions to global challenges, such as environmental, health and energy issues, will need to draw on more inter and multidisciplinary research.

Furthermore, industries based on the social sciences and humanities can also be highly innovative. For example, according to recent estimates by the National Endowment for Science, Technology and the Arts (NESTA, 2006), creative industries[12] account for 8% of the United Kingdom's economy, and the global market value of these industries increased from USD 831 billion in 2000 to USD 1.3 trillion in 2005.

7.3.1 R&D trends and scientific and technological output

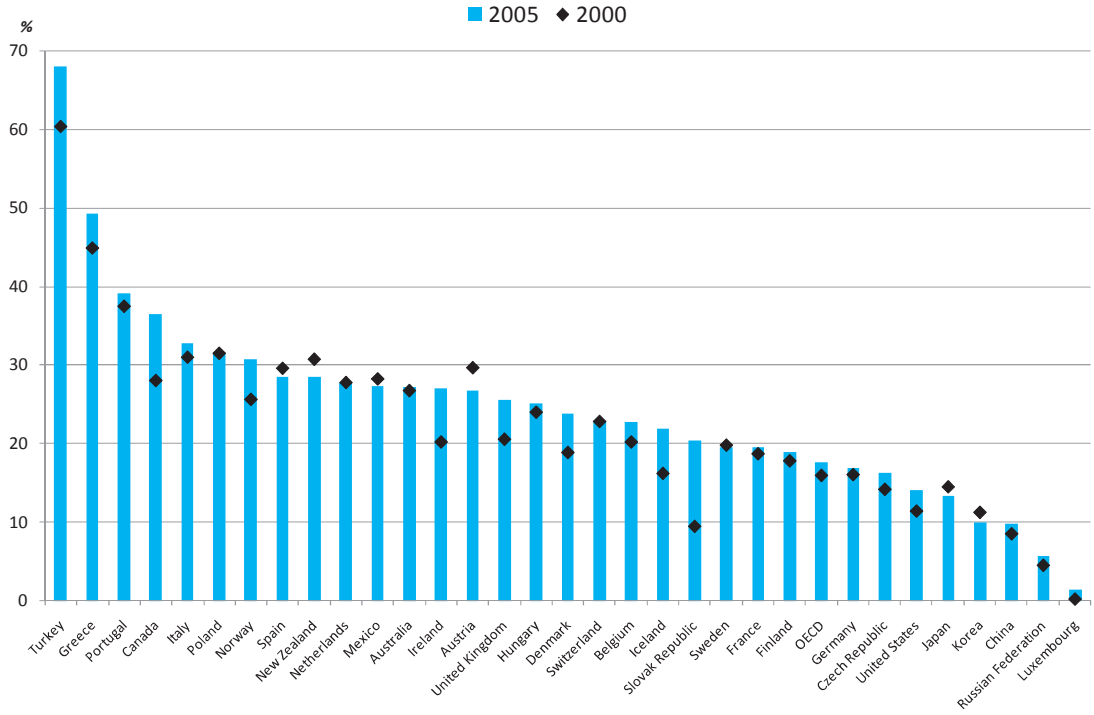
Investment in R&D is an important indicator of the efforts that countries are putting into achieving scientific and technological progress. Figure 7.1 shows the higher education sector performs a large share of R&D in many countries. In 2005, the share of R&D performed in the higher education sector peaked in Turkey at 68%, followed by Greece, Portugal and Canada, which were all above 35%. Across the OECD, the average was 18%. Between 2000 and 2005 the share of R&D performed in the higher education

11. For example, in 2002 Australia announced four National Research Priorities. One of the priorities is "safeguarding Australia", which is tied to understanding languages, societies and cultures. In New Zealand, distinctive contributions to research, science and technology and the creative potential of traditional knowledge are increasingly being recognised (Ministry of Research, Science and Technology, New Zealand, 2006).

12 Creative industries include advertising, architecture, design, film and video, interactive leisure software (such as computer games), music, the performing arts, publishing, software and computer services, television and radio (NESTA, 2006).

sector grew in more than half of the countries represented in Figure 7.1. The largest increase was in the Slovak Republic where the share of R&D performed in the higher education sector increased by nearly 11 percentage points. The share in Canada rose from 28% to 36%, whereas across the OECD the increase was 2 percentage points.

Figure 7.1. Percentage of gross domestic expenditure on R&D (GERD) performed by the higher education sector, 2000 and 2005



Countries are ranked in descending order of the percentage of GERD performed by the higher education sector in 2005.

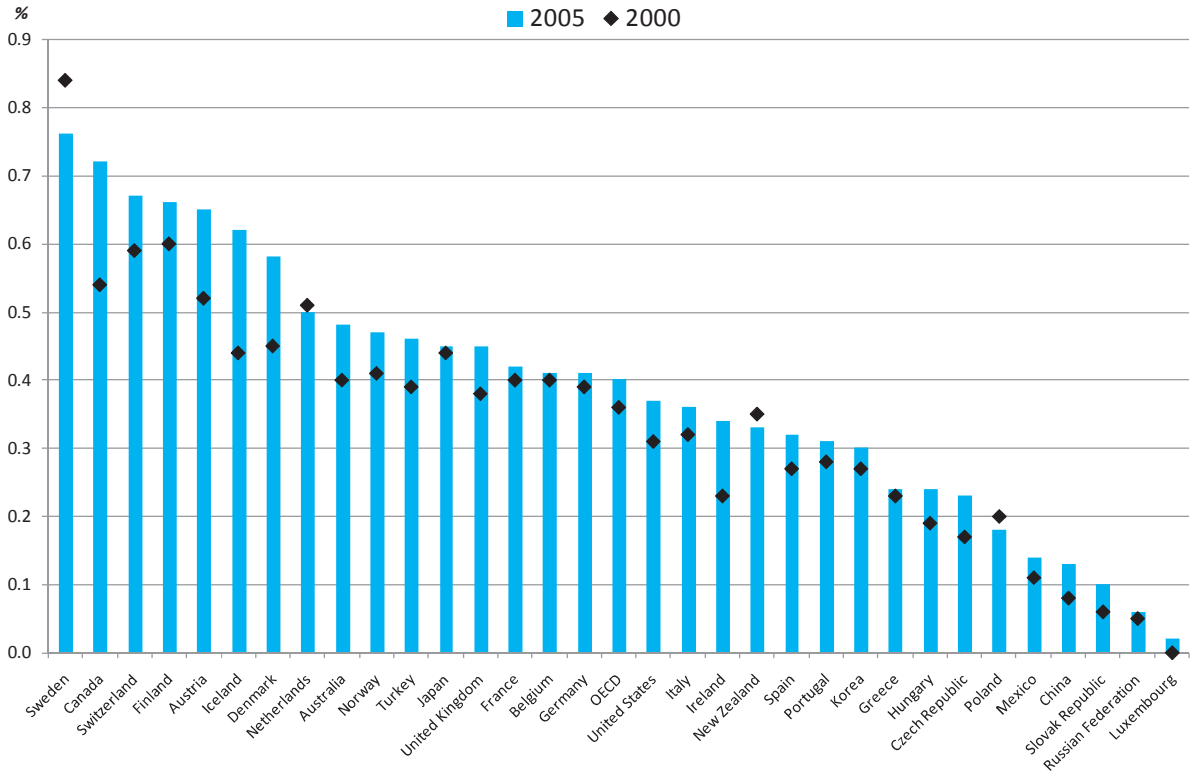
Note: For '2000' data, the reference year is 1998 for Austria and 2001 for the Czech Republic, Greece, New Zealand, Norway and Sweden. For '2005' data, the reference year is 2003 for New Zealand and 2004 for Australia, Italy, the Netherlands and Switzerland.

Source: OECD, Main Science and Technology Indicators Database, 2007-1.

In GDP terms, higher education R&D expenditure has risen steadily from 0.36% to 0.40% of GDP across the OECD between 2000 and 2005 (Figure 7.2). The largest increases occurred in Austria, Canada, Denmark, Iceland and Ireland. In the Netherlands, New Zealand, Poland and Sweden R&D in higher education institutions declined as a share of GDP. The difference among OECD countries remains large. Sweden has the highest ratio of higher education R&D (HERD) to GDP in the OECD area, at 0.76%, followed by Canada (0.72%), Switzerland (0.67%) and Finland (0.66%). Most large OECD countries, including France, Germany, Italy, Japan, the United Kingdom and the United States, devote between 0.35% and 0.45% of GDP to R&D in higher education intuitions. Luxembourg had the lowest ratio because it established its first university in 2003.[13] Other OECD countries with low R&D spending by higher education institutions as a proportion of GDP are Mexico, Poland and the Slovak Republic.

13. However, other types of TEIs existed before 2003.

Figure 7.2. Higher Education Research and Development (HERD) as a percentage of GDP, 2000 and 2005



Countries are ranked in descending order of the HERD as a percentage of GDP in 2005.

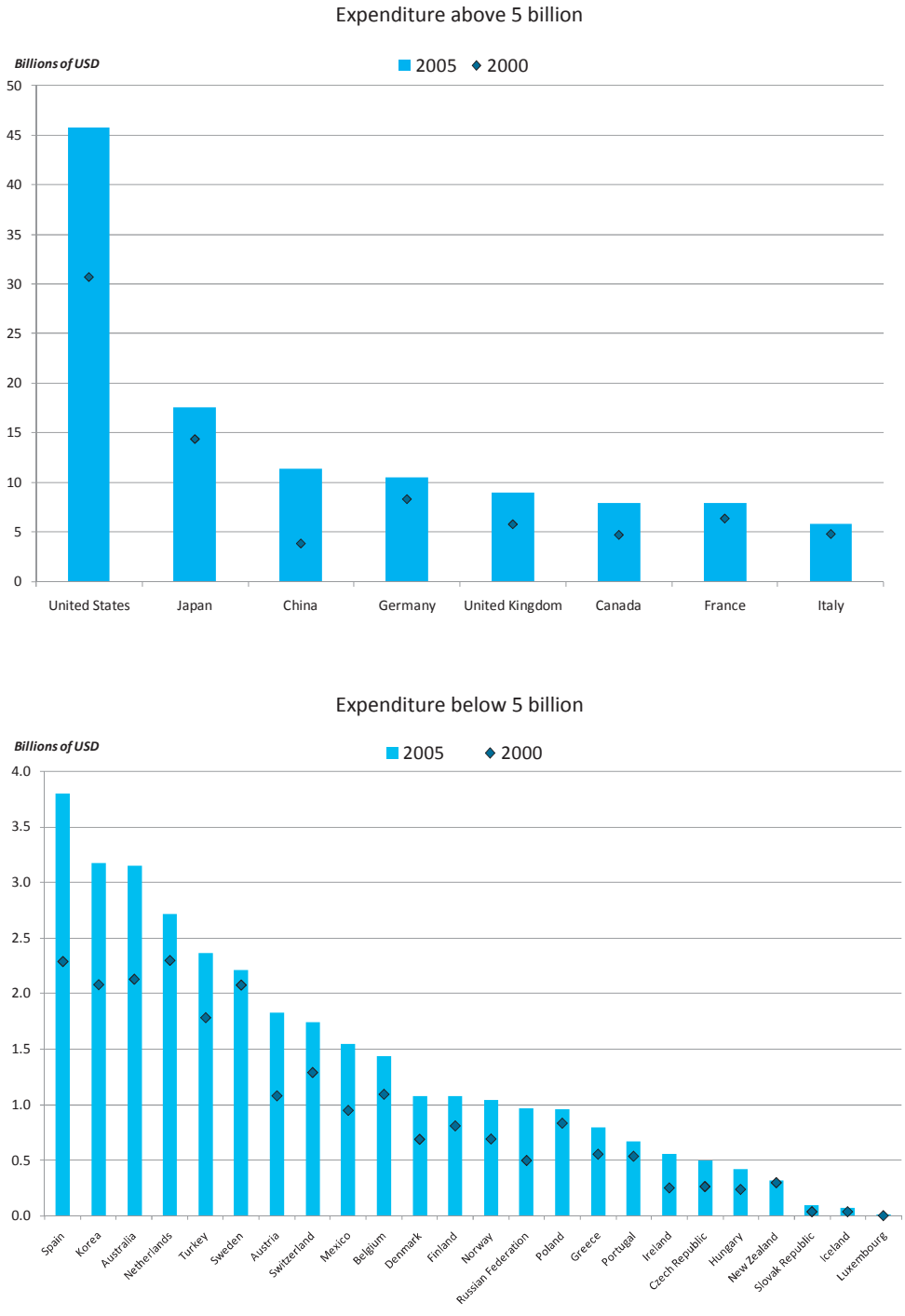
Note: For '2000' data, the reference year is 1998 for Austria and 2001 for Greece, Norway and Sweden. For '2005' data, the reference year is 2003 for New Zealand and 2004 for Australia, Italy, the Netherlands, Switzerland and Turkey.

Source: OECD, Main Science and Technology Indicators Database, 2007-1.

Between 2000 and 2005, higher education R&D expenditure (in absolute terms) increased across all countries represented in Figure 7.3. China experienced the highest average annual increase over the period reaching 24%, followed by the Slovak Republic (20%) and Ireland (17%). Austria, Canada, the Czech Republic, Hungary, Iceland, Mexico, Spain and the Russian Federation saw increases of 10% or more annually during this period. Annual growth across the OECD was 7%, which was noticeably higher than the annual R&D growth rates in the business and government sectors. Across the OECD, business expenditure on R&D increased 4% annually over the period 2000 to 2005 whereas in the government sector the rate was 5% across the OECD. The larger expenditure increases in the higher education sector may reflect the growing recognition that R&D in higher education institutions is an important stimulus of economic growth and improved social outcomes.

Figure 7.3. Higher education expenditure on R&D, 2000 and 2005

Billions of USD, current (PPP)



Countries are ranked in descending order of higher education expenditure on R&D in 2005.

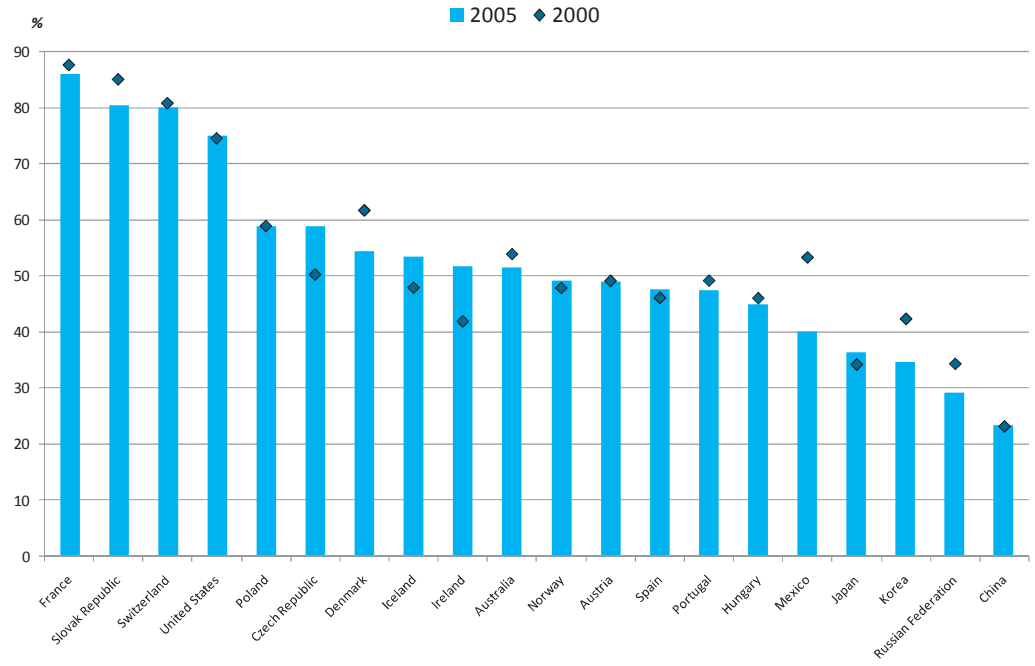
Note: For '2000' data, the reference year is 1998 for Austria and 2001 for Greece, New Zealand, Norway and Sweden. For '2005' data, the reference year is 2003 for New Zealand and 2004 for Australia, Italy, the Netherlands, Switzerland and Turkey.

Source: OECD, Main Science and Technology Indicators Database, 2007-1.

Types and fields of R&D

Figure 7.4. Share of basic research performed within the higher education sector, 2000 and 2005

As a percentage of all types of research in the higher education sector



Countries are ranked in descending order of the share of basic research performed within the higher education sector in 2005.

Note: For '2000' data, the reference year is 1998 for Iceland and 1999 for Norway. For '2005' data, the reference year is 2003 for Mexico and Portugal and 2004 for Australia, Austria, Denmark, France and Switzerland.

Source: OECD, R&D database, 2007.

As mentioned above, TEIs perform three different types of R&D (see Box 7.1) and do not necessarily undertake basic research exclusively. Indeed, as shown in Figure 7.4 the share of basic research performed within higher education institutions in 2005 ranged from 86% in France to 23% in China. Figure 7.4 also shows the share of basic research undertaken in TEIs from 2000 to 2005 has fallen in 11 of the 20 countries represented. Mexico experienced the largest decrease from 53% in 2000 to 40% in 2005. Conversely, the share of basic research performed in higher education institutions grew 10 percentage points in Ireland over the same period. In some countries it is possible to look at the data over a longer time-period, which reveals that the share of basic research performed in higher education institutions has slowly decreased. For example, in Australia the share of basic R&D in higher education institutions was 67% in 1981 and 63% in 1990, and in Sweden it was 70% and 66% respectively. Conversely, in other countries the share has gradually increased. In the United States the share of basic R&D was 63% in 1980 and 66% in 1990 whereas in Japan the share grew from 30% in 1981to 33% in 1991. These results suggest that the focus of R&D in higher education institutions is not static and may be linked to wider industrial, social or national priorities.

R&D in vocational TEIs

Even though R&D data is collected at the institutional level it is aggregated according to the sector of performance. Therefore, it is not possible to quantify R&D expenditure across the different types of TEIs.[14] In some countries, some post-secondary institutions are excluded from R&D data collections. In the case of Australia, for example, only universities are surveyed because other TEIs (such as Technical and Further Education colleges) are excluded since the national statistical agency considers that "their contribution to total R&D activity would be minimal" (ABS, 2004). In the Netherlands, the vast majority of higher education R&D takes place in universities and research institutes, and in New Zealand, two universities accounted for more than 50% of the reported higher education R&D in 2004. In Estonia, research is concentrated in two universities, which account for around 70% of total R&D output. Smaller TEIs, including most professional higher education institutions, vocational education schools and private institutions in Estonia carry out very little research. In China, research and innovation is the objective of research universities and teaching and servicing regional economic development is the objective of teaching institutions. Conversely, the role of polytechnics has changed in Finland because R&D activities are now included in their formal objectives whereas previously they were viewed as teaching institutions only.

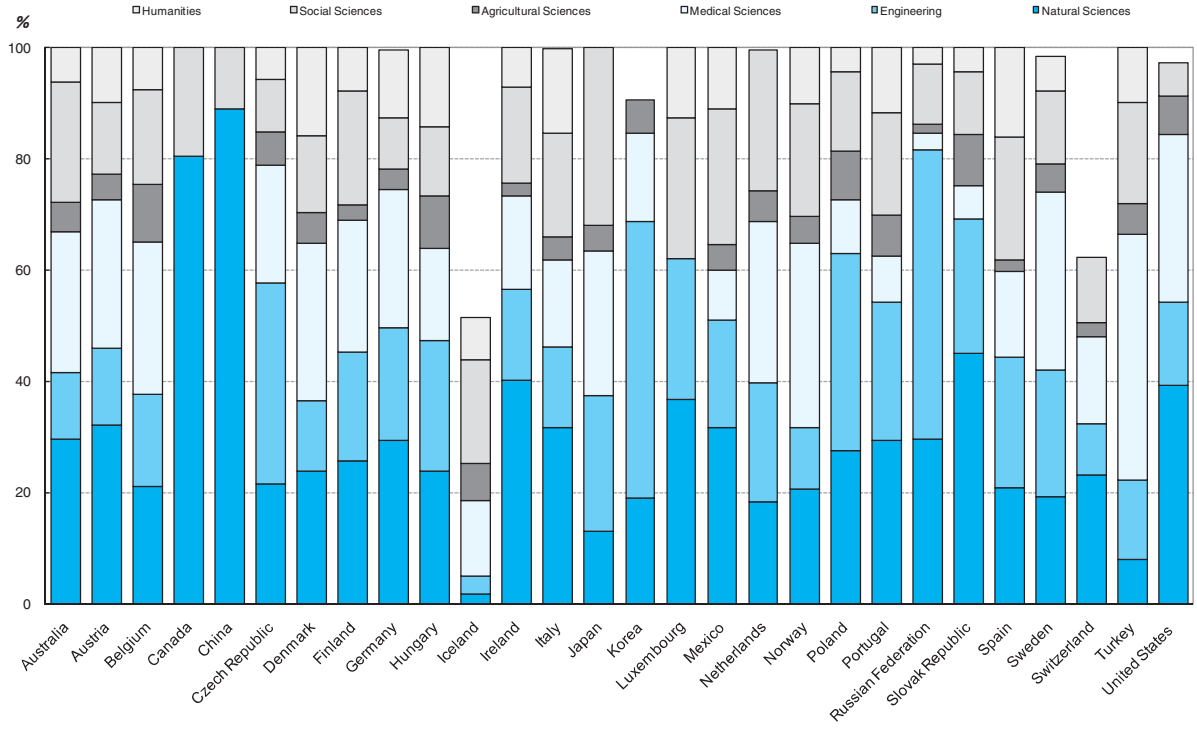
R&D expenditures differ across countries by field of study

Significant differences remain in the fields of study towards which higher education R&D is directed. In the Russian Federation for example, over 85% of all research and development is carried out in natural sciences, engineering, medical sciences and agricultural sciences, with social sciences and humanities accounting for only a small share (Figure 7.5). In Luxembourg however, more than 60% of all higher education R&D is carried out in social sciences and humanities whereas in Mexico and Spain these fields account for around 35%. These differences may be linked to the specialisation of the innovation systems in each country. It is important to bear in mind that countries are often specialised in scientific or technological terms (Archibugi and Pianta, 1992), and so the types of specialisation in each country are likely to have a bearing on policy mechanisms aimed at removing demand gaps. Where gaps become more acute in the key fields and priority areas of particular countries, policy makers may have to focus on specific fields.

14. According to the *Frascati Manual* (OECD, 2002), R&D data in the higher education sector should include all universities and other institutions of post-secondary education.

Figure 7.5. Higher education R&D expenditure by field of study, 2005

As a percentage of total higher education R&D expenditure



Note: The reference year is 2001 for the United States, 2002 for the Netherlands, 2003 for Mexico and 2004 for Australia and Austria. In Canada and China sciences and engineering are combined. In Canada, China, Japan, the Netherlands and Switzerland social sciences and the humanities are combined. In Iceland, Korea, Sweden Switzerland and the United States some fields are not classified therefore the sum does not reach 100%.

Source: OECD R&D Database, 2007.

Scientific publications and patents

The main indicators of R&D output at the present time are the numbers of published journal articles (on the basic R&D side), and patent applications (on the applied and experimental development side). Data on publications and citations can be used to measure the quantity and impact of scientific output in the higher education sector. Even though these bibliometric indicators are imperfect,[15] the number of journal articles is an indicator of output and knowledge generation. As shown in Figure 7.6, universities account for the bulk of scientific publications. Apart from France, more than 65% of publications can be attributed to universities. In Japan, universities accounted for 80% of publications and in the United States this figure was 71%. In absolute terms, United States universities produce the largest number of publications by a wide margin.[16]

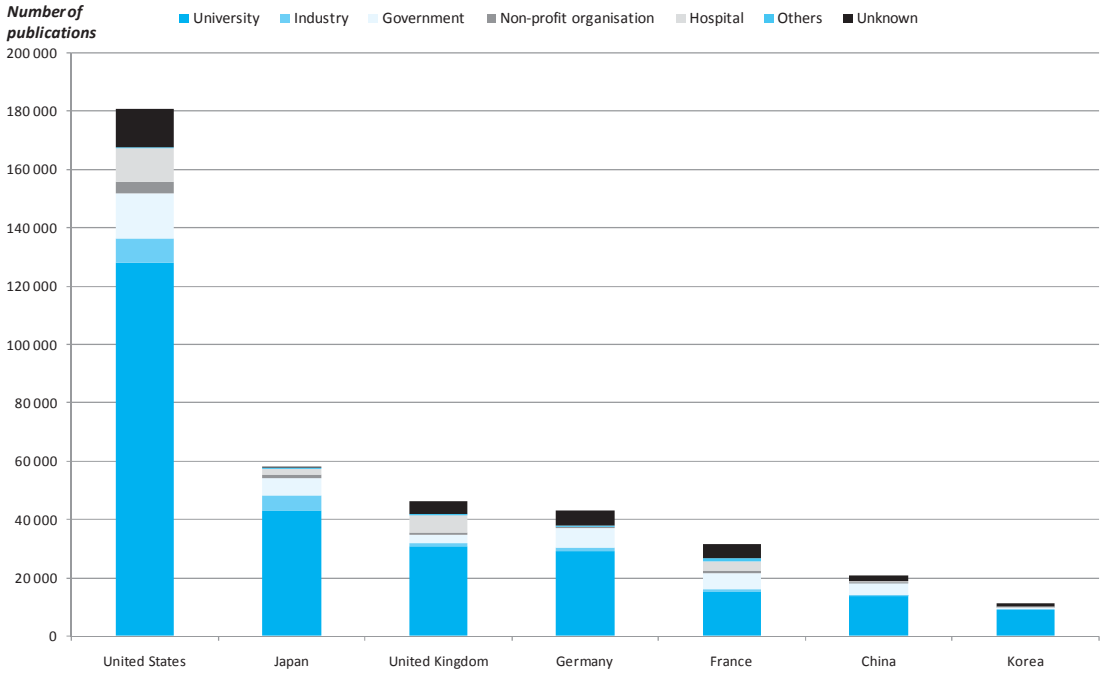
15. For example, bibliometric databases do not cover all disciplines equally well, citation practices vary by scientific field, non-English journals are less well represented and the frequency of citation is not necessarily an indication of quality.

16. It should be noted that bibliometric databases are skewed towards American scientific literature.

However, in terms of the relative prominence of scientific literature (measured by the relative citation index), the United States ranked second, behind Switzerland, in 1995 and 2003 (NSF, 2006). It should also be noted there are large discrepancies between institutions. In the Netherlands, for example, 69% of research articles are produced by scientists and scholars employed at 13 research-intensive universities. In New Zealand, a study on the academic impact of research found the relative impact of research performance[17] differed markedly across universities and disciplines (Ministry of Education, New Zealand, 2007).

Figure 7.6. Scientific publications by sector, selected countries, 2001

Total number of publications



Countries are ranked in descending order of the total number of publications.

Source: NISTEP, 2005.

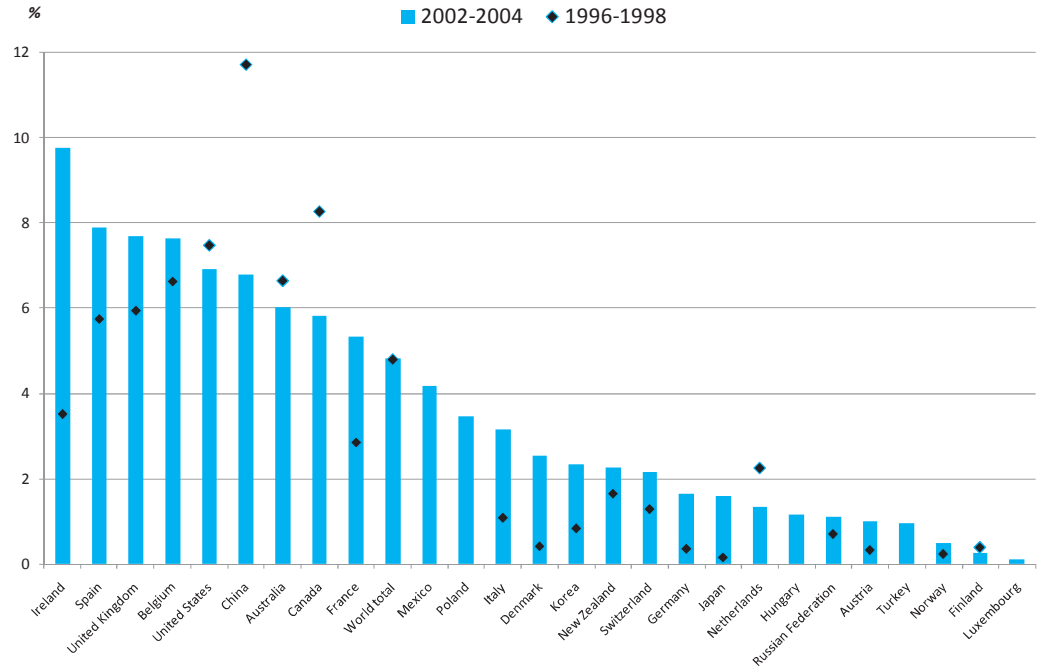
While TEIs dominate other institutional sectors in terms of scientific publication output, they account for only 4.8% of European Patent Office (EPO) world patents (Figure 7.7). The vast majority of patents are owned by companies (82% in 2002-2004). The share of patents owned by universities increased by 6.2 percentage points in Ireland over the period 1996-1998 to 2002-2004, followed by Mexico (4.2 percentage points), Poland (3.4 percentage points) and France (2.5 percentage points). Some countries experienced a drop in the share of patents owned by universities. The largest fall was in China (4.9 percentage points), followed by Canada (2.5 percentage points), the Netherlands (0.9 percentage points) and Australia and the United States (0.6 percentage points each). In some countries, like Sweden or until recently Germany or Japan,

17. The measure is calculated using the average number of citations per publication divided by the world average of citations per publication.

university professors are entitled to own patents resulting from their research, therefore these are not registered here as belonging to universities.

Figure 7.7. Share of European Patent Office (EPO) patent applications owned by universities, 2002-2004

As a percentage of total EPO patents



Countries are ranked in descending order of the share of patent applications owned by universities.

Note: Patent counts are based on the priority date, the inventor's country of residence and fractional counts. This figure considers patent applications filed under the Patent Co-operation Treaty (PCT), at international phase, designating the European Patent Office (EPO). Only countries with more than 300 PCT filings per period are included. EPO patent applications are attributed to institutional sectors using an algorithm developed by Eurostat.

Source: OECD, Patent Database, using the Eurostat sector attribution algorithm, June 2007.

7.3.2 Human resources for science and technology

Human resources for science and technology (HRST) are critical to innovation and economic growth in two main ways. First, highly skilled people contribute to economic growth directly through their role in the creation and diffusion of innovations. Second, those with science and engineering (S&E) skills contribute in an indirect way, by maintaining society's store of knowledge, and by transmitting it to future generations. There are close links between formal education and innovation capabilities. Even though innovation requires many non-research and non-technological skills, there remains a consistently increasing demand for individuals with higher levels of education and advanced training in science and technology (S&T). Higher levels of education may also increase capabilities to use new technologies more effectively. Therefore, TEIs are a fundamental element of the research and innovation system because of the effects of human resource development and R&D capabilities on innovation and knowledge diffusion. Any economy needs a sufficient number of people with appropriate education, skills and training to support and increase its knowledge base.

HRST refers to people who are actually engaged in or have the relevant training to be engaged in the production, development, diffusion, application and maintenance of systematic scientific and technological knowledge. HRST are a central element in socio-economic development, and much work has been done in recent years to improve statistics and indicators on them. HRST are defined by the *Canberra Manual* (OECD, 1995) as people who fulfil one or other of the following conditions:

i. Successfully completed education at the tertiary level in an S&T field of study (*i.e.* HRSTE).

ii. Not formally qualified as above, but employed in a S&T *occupation* where the above qualifications are normally required (*i.e.* HRSTO).

It is important to clarify the differences between HRST, R&D personnel and researchers. The HRST definition is broad and covers "people actually or potentially employed in occupations requiring at least a first university degree" in S&T, where this includes all fields of science, technology and engineering study. R&D personnel, as defined by the *Frascati Manual* (OECD, 2002), are "all persons employed directly on R&D", which includes those providing direct services such as R&D managers, administrators, and clerical staff, whereas researchers are defined as "professionals engaged in the conception or creation of new knowledge, products, processes, methods, and systems and in the management of the projects concerned."

Table 7.1 provides a rough comparison of the size of each group in 2005 across the main OECD regions, China and the Russian Federation. By far the largest category is HRST, indicating the wide use of highly qualified people across the economy. R&D personnel stocks often include large proportions of technical support staff and administrators. Researchers are only a small subgroup of the highly skilled, but nevertheless they are crucial for R&D and innovation.

Table 7.1. Human Resources for Science and Technology (HRST) in selected countries, 2005

	HRST (completed education, ISCED 5A, 5B and 6)	R&D personnel (full time equivalent)	Researchers (full time equivalent)
OECD	191 729 858[1]	Not available	**3 865 778**
China	70 336 000[1]	1 364 799	**1 118 698**
United States	63 021 902[1]	Not available	**1 394 682**
European Union (EU-15)	51 770 011[1]	1 912 355[1]	**1 088 206[1]**
Russian Federation	42 238 000[2]	919 716	**464 577**
Japan	**32 790 000[1]**	**921 173**	**704 949**

Note: 1: 2004; 2: 2003.

Source: OECD Main Science and Technology Indicators database 2007/1; OECD, Education Attainment database, 2006; National sources for China.

Across the OECD, growth rates in professional occupations have outpaced employment growth overall, often by a wide margin. Employment in HRST occupations grew twice as fast as overall employment between 1996 and 2006 in most OECD countries (OECD, 2007a), and demand for skilled workers, and researchers, in particular, is expected to increase further. Real expenditure on R&D increased by around 2% annually between 2000 and 2005 across the OECD, and it is growing rapidly in non-OECD economies (for example, annual growth in China was 18%). Many OECD and non-OECD economies have policy targets to increase R&D intensity further in the coming years (see Section 7.4). While demand for HRST is increasing, it differs across scientific and technological fields. Some OECD countries have identified research priority areas where, despite variations, the broad focus is on information and communication technology (ICT), biotechnology and nanotechnology. However the extent to which these priority choices will affect HRST demand remains unclear.

Moreover, the demand for HRST is evolving, which has implications for supply-side education and training policies. Globalisation is changing firms' R&D strategies and this has a bearing on HRST and TEIs more generally. Multinational enterprises (MNEs) are altering how they innovate and this involves establishing R&D facilities around the world. In many OECD economies significant shares of domestic R&D are performed by affiliates of foreign firms, and firms headquartered in particular OECD countries are performing increasing amounts of R&D outside their home base. Firms appear to be relocating R&D to benefit from knowledge capabilities that are distributed across countries. This reflects the growing complexity of industrial and service sector knowledge bases which requires firms to build global strategies to access relevant R&D results and knowledge capabilities (for a full overview see OECD, 2006a: Chapter 4).

In addition, the expansion of R&D in the services sector and with it, knowledge intensive services (*e.g.* banking, financial and business services, health and education) has also changed the composition of demand for HRST. In 2004, service firms accounted for 25% of business sector R&D in the OECD, which was 11 percentage points higher than in 1995. In several countries, more than one-third of total business R&D is carried out in the services sector: Australia (47%), Norway (42%), Canada and Ireland (39% each), the Czech Republic (38%), the United States (36%) and Denmark (34%) (OECD, 2007a). An implication of change is that priority fields for education and training may be more varied than current R&D policy priorities suggest. In addition, in some of these high-demand fields the content of work is changing, so it is important to combine technical skills with "soft" skills such as problem-solving capabilities as well as communication and management skills (see Figure 7.10 for further details). Ultimately, the successful match between supply and demand for HRST depends on a flexible and rapid response from the higher education system as well as greater institutional and market incentives for mobility.

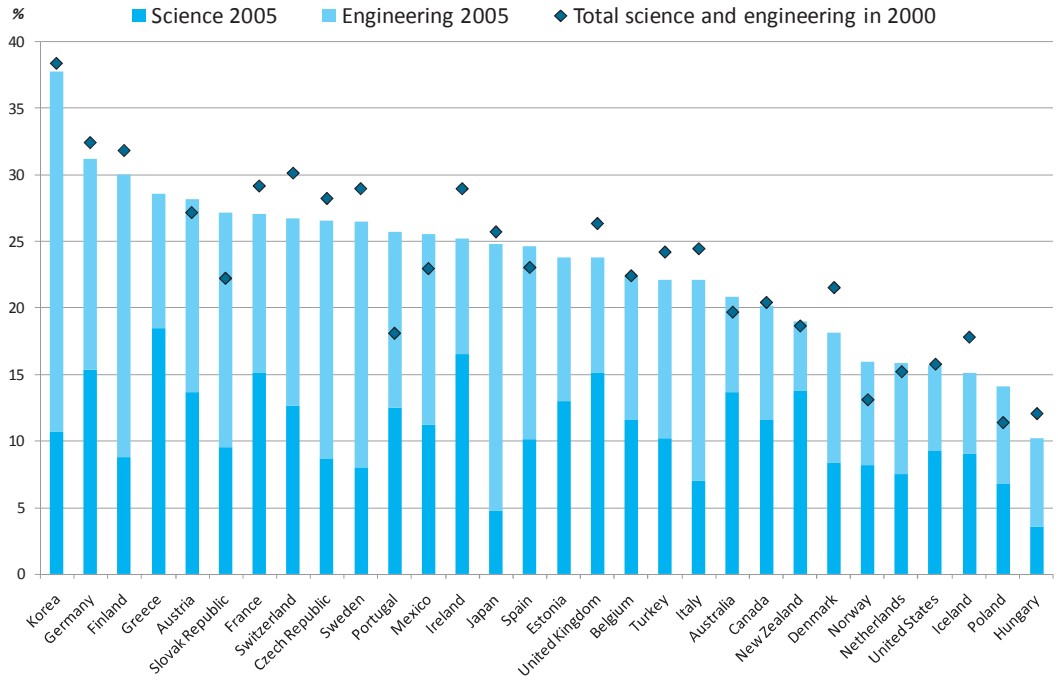
The supply of S&E graduates

Graduates in science and engineering (S&E) are an essential component of HRST, and are particularly important for science-based industries, therefore countries are keen to ensure that supply continues to grow. On average, 25% of the degrees awarded at universities in the OECD area in 2005 were granted in science-related fields (engineering, manufacturing and construction, life sciences, physical sciences and agriculture, mathematics and computing). However, the number and proportion of S&E graduates has changed markedly across countries in recent years. In absolute terms, the number of students graduating in S&E increased with the exception of Germany, where engineering

graduates fell from 38 761 in 2000 to 38 135 in 2005, Hungary (engineering fell from 5792 in 2000 to 4582 in 2005) and Spain (science graduates dropped from 21 679 in 2000 to 20 400 in 2005). However, in relative terms, the share of S&E graduates decreased in 17 of the countries shown in Figure 7.8. The largest drop in the share of S&E graduates (around 3 percentage points or more) occurred in Denmark, Iceland, Ireland, Sweden, Switzerland and the United Kingdom. The share of S&E graduates in Portugal grew from 18% in 2000 to 26% in 2005, whereas growth in Mexico, Norway, Poland and Spain was between 1.5 and 5 percentage points in 2005.

Figure 7.8. Science and engineering degrees, 2000 and 2005

As a percentage of total new degrees



Countries are ranked in descending order of science and engineering degrees as a percentage of total new degrees.

Source: OECD, Education database, 2007.

There are however important differences among countries in terms of the mix of S&T graduates; some countries have more engineering graduates and others have more science graduates. This generally reflects the industrial structure and historical academic traditions, but also higher education and research funding policies. In 2005, around half of the countries shown in Figure 7.8 had a larger share of engineering graduates than science graduates. In some countries, notably Belgium, Germany, the Netherlands, Norway, Poland and Portugal, the picture is more balanced with around half of graduates in each field.

Vocational training and skill development for innovation

Even though S&E graduates are a key component of HRST, persons with technical skills and vocational training are also a central part of the research and innovation system

because innovation requires a variety of skills and capabilities. Innovating firms are not necessarily engaged in the development of radical, new to the world goods, services or processes. They can be reproducing products already on the market, perhaps using off the shelf technology inputs, or making small incremental improvements to existing products. However, this is not an easy or costless process because it requires learning and adaptation within the firm. In fact, innovation involves a range of activities such as tooling up, design work, developing prototypes and testing. These activities are a key function of vocationally trained personnel (for a full overview see Toner, 2007; and Tether *et al.*, 2005).

Box 7.2. Engaging polytechnics in New Zealand

The **New Zealand** *Institutes of Technology and Polytechnics (ITP) Business Links Fund* was designed to foster greater engagement between ITPs and business. The fund provides a resource to build the capability of ITPs to establish and maintain effective working relationships with the business sector.

The most common approaches in ITPs are to develop partnerships, relationships and joint ventures with industry, and involving industry in the development of qualifications and programmes, with the latter often being achieved through advisory groups.

Allocation of the fund was intended to reflect the differences in ITPs' missions, size and stakeholders and not create excessive transaction and compliance costs for ITPs or business. In 2005 a total of NZD 5 million was available for allocation, NZD 6 million in 2006, and NZD 7 million in 2007. A half-year appropriation of NZD 3.5 million is available in 2008.

A range of projects have been funded including:

- research to support business engagement plans, particularly on skill needs analysis;
- building human capability to develop staff skills to work with industry more effectively, including staff secondments to industry;
- increasing the relevance of provision, including student placements and secondments from industry, also known as "experts in residence";
- establishing centres, incubators or clusters for co-operative curriculum development, increasing staff knowledge, provision of work experience for students and opportunities for graduates; and
- improving advice received through programme advisory committees through improved structures, increased resources and additional activities, such as regular forums with business stakeholders and community representatives.

In 2006 the focus for investment shifted from activities designed to improve relationships with business stakeholders, to the adaptation of provision to meet the needs of local business/industry.

Sources: Country Background Report and Country Review Report for New Zealand; and Ministry of Education, New Zealand (2006).

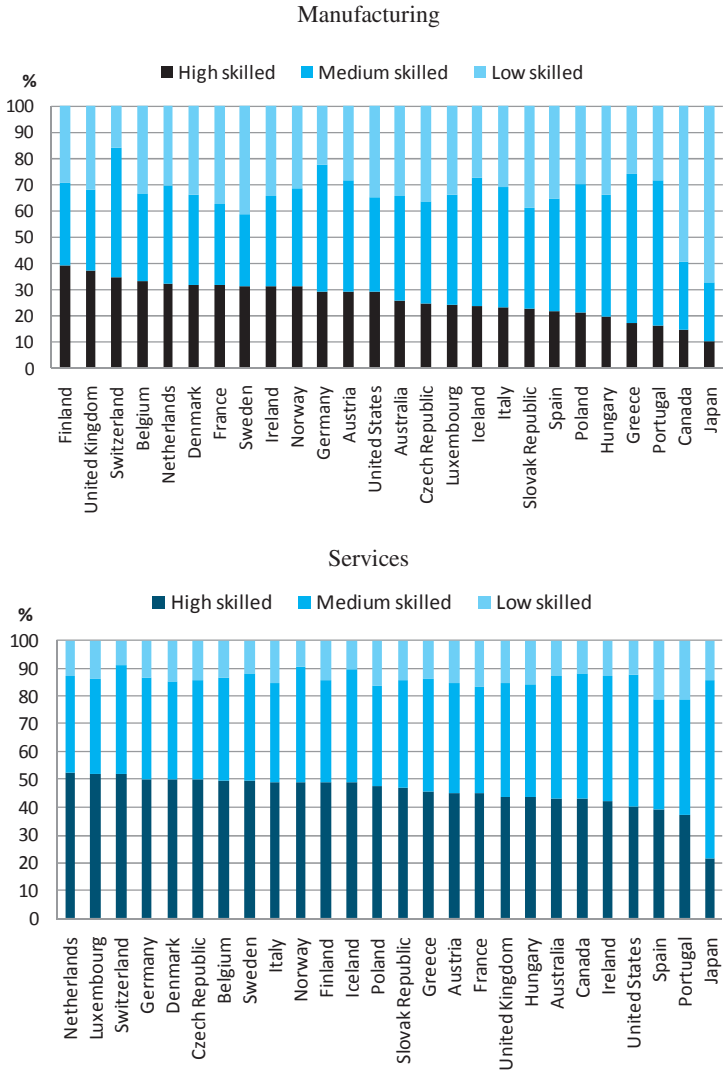
Vocational TEIs are essential for enhancing research and innovation. While many vocational TEIs are not engaged in formal R&D (see Section 7.3.1) their role, particularly in terms of training and knowledge transfer to industry is crucial. In Poland, for example, the review team noted that "the vocational tertiary institutions need to be better integrated into overall strategic thinking. In principle, vocationally and professionally oriented institutions have the potential to form a vital link between tertiary education institutions and industry." Box 7.2 provides a policy example from New Zealand where the *Institutes of Technology and Polytechnics (ITP) Business Links Fund* is designed to strengthen linkages between polytechnics and industry.

It is also important to bear in mind that innovation is not confined to science-based or high technology industries. Low technology sectors (such as food products and beverages

manufacturing and wood product manufacturing) and service-sector firms are also highly innovative (ABS, 2006; Eurostat Community Innovation Survey Database, 2007; Statistics New Zealand, 2004). Figure 7.9 shows that in each country, service industries have a higher proportion of high-skilled employment than manufacturing. In some countries, the service sector has double the share of high-skilled employment than the manufacturing sector.

Figure 7.9. Skill composition of employment in services and manufacturing, 2005

As a percentage of total employees of the industry



Countries are ranked in descending order of high-skilled employees as a percentage of total employees.

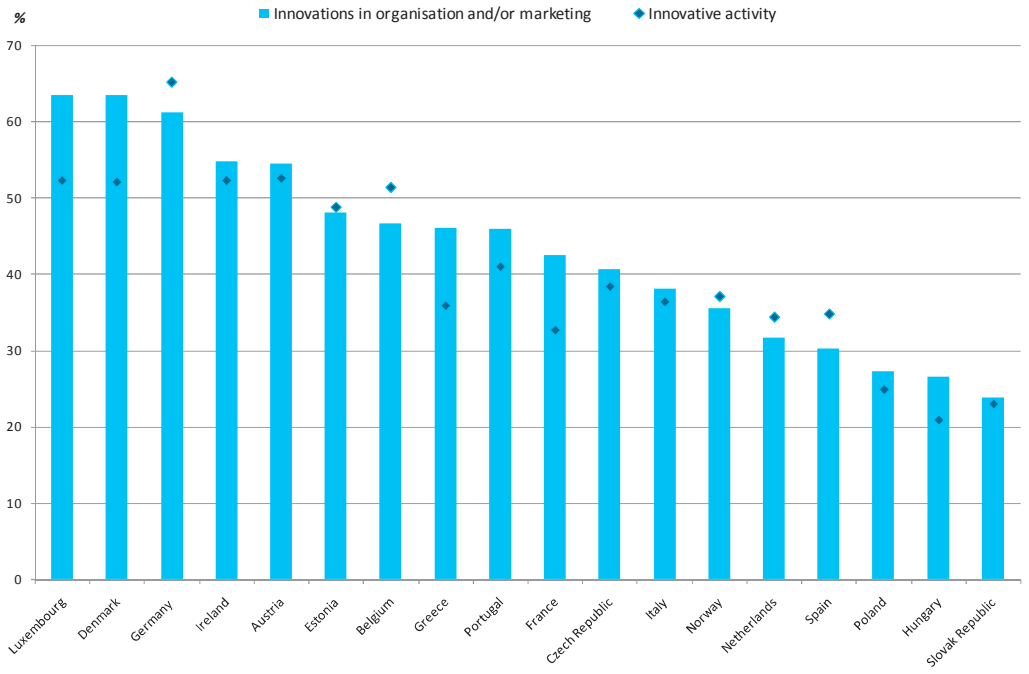
Note: Occupation (ISCO-88): ISCO 1-2-3 are considered as high skilled, ISCO 4-5-6-7 are considered as medium skilled, and ISCO 8-9 are considered as low skilled. These figures represent OECD calculations based on national estimations. The reference year for Japan is 2004. For Japan, the share of the high skilled workers seems to be underestimated because of the difficulties in converting the data from Japan Standard Occupational Classification (JSCO) towards ISCO.

Source: OECD, ANSKILL database, forthcoming.

But looking at the skill composition in services and manufacturing more closely reveals that manufacturing has a higher share of medium-skilled employees than the service sector in many countries (Figure 7.9). Vocational and technical skills are particularly important for innovation in the manufacturing sector because most innovation is incremental (*i.e.* the innovation is new to the firm) and requires adopting and adapting technologies developed outside of the firm.

Figure 7.10. Firms engaged in technological and non-technological innovation, 2002-2004

As a percentage of all firms



Countries are ranked in descending order of firms engaged in innovation as a percentage of all firms.

Note: Technological innovative activity refers to product (good or service) innovation, process innovation and ongoing or abandoned product and/or process innovation activities. Non-technological innovation (*i.e.* innovations in organisations and/or marketing) refers to the implementation of new or significant organisational and/or marketing changes.

Source: Eurostat, Community Innovation Survey Database, 2007.

In recent years measuring non-technological, or organisational innovation, has received increasing attention and it is now routinely included in national innovation surveys (OECD, 2005). As shown in Figure 7.10, the proportion of firms reporting organisational and marketing innovations (*i.e.* non-technological innovation) was higher than technological innovative activity[18] in 12 of the 18 countries. While the difference between these proportions was small, the data indicate that innovation is not only technological in nature. Looking at the sectoral differences reveals that the rate of non-technological innovation is similar in the manufacturing and services sectors in most

18. Innovative activity refers to product (good or service) innovation, process innovation and ongoing or abandoned product and/or process innovation activities.

countries (OECD, 2007a). This shows that organisational innovation is undertaken in both manufacturing and service firms. Innovation surveys in Australia and New Zealand have also found that around 25 to 30% of firms report non-technological innovation (ABS, 2006; and Statistics New Zealand 2007). Management, leadership, marketing, sales and distribution skills are also a central part of the innovation process. Indeed, research conducted by Statistics Canada found that a lack of specialised personnel with sales and marketing skills was a major obstacle in terms of firms commercialising their products, particularly for small and medium-sized enterprises (SMEs) (Rosa and Rose, 2006), and Australia's *Innovation Survey* found that general business skills were the most common skills and capabilities sought by innovating firms (ABS, 2007). Moreover, globalisation and the growth in outsourcing and inter-institutional collaboration has changed the way firms innovate which means employees need to develop new work methods and adapt to research and production methods that are increasingly conducted outside the firm. In fact, the most recent *Community Innovation Survey* defined one aspect of organisational innovation as "new or significant changes in your relations with other firms or public institutions, such as through alliances, partnerships, outsourcing or sub-contracting" (Eurostat, 2004). This further demonstrates that TEIs need to equip graduates with flexible and broad skill-sets to enhance innovation.

R&D personnel

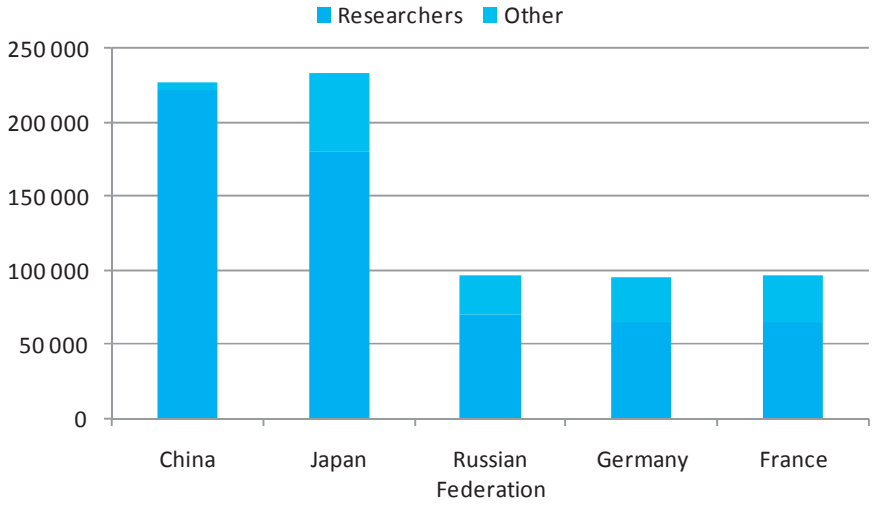
As discussed above, economic development and improving innovative capacity requires a well-trained and skilled workforce. An important occupational category of HRST is R&D personnel and researchers. R&D personnel are of two main types. Firstly, there are people who are directly engaged in R&D activities and secondly there are those providing management, support and ancillary services such as R&D managers, technicians and administrators. Looking at Figure 7.11 reveals the sharp differences across countries in terms of the ratio of researchers to other R&D personnel in higher education institutions. In China, Luxembourg and Portugal researchers account for more than 90% of R&D personnel whereas in Italy and the Netherlands researchers represent 47% and 36% of the share respectively. These differences may reflect the different types of R&D activities and industrial structures in each country.

Countries differ considerably in terms of the size of their population and labour force, therefore looking at the share of higher education researchers in relation to researchers in other sectors provides an indicator of the relative size of this group. It is interesting to note that the share of researchers in the higher education sector decreased in 15 countries between 2000 and 2005 (Figure 7.12). These decreases ranged from a 14 percentage point drop in Mexico to a 0.2 percentage point fall in Turkey. This is despite the fact that R&D expenditure in the higher education sector has grown at a higher rate than in the business and government sectors (see Figure 7.3).

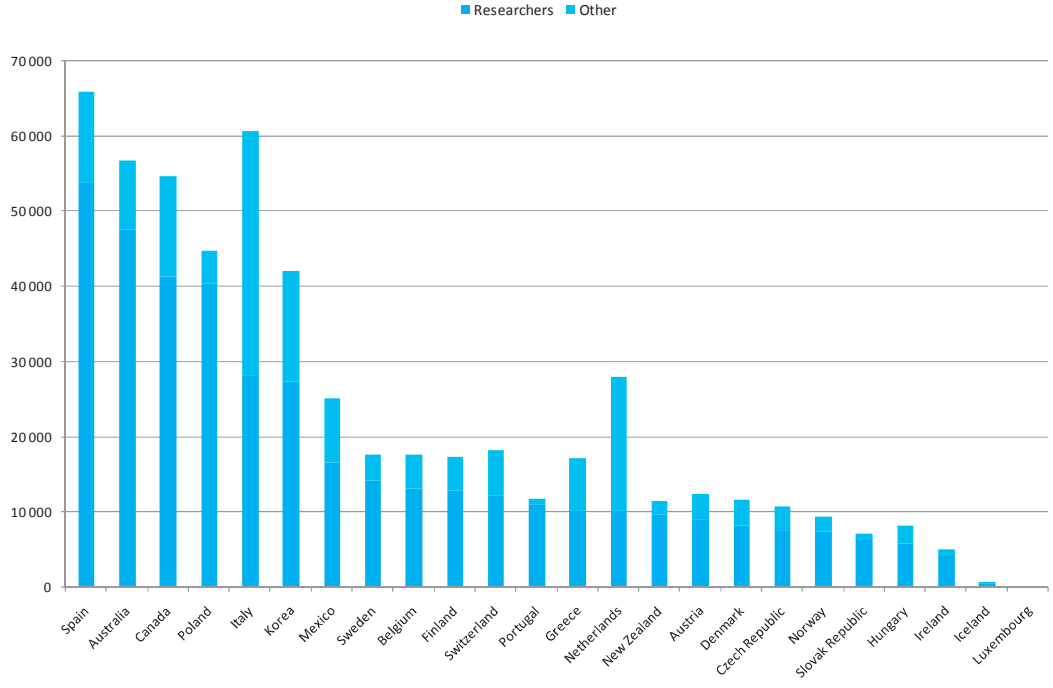
Figure 7.11. Higher education R&D personnel, 2005

Total number (full time equivalent)

More than 70 000



Less than 70 000

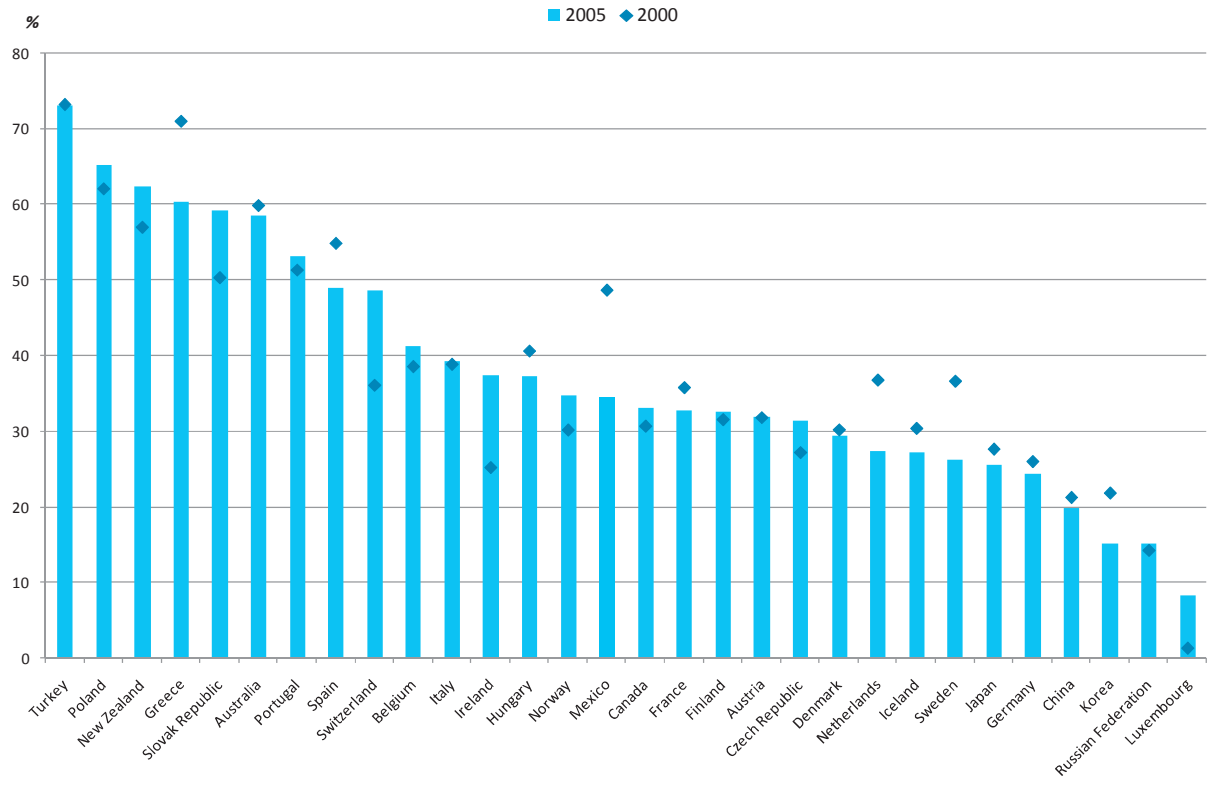


Countries are ranked in descending order of the total number of researchers.

Note: The reference year is 2003 for the Netherlands and New Zealand, and 2004 for Australia, Canada, France, Italy, Switzerland and Turkey. All persons employed directly on R&D are counted as R&D personnel but they can be further classified in terms of researchers (persons engaged in the conception or creation of new knowledge) and other (persons providing direct services on R&D such as technicians, R&D managers and clerical staff) (OECD, 2002).

Source: OECD, Main Science and Technology Indicators Database, 2007-1.

Figure 7.12. Higher education researchers as a percentage of national total of researchers, 2000 and 2005



Countries are ranked in descending order of higher education researchers as a percentage of national total of researchers in 2005.

Note: For '2000' data, the reference year is 1998 for Austria, and 1999 for Denmark, Greece, Iceland, Mexico, New Zealand, Norway, Sweden and the United States. For '2005' data, the reference year is 2003 for the Netherlands and New Zealand, and 2004 for Australia, Canada, France, Italy, Switzerland and Turkey. In the Netherlands, 2005 data excludes doctoral trainees whereas 2000 data includes them.

Source: OECD, Main Science and Technology Indicators Database, 2007-1.

Only 5 countries experienced a fall in the absolute number of researchers in the higher education sector (Germany, Greece, the Netherlands, the Russian Federation and Sweden).[19] The main point here is expenditure on R&D in the higher education sector has increased markedly between 2000 and 2005, and the number of researchers has also experienced strong growth in most countries. Nevertheless, the share of researchers in higher education has dropped as a proportion of the national total in half of the countries shown in Figure 7.12. In some countries, the average annual growth rate of "other R&D personnel" was much higher than the growth of researchers. In Spain, for example, the number of researchers increased by 5% annually between 2000 and 2005 while other R&D personnel grew by 11% annually over the same period. Conversely, in other countries the reverse could be observed. In China, for example, researchers grew by 12% annually whereas other R&D personnel decreased by 14%.

19 In the case of the Netherlands, this fall may be attributed to the categorisation of doctoral trainees – in 2005 they were counted as R&D personnel whereas in 2000 they were counted as researchers.

7.3.3 Maintaining and expanding HRST capabilities[20]

OECD countries face recurrent concerns about a range of HRST issues, primarily to do with recruitment to and participation in scientific careers, and the impacts of globalisation on the levels and mobility of highly skilled people. There are doubts about the ability of OECD countries to expand or even maintain the supply of workers with skills in S&E. Concerns include a decline in the share of science and engineering graduates at the tertiary level. This decline is exacerbated by potential shortages due to demographic changes and the ageing of the academic workforce in many OECD countries (see also Chapter 8). As a result attention has focused on recruitment, including the attractiveness of S&E careers, particularly at the doctorate level, enhancing women's participation in the S&E labour force, and on immigration and international mobility as potential solutions to recruitment problems. These recruitment issues have major implications for research and innovation in TEIs.

The attractiveness of research careers

In recent years the supply and demand for researchers have raised concerns about the attractiveness of research careers. A general concern in industry and academia is the issue of attracting students to research careers, particularly in S&T, because the private returns may be too low relative to other careers. Even though university graduates in S&T tend to have higher employment rates compared to university graduates in general, a research career in the public sector typically requires an advanced degree. However, increases in the number of doctoral holders have not been matched by an expansion of permanent academic positions. In many countries, access to tenure-track positions appears to be declining in favour of non-tenured temporary positions. While careers in research are often considered to be a "vocation" and not ones where monetary rewards are the main impetus, researchers seek to recoup their investments in higher education, including the opportunity costs of forgoing employment for further study. Early stage researchers appear to have more difficulty accessing longer term and stable careers in academia, which threatens the attractiveness of such careers. At the same time, the research profession is also one where non-monetary values such as independence and academic freedom are important. These non-monetary values must not be neglected in efforts to make research an attractive career (for further details see OECD, 2007b and Chapter 8 of this volume).

Doctoral students

While many researchers do not possess doctoral degrees, the supply of doctorate holders and their take-up in the labour market is of special concern. Any policy effort to increase the quality and quantity of university graduates in S&E or output from public research needs to focus on the doctorate trained population. This is because advanced research and a public-sector research career generally requires doctoral trained personnel. Even in industry the doctorate holder is relevant, especially in sectors that draw on the science base. OECD universities awarded some 6.7 million degrees in 2004, of which 179 000 were doctorates (OECD, 2007a). Among the priority issues concerning doctoral students and post-doctorates is their status as students or employees as well as their working conditions, including access to social welfare benefits. Results from the SFRI

20. Part of this Section draws on work conducted by OECD's Committee for Scientific and Technological Policy Working Group on the Steering and Funding of Research Institutions (SFRI).

work show a large variation in the average duration of doctoral programmes ranging from up to three to seven and a half years. The duration is dependent on many factors including country-specific and institutional differences such as the availability of funding for doctoral studies as well as the status/conditions of the doctoral candidate (*e.g.* employee or student). In many countries, the average duration is higher in the humanities and social sciences (for further details see OECD, 2006a and 2007b).

More research is being undertaken to advance our understanding of doctoral careers. The OECD Directorate for Science, Technology and Industry launched a project in 2004 to follow the career paths and mobility of doctorate holders. The project, the Careers of Doctorate Holders (CDH) is being jointly undertaken with Eurostat and the UNESCO Institute for Statistics, and includes data on doctoral holders' demographic and educational characteristics, their labour market situation, international mobility and scientific output. Seven countries (Argentina, Australia, Canada, Germany, Portugal, Switzerland and the United States) participated in the first data collection round in 2005. Five of the seven countries have drawn data from their census and/or labour force surveys, while two countries have dedicated surveys of doctorate holders (for a full overview see Auriol, 2007). Although the coverage of countries is currently limited, it is expected that data will be available for another 20 countries in mid 2008.

Women in Science

Against a background for growing demand for HRST, policy makers have started to pay greater attention to encouraging women to pursue careers in S&E. Women have increased their numbers in higher education and the workforce, but their participation in science education and S&E careers remains low in comparison to men, especially at senior levels, and wide discrepancies exist across scientific fields. OECD countries are addressing the issue of women's participation in science to a varying degree. Most OECD countries have specific programmes in place which aim to achieve a better gender balance in science education and research. Measures range from grants to support positions for women at universities, gender-neutral performance assessment to preferential policies towards equally qualified women candidates and mentoring programmes. On the employment side, equal opportunity policies, flexible working hours, access to childcare and parental leave are used to encourage women to pursue research careers in the public and private sectors (for further details see OECD, 2006b).

International mobility of HRST

Foreign talent contribute significantly to the supply of S&E personnel in many OECD countries, therefore countries are increasingly taking action to attract foreign and expatriate researchers. However, the global market for the highly skilled is becoming more competitive and opportunities in the main supply countries are improving. Countries are competing to attract staff from abroad and they are also competing to retain their best researchers, scientific talent and foreign graduates. Nevertheless, the labour market for the highly skilled, researchers and scientists has become more internationalised, and this phenomenon is likely to continue since countries are developing a range of initiatives to facilitate mobility (see also Chapter 10).

Despite increasing international flows, policy makers cannot ignore the development of human capital at the national level. International mobility is a supplement to domestic human capital creation, not a substitute for it, and policies for mobility need to be

considered against the background of the broader nationally oriented policies to build an innovative environment. Moreover, policies to expand mobility cannot simply focus on monetary incentives. Attractive environments are also important, and these include the availability and quality of the research infrastructure within which highly skilled professionals work. From this perspective, mobility cannot be separated from wider dimensions of support for science and innovation (for further details see OECD, 2008a forthcoming).

7.3.4 Collaboration, IPRs and commercialisation

Collaboration and linkages with TEIs

Collaboration between TEIs and industry is vital for generating technological spillovers, knowledge diffusion and innovation. Although the literature on university-industry collaboration and linkages tends to focus on the analysis of joint R&D projects, both innovation surveys and more specific collaboration surveys have demonstrated that these linkages are much broader than R&D joint ventures, and often rest on informal relationships (OECD, 2001). Firms, including those in low-technology sectors, collaborate with TEIs to access research results, specific technical knowledge, skills and competencies (Basri, 2006). The benefits of collaboration are often mutual and include staff mobility, bi-directional knowledge flows and enhanced learning across institutions and sectors.

Moreover, collaboration and linkages between industry and TEIs may enhance a firm's absorptive capacity and the ability to access and utilise external knowledge generated outside the firm. In order to innovate, firms must be able to learn and create new knowledge. This can rest on internal R&D, but it also requires the ability to search, identify, access, absorb and apply information from external sources, and then combine this new knowledge with existing knowledge in the firm. While R&D conducted within the firm generates innovations it also develops a firm's ability to use external information: Cohen and Levinthal (1989) refer to this as absorptive capacity. Collaboration with TEIs can expand firms' capabilities and innovation potential, thus the importance of absorptive capacity is relevant not just within the firm but for the wider economy as a whole.

TEI-industry linkages occur through a number of channels and include joint research projects, consultancy and contract work, training and other interactions, such as attending meetings and conferences. Even though there are numerous methods for interaction, research has shown that these linkages are skewed since a small number of researchers are involved in a large number of interactions (Balconi *et al.*, 2004), and there are differences according to scientific discipline (D'Este and Patel, 2007).

Box 7.3 provides examples of a range of policies that promote linkages between TEIs, industry and public research organisations. In the case of Portugal, the *Partnerships for the Future* programme has an international focus that brings together research teams from around the world. In the Netherlands and Norway, the programmes promote the utilisation of public research results, and specifically address the improvement of knowledge utilisation in SMEs. The *Co-operative Research Centre* programme in Australia fosters collaborative R&D as well as producing graduates with industry skills. All of these programmes have been developed with the intention of expanding and strengthening interactions between TEIs, other public research organisations and industry.

Box 7.3. Promoting linkages in Australia, the Netherlands, Norway and Portugal

The *Co-operative Research Centre* (CRC) programme in **Australia** was established in 1990 to strengthen the effectiveness of Australia's R&D by linking researchers with industry. A CRC is a company formed through a collaboration of businesses and researchers. This includes private sector organisations (both large and small enterprises), industry associations, universities and government research agencies such as the Commonwealth Scientific and Industrial Research Organisation (CSIRO), and other end users. A selection round for new CRCs is usually held every two years. It is a competitive process with applications selected on the basis of merit.

The close interaction between researchers and the users of research is a key feature of the programme. Another feature is the industry contribution to CRC education programmes and the strong education component with a focus on producing graduates with skills relevant to industry needs. Since the start of the programme, over 3000 under-graduate, post-graduate and doctoral students of CRCs have taken up employment with industry and other end users.

The Australian Government funds CRCs for up to seven years. Since the programme began, 158 CRCs have been funded. There are currently 56 CRCs operating in 6 sectors: environment (13), agriculture and rural-based manufacturing (15), information and communication technology (5), mining and energy (7), medical science and technology (8) and manufacturing technology (8).

In the **Netherlands**, the Ministry of Economic Affairs offers a "knowledge vouchers" system. Knowledge vouchers are, in essence, a subsidy that enables SMEs to buy research services from universities and from other types of institutes including large firms, in order to improve innovation processes, products and services. This system is designed to strengthen the relation between companies and knowledge institutes, including TEIs. It is expected that these knowledge vouchers not only promote innovation but also foster other relations, such as stronger linkages between education providers and the labour market.

The value of the large "knowledge voucher" is EUR 7500, of which SMEs contribute one third themselves. As of 2006, there will also be smaller knowledge vouchers representing a value of EUR 2500 to stimulate SMEs to become acquainted with research institutes, and these are known as "sniffing vouchers".

At the commencement of the scheme the number of vouchers was 100. Following initial demand they were increased to 6000. Knowledge vouchers have been very well received in the business community. Many employers have been using this subsidy and relations with knowledge institutes have been intensified.

The **Norwegian** VRI-programme is a new funding initiative for regional R&D and Innovation established to strengthen innovative capacity and promote new forms of cooperation within the regions of Norway. The programme is administered by the Research Council of Norway. Its aim is to generate regional mobilisation within priority areas such as the environment, tourism, the maritime sector, and the marine sector. One of the instruments implemented to increase cooperation between industry and the R&D sector is the placement of researchers into companies for a given period of time to take part in product development activities. Similarly, company employees may be deployed to work on a research project at a university, college or research institute.

In 2006, the Norwegian Research Council merged several smaller industrial R&D programmes into a larger, general programme – the Programme for User Driven Innovation Projects (BIA). The aim is to reduce administrative costs and to make it easier for the applicants to apply for R&D grants. The programme complements the Research Council's other instruments for funding industry-oriented research.

Another programme in Norway is the SkatteFUNN scheme which gives Norwegian enterprises tax credit for investments in research. All enterprises operating in Norway are eligible for a deduction in tax payable for expenses in approved R&D projects. About 50% of the companies making use of the scheme have fewer than 10 employees, and the scheme is used in all parts of the country and across many sectors. The tax credit is larger for smaller and medium sized companies than for big companies. An evaluation of the SkatteFUNN scheme found that it is most effective for small businesses, in companies where education levels among the workforce are relatively low, and in companies with low R&D intensity. The scheme also has a greater impact on businesses located in more outlying areas of the country. The likelihood that these groups will initiate R&D activity has increased since the scheme was introduced in 2002.

During 2006-2007 the **Portuguese** Government launched a *Partnerships for the Future* initiative. It is based on new international partnerships involving Portuguese and foreign universities, research institutions and companies in specific thematic areas concerning the development of post-graduate and R&D programmes. The initial partnerships were established with the:

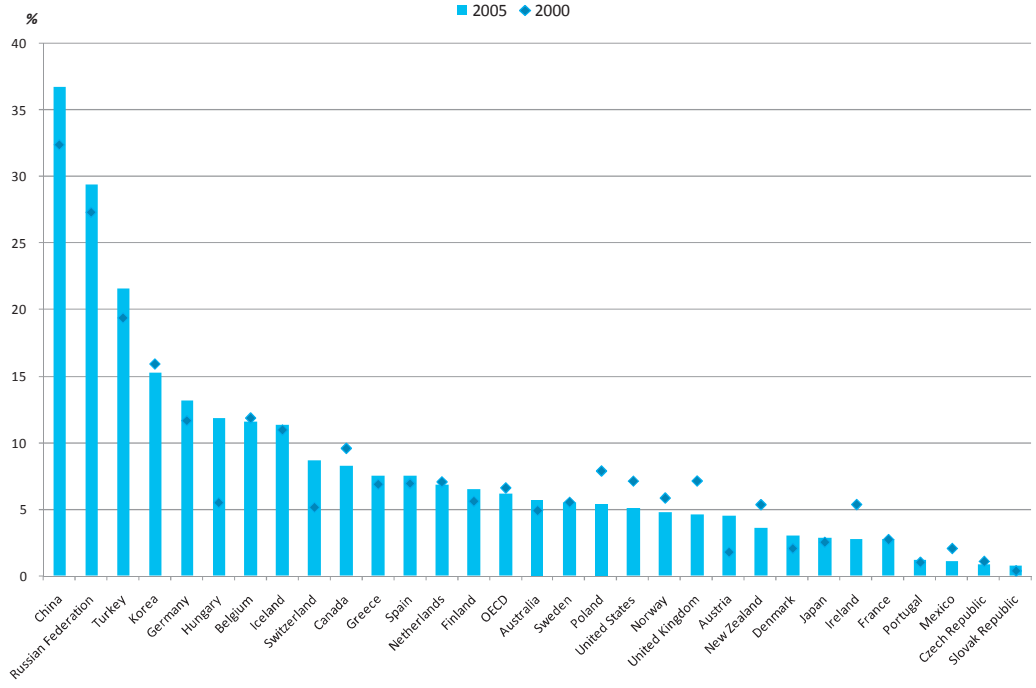
- Massachusetts Institute of Technology (MIT-Portugal Programme), focused in the areas of energy systems, transports systems, advanced manufacturing and bioengineering;
- Carnegie Mellon University (CMU-Portugal Program), in ICT;
- University of Texas at Austin (UTAustin-Portugal Program), in digital media, advanced computing, mathematics and technology commercialisation; and
- Fraunhofer Society, including the establishment of the first Fraunhofer institute outside Germany, in the area of technologies, contents and services for ambient assisted living.

The overall goals of the initiative include launching and promoting new research-based consortia at a national level together with a large number of research centres and associated laboratories as well as establishing a productive working relation between universities, research institutions and companies.

Sources: Review materials and National Programme Web sites.

The share of higher education R&D expenditure financed by industry provides an indicator of linkages between the two sectors. Figure 7.13 shows there is wide variation across countries ranging from 37% in China to 1% in the Slovak Republic in 2005. Across the OECD, industry financed R&D in higher education institutions reached 6.1% in 2005, which was slightly lower than the share in 2000 (6.6%). Nevertheless, the share across the OECD has remained fairly constant since 1990 moving between around 6% and 7%. Hungary experienced the highest growth with industry financing increasing by 6.2 percentage points between 2000 and 2005. Conversely, in Ireland, Poland, the United Kingdom and the United States the share of industry financing dropped by more than 2 percentage points in each country.

Figure 7.13. Percentage of Higher Education R&D financed by industry, 2000 and 2005



Countries are ranked in descending order of the percentage of higher education R&D financed by industry in 2005.

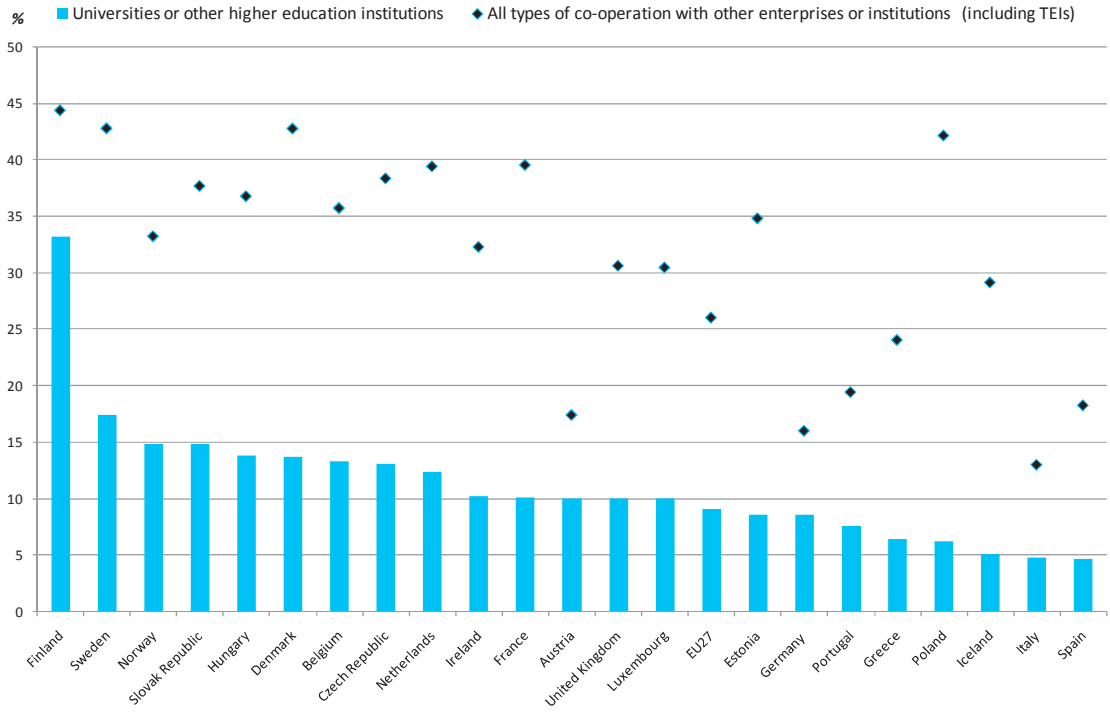
Note: For '2000' data, the reference year is 1998 for Austria, and 2001 for Greece, Iceland, New Zealand, Norway and Sweden. For '2005' data, the reference year is 2003 for Belgium, Greece, the Netherlands, New Zealand and Sweden, and 2004 for Australia, Denmark, France, Germany, Spain, Switzerland and Turkey.

Source: OECD, Main Science and Technology Indicators Database, 2007-1.

Results from innovation surveys are another useful data source that can be used to analyse linkages between TEIs and industry. Firms participating in the survey are asked if they have co-operated with a range of external partners during the innovation process. As shown in Figure 7.14, collaboration with enterprises or institutions is widespread among innovating firms and reaches a high of 44% in Finland. All countries report collaboration rates of 10% or more. Figure 7.14 also shows the proportion of innovating firms collaborating with universities or other higher education institutions. The results across countries vary from 33% in Finland to 5% in Spain, which reflects the different structure of innovation systems across countries. In New Zealand, 7% of businesses reported co-operative arrangements with universities or polytechnics (in the last two financial years at August 2005, Statistics New Zealand, 2007), whereas in Australia 2.3% of businesses collaborated with a university or other higher education institution (between 2004 and 2005, ABS, 2007). It has been argued that these types of collaboration results are particularly noteworthy because they indicate a strong role for TEIs in the innovation process. This is because most innovation is incremental and involves small-scale change which would not necessarily require university-type inputs. Therefore it shows that universities are not only collaborating in research-based radical innovations but are contributing to "everyday" incremental innovation as well (Basri, 2001).

Figure 7.14. Innovating firms co-operation in innovation with other firms or non-commercial institutions (including TEIs), 2002-2004

As a percentage of all innovating firms



Countries are ranked in descending order of co-operation with universities or other TEIs.

Note: Co-operation in innovation, by innovating forms, refers to active participation in innovation activities with other firms or non-commercial institutions. Co-operation can take place with more than one partner.

Source: Eurostat, Community Innovation Survey Database, 2007.

Firms are also asked to identify which type of collaboration partner was most valuable for their innovation activities. Once again, differences across countries were evident. In Greece, 3.6% of firms reported that universities or other higher education institutions were the most valuable co-operation partner for innovation activities while in Slovakia the result was 0.6%. In comparison, suppliers of equipment, materials and components or software were seen as the most valuable partner in most countries, followed by clients or customers. Government or public research institutes scored lower results than other types of partners, including TEIs in almost all countries.[21] These results are not surprising given the different roles collaboration partners play in the innovation process.

As Figure 7.15 shows, large firms reported more collaboration with TEIs than small firms. This may reflect the higher rate of new product development in large firms as well as easier access to collaboration partners and more resources. The variation among countries is noteworthy. In Finland, nearly 70% of firms with 250 or more employees co-operated with a TEI, whereas in Greece 11.5% of large firms were co-operating with a TEI. The point to note here is that apart from Belgium, Denmark, Finland, Norway, the Slovak Republic and Sweden, co-operation between small firms and TEIs is under 10% in each country and it drops below 5% in Greece, Italy, Poland, Portugal and Spain. A similar pattern emerges in medium-sized firms with between 50 and 249 employees. In most countries, less than 20% of medium-sized firms collaborate with TEIs for innovation.

While collaboration is an important mechanism enabling the transfer of knowledge, human mobility is another way in which knowledge is spread because people hold tacit knowledge. This is because tacit knowledge is not readily transferable and has been described as "know-how", or the skills or capability to do something. Tacit knowledge is transmitted via communication between people, or through "learning-by-doing" (Lundvall and Johnson, 1994). It also involves learning-by-using and learning-by-interacting. In comparison, codified knowledge is embedded in artefacts (books, journals, machinery, patents *etc.*) so the dissemination mechanisms are quite different. This is why mobility between the public and private sector is important: it facilitates knowledge transfer and the development of cross-sector skills. Job mobility via the placement of researchers and research students in and out of the private sector may also enhance absorptive capacity. In Europe, the Aho report proposes that "*ten per cent of the workforce in each year should be moving"* (Aho, 2006), however, the basis of advocating 10% is not apparent. In 20 of the 27 European Union countries, 6.1% of employed HRST changed jobs between 2004 and 2005, which represented nearly 3 million HRST in absolute terms. Within the EU-27, Denmark had the highest proportion of HRST job-to-job mobility in 2005 at 10.2%, and the United Kingdom followed with 9.5% (Meri, 2007). Of course inter-institutional mobility is not limited to flows between TEIs and firms because mobility within the public sector (*i.e.* between TEIs and public research organisations) is also important.

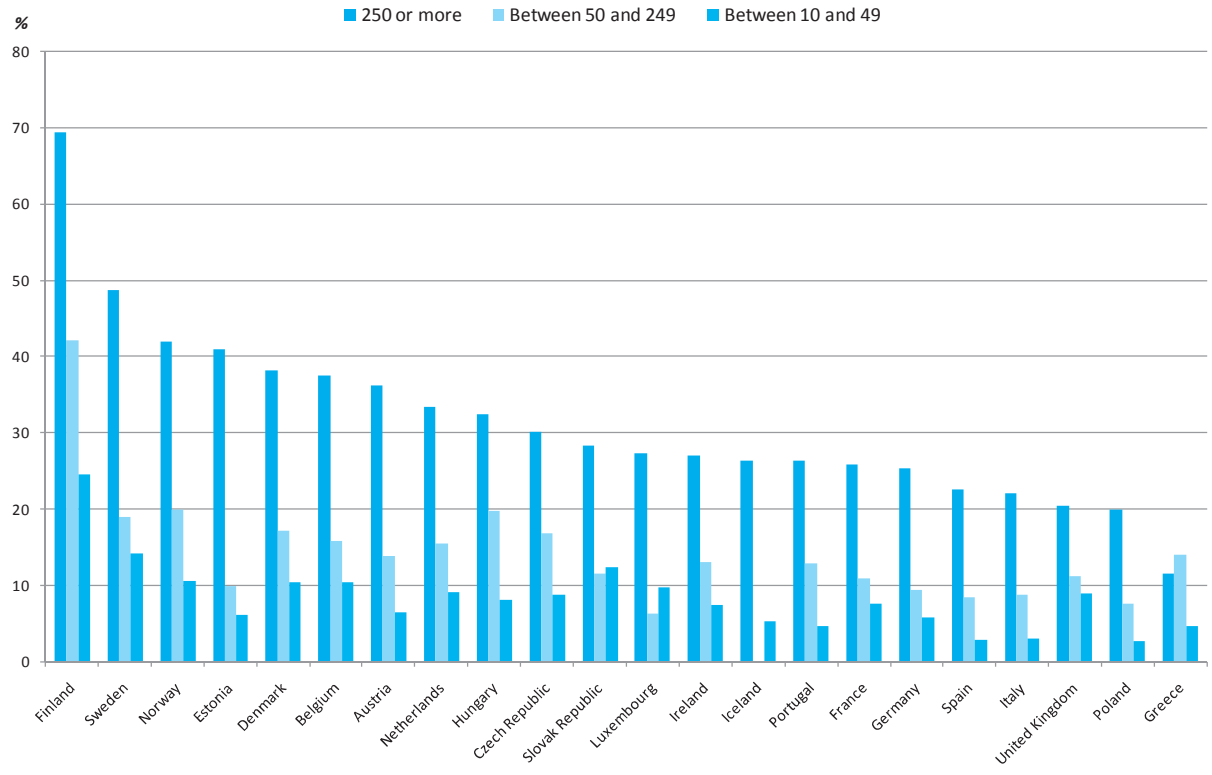
Preliminary results from the OECD's survey of the Careers of Doctorate Holders (CDH) for a subset of countries indicate that doctorate holders in the United States are more mobile than those in Germany: 62% of doctorate holders in Germany have been

21. Other types of partners identified in the survey include enterprises within the enterprise group, competitors, consultants, commercial labs or private R&D institutes (Eurostat, 2007, Community Innovation Statistics Database).

with the same employer for at least five years compared to 55% in the United States. Mobility in the United States is lower in the higher education sector, however: 60% of United States' doctorates in academia have been with the same employer for at least five years compared to 50% in other sectors (Auriol, 2007).

Figure 7.15. Innovating firms co-operation in innovation with universities or other tertiary education institutions by firm size, 2002-2004

As a percentage of all innovating firms



Countries are ranked in descending order of co-operation with universities or other tertiary education institutions by innovating firms with 250 or more employees.

Source: Eurostat, Community Innovation Survey Database, 2007.

Knowledge transfer mechanisms: the role of IPRs and commercialisation

A key policy focus in many OECD countries over recent years has been on enhancing the capacity of TEIs to contribute more actively to innovation and knowledge transfer through a sharper definition of intellectual property, followed by its commercialisation. In the past, commercialisation was not a priority compared with teaching and research functions. Policy mechanisms such as the Bayh-Dole Act in the United States not only made it legally possible for universities to patent results from publicly-funded research, they encouraged the idea that patenting ought to be a major function of universities. However patents have to be commercialised, and throughout the world universities have been establishing technology transfer offices (TTOs) which seek profitable links with industry through the licensing of university-produced knowledge. TTOs are meant to

increase knowledge diffusion between higher education institutions and industry. Yet the record in this area is somewhat mixed. University patenting has increased in many OECD countries, although it was already on an increasing trajectory before Bayh-Dole (Mowery and Ziedonis, 2002). In addition, the record of TTOs has not been one of great success because results have been skewed, with only a few discoveries yielding major revenue flows. Furthermore, the results are highly skewed across institutions since a small number of institutions account for the majority of patents (AUTM, 2007; NSF, 2008).

More recently, it has become clear that there are complex trade-offs between providing incentives for universities and firms to develop intellectual property rights (IPRs) versus creating incentives for diffusion of knowledge across the economy (Mowery and Sampat, 2004). Improving knowledge transfer between universities and industry is widely recognised as important, however, although commercialisation measures have been widely adopted, they are beginning to come under question. In Australia, for example, the Productivity Commission's (2006) study of the science and innovation system has been critical of the effects of commercialisation as a policy objective, and advocates a wider approach to university-industry links.

The idea that stronger IPR regimes for universities will strengthen commercialisation of university knowledge and research results has been in focus in OECD countries in recent years. Indeed, Table 7.2 shows that countries have developed national guidelines on licensing, data collection systems and strong incentive structures to promote the commercialisation of public research. More than half of the countries shown in Table 7.2 have a national policy or guidelines targeted at encouraging the commercialisation of publicly-funded R&D, which allows exclusive and/or non-exclusive licensing. The incentive structures to promote the commercialisation of public research are particularly strong. Of the 23 countries shown in Table 7.2, 19 have incentive systems for their TTO professionals, such as granting staff a proportion of licensing revenue. Likewise, 19 countries allow researchers to return to academia with the same employment conditions after a period in the private sector to create a spin-off company, although some countries have time restrictions and the decision is at the discretion of the institution. The monitoring of commercialisation in TEIs has strengthened in recent years since 11 countries regularly collect data on licensing activities and four countries plan to start collecting data in the future. Six countries (Greece, the Netherlands, New Zealand, Poland, Portugal and Sweden) do not collect data and have no plans to collect it on a regular basis in the future. However, in the Netherlands and New Zealand data on patents are collected, but not on licensing, and in New Zealand a one-off survey of all commercial activities was conducted in 2002. Given the emphasis placed on the commercialisation of TEI research it is important to collect data and monitor developments in this area.

Even though the policy issue of stronger IPR for universities is prominent, it contains a number of problems however. Firstly, the most important of these is that commercialisation requires secrecy in the interests of appropriating the benefits of knowledge, whereas universities may play a stronger role in the economy by diffusing and divulging results. It should be remembered that IPRs raise the cost of knowledge to users, while an important policy objective might be to lower the costs of knowledge use to industry. Open science, such as collaboration, informal contacts between academics and businesses, attending academic conferences and using scientific literature, can also be used to transfer knowledge from the public sector to the private sector. Moreover, industry financed R&D is usually aimed at obtaining up-to-date knowledge, solutions to

specific problems and access to students rather than specific inventions (Mansfield and Lee, 1996).

Secondly, there have been very few universities worldwide that have successfully been able to generate revenues from patents and commercialising inventions, partly because a very small proportion of research results are commercially patentable. In addition, pursuing commercial possibilities is only relevant for a select number of research fields, such as biomedical research and electronics. Other areas such as the humanities, social sciences and astronomy for example, do not engage in significant commercial activity.

Thirdly, the commercial exploitation of inventions and patents is itself a complex process requiring expertise that universities researchers seldom have, and that universities can themselves develop only by spending large sums to develop TTOs. Mowery and Shane (2002) point out that "management by universities of technology licensing activities requires a set of skills that are extremely rare within universities and in short supply more generally". As a result, the economic benefits of university-based research are quite uncertain, and many universities that have tried to take this route have lost money. The prominent international examples where universities have contributed to commercially-valuable research have been initiated by private corporations, not by universities themselves (Bok, 2003).

The failure to commercialise public science is known as the "European paradox", but this belief is not confined to Europe. Policy makers in Australia and Canada, for example, also share the view that their public research is of high quality but it is not commercialised (DEST, 2003; Industry Canada, 2007). In contrast, the United States is seen as the exemplar. The reasons attributed to the failure to commercialise scientific research include a lack of entrepreneurial skills, particularly among academics, a lack of experienced managers, mobility barriers between the public and private sector, and weak IPRs for TEIs inventions. Therefore, a range of policy initiatives have been developed to improve the commercialisation of public science. These include courses on entrepreneurship, subsidies for the establishment of TTOs and changes to university IPRs.

However, the empirical evidence suggests the "European Paradox" is misguided. Dosi and colleagues (2005) point out there are large differences across scientific and technological fields, but they find no evidence to support the European paradox. Research by Arundel and Bordoy (2006)[22] demonstrates that United States universities lead on only one commercialisation indicator, which is the number of patent grants (8.8). Nevertheless, the United Kingdom was not far behind (6.6), and it has the highest number of invention disclosures, licenses executed and start-up companies. Canada leads on the number of priority patent applications. While Europe and Australia do not lead on any particular indicator, the results are close. For example, the United Kingdom scored 3.5 on the number of start-ups, whereas the United States scored 1.1, Europe had 2.8 and Australia scored 2.1 (data were unavailable for Canada).[23] Furthermore, Crespi and colleagues (2006) conclude that patenting in European universities is not significantly behind American universities once the data have been corrected to account for different ownership structures between the regions.

22. Six performance indicators are presented using results from public science commercialisation surveys in Australia, Canada, Europe, the United Kingdom and the United States.

23. The indicators are based on the number per 100 million US PPP$ research expenditures.

Table 7.2. Commercialising public research, 2007

	Are there national policies/guidelines on licensing the results of publicly-funded research?	Is there a system to collect data on a regular basis on the licensing activities of public and/or private TEIs or research organisations to which TEIs contribute?	Incentives structures	
			Does the legal framework allow public and/or private TEIs or research organisations to which TEIs contribute to introduce incentive systems for their TTO professionals?	Does the legal framework allow researchers to return to academia with the same employment conditions after a period in the private sector to create a spin-off company?
Australia[1]	Yes, allowing exclusive and non-exclusive licensing at the discretion of TEIs	Yes, regular survey (biennial)	Yes, fully at the discretion of TEIs[2]	Yes, at the discretion of TEIs (in most cases, it involves compliance with 'conflict of interest' policies upon return, and time restrictions on the period in the spin-off company)
Belgium (Flemish Community)	Yes, allowing exclusive licensing at the discretion of TEIs	Yes, regular survey (on a continuous basis)	Yes, fully at the discretion of TEIs	Yes, with time restrictions
Chile	No	*m*	*m*	*m*
Croatia	Yes, allowing exclusive and non-exclusive licensing	Not yet, but it is planned	Yes, fully at the discretion of TEIs	Yes, with time restrictions
China	Yes, allowing exclusive and non-exclusive licensing	Yes, regular survey (annual)	Yes, fully at the discretion of TEIs	No
Czech Republic	Yes, allowing non-exclusive licensing[3]	Yes, regular survey (annual)	Yes, fully at the discretion of TEIs	Yes, without restrictions
Estonia	Yes, allowing exclusive and non-exclusive licensing	Yes, regular survey (annual)	Yes, following national guidelines (at the discretion TEIs)	Yes, without restrictions
Finland	Yes, allowing exclusive licensing	Not yet, but it is planned	Yes, fully at the discretion of TEIs	Yes, at the discretion of TEIs
Greece	Yes, allowing exclusive and non-exclusive licensing	No	No	No[4]
Iceland	Yes, allowing exclusive and non-exclusive licensing	Not yet, but it is planned	*m*	Yes, with time restrictions
Japan	Yes, allowing exclusive and non-exclusive licensing (at the discretion of TEIs)	Yes, regular survey (annual)	Yes, fully at the discretion of TEIs	Yes, without restrictions
Korea	Yes, allowing exclusive and non-exclusive licensing	Yes, regular survey (annual)	Yes, following national guidelines	Yes, with time restrictions
Mexico	No	*m*	Yes, following national guidelines	Yes, with time restrictions
Netherlands	No	No[5]	Yes, fully at the discretion of TEIs	Yes, without restrictions
New Zealand	Yes, allowing exclusive and non-exclusive licensing[6]	No[7]	Yes, fully at the discretion of TEIs[8]	Yes, at the discretion of TEIs
Norway	No[9]	Yes, regular survey (annual)[10]	No	Yes, with time restrictions (at the discretion of TEIs)
Poland	No[11]	No	Yes, fully at the discretion of TEIs	Yes, without restrictions
Portugal	Yes, allowing exclusive and non-exclusive licensing	No	Yes, fully at the discretion of TEIs	Yes (negotiated on a case by case basis)
Russian Federation	Yes, allowing exclusive and non-exclusive licensing[12]	Not yet, but it is planned	Yes, fully at the discretion of TEIs	*a*[13]
Spain[1]	No	Yes, regular survey (annual)	Yes, fully at the discretion of TEIs or regional governments	Yes, with time restrictions
Sweden	No[14]	No	Yes, fully at the discretion of TEIs	Yes, without restrictions
Switzerland	Yes, other[15]	Yes, regular survey (annual)	Yes, fully at the discretion of TEIs	Universities: yes, without restrictions Universities of applied sciences: yes, at the discretion of institutions
United Kingdom	No	Yes, regular survey (annual)	Yes, fully at the discretion of TEIs	Yes, at the discretion of TEIs[16]

Definitions: This table addresses existing national policies targeted at encouraging the commercialisation of publicly-funded R&D results achieved by public or private TEIs or research organisations to which TEIs contribute (*e.g.* centres of Excellence, research consortia *etc.*)
Publicly-funded research refers to research activities funded by public authorities at all levels of government (central, regional, local) and in different areas (*e.g.* Research, Science, Technology and Industry), or by intermediate agencies channelling public funds to TEIs and research organisations.
Licensing the results of publicly-funded research refers to the commercialisation of publicly-funded R&D results achieved by public or private TEIs or research organisations to which TEIs contribute through a formal contractual agreement transferring the right to use a technology from the inventor to the licensee.
Exclusive licensing refers to licensing conditions whereby a single entity (firm, foundation, other TEI or research institute) purchases the intellectual property rights and obtains exclusive rights to use the R&D results for a fixed period. Exclusive licensing grants monopoly rights to the purchasing entity.
Non-exclusive licensing refers to licensing conditions whereby all entities (firm, foundation, other TEI or research institute) willing to purchase the intellectual property rights are allowed to use the R&D results for a fixed period. Non-exclusive licensing does not grant any monopoly status to the purchasing entities.
System to collect data on a regular basis refers to surveys on the commercialisation of intellectual property such as the AUTM (Association of University Technology Managers) survey in the United States or the ProTon or ASTP surveys in Europe.
TTO stands for 'Technology Transfer Office' and refers to offices which are engaged in intellectual property management of innovations and technologies developed by public and/or private TEIs or research organisations to which TEIs contribute. TTO professionals perform intellectual property management activities such as the identification, documentation, evaluation, protection, marketing and licensing of technologies, as well as the management of intellectual property on a daily basis.
Incentive systems refer to schemes designed to provide TTO professionals with incentives to license research results and innovations, such as granting them a percentage of licensing revenue.
Spin-off company refers to firms created by academics and/or research staff on the basis of an innovation licensed from their TEI. Spin-off firms derive a significant proportion of their commercial activity from the application or use of a technology and/or know-how licensed from the TEI.

Notes: *a*: Information not applicable because the category does not apply; *m*: Information not available; *TEI*: Tertiary education institution
1. Information concerns universities only and does not account for the non-university sector.
2. Some publicly funded research organisations may need to seek Ministerial approval before introducing incentive schemes for TTO professionals.
3. If more than 50% of the funds come from public sources, the licence should be open to public disposal.
4. According to the legal framework, researchers are only allowed to work on a part-time basis for a spin-off company. Few TEIs have created spin-off companies.
5. The Centre for Science and Technology Studies at Leiden University collects data on patents, but not on licensing.
6. The governing legislation requires TEIs to constrain investments to the same range of low-risk investments. However, the Minister of Finance can approve investments outside the legislated "low-risk" parameters.
7. There is no formal survey sponsored by the Ministry of Education or the Tertiary Education Commission. However, a one-off survey of all commercial activities was conducted by the Tertiary Advisory Monitoring Unit (TAMU) of the New Zealand Ministry of Education in 2002.
8. New Zealand TEIs have autonomy in employment matters. No national guidelines are known to have been developed in this area.
9. TEIs are responsible for the development of guidelines on licensing the results of research, including publicly-funded research. However, the Research Council of Norway was considering developing national licensing guidelines at the time this Table was prepared.
10. This data collection is part of the budget reporting.
11. According to the Polish Law on industrial property, the contractual relations with other entities regarding licensing R&D results are at the discretion of the TEI.
12. In practice, non-exclusive licensing and license concession are used frequently.
13. The creation of spin-off companies is not allowed in State institutions.
14. There are no rules on licensing the results of publicly-funded research conducted in public or private TEIs as the researchers have ownership of the results.
15. TEIs have ownership of the results, but inventors can obtain the intellectual property rights that have note been used.
16. It would depend on the terms and conditions of employment at the individual TEI.

Source: Derived from information supplied by countries participating in the project. The table should be interpreted as providing broad indications only, and not strict comparability across countries.

Tether and colleagues (2005) remind us that the public science base is funded by national taxpayers and so it is not unreasonable to expect this research to be relevant to national business interests. Indeed, these authors argue that "currently, a significant proportion of the science budget is spent on activities which contribute to a global pool of knowledge which is unlikely to be commercialised in the UK" (Tether *et al.*, 2005). However, it should be remembered that all countries have the benefit of tapping into the global pool of knowledge and utilising and commercialising knowledge developed around the world. This suggests the policy focus should also be directed towards improving access to open science. Moreover, other forms of knowledge transfer are important, and D'Este and Patel (2007) argue that government policy has been too focused on patenting and spin-off activity, and this can obscure "other types of university-industry interactions that have a much less visible economic pay-off, but can be equally (or even more) important, both in terms of frequency and economic impact."

7.4 The governance of TEI research: Systems in transition

With respect to research performance, the reform of TEI governance methods has focused on four broad actions across OECD countries in recent years. These actions are, firstly, attempts to focus research efforts around explicitly chosen priority areas; secondly, changes in funding mechanisms aimed at raising research quality; thirdly, a stronger emphasis on research evaluation; and fourthly, building critical mass. In some countries these shifts have been accompanied by efforts to widen the channels of funding, with attempts to increase the links between universities and industry, and to make universities more responsive to industrial needs by making them more dependent on business funding of research. These changes have multiple sources and objectives, but a central motivation has been the aim of increasing the innovation effectiveness of TEIs' R&D.

7.4.1 The research and innovation policy framework

Across the OECD and non-member economies national governments continue to develop national strategies, plans and frameworks for planning, co-ordinating and implementing science, technology and innovation policies to increase the efficiency of their research and innovation system. This is important for TEIs because national S&T plans provide an overarching framework in terms of funding commitments and future orientations, and they are used to identify research priorities. There appears to be a trend towards a more integrated and strategic approach to policy with respect to innovation. National strategies now often involve inter-ministerial councils, often at a very high political level, suggesting a degree of policy coherence. Moreover, these plans are increasingly involving institutions at the sub-ministry level such as research bodies, funding agencies and universities, since they are required to undertake their own strategic planning exercises and monitor progress. TEIs are also linked to regional development strategies in some countries (Box 7.4).

Box 7.4. The role of TEIs in regional innovation

TEIs play an important role in regional research and innovation systems along four main dimensions. As discussed above, TEIs contribute to innovation through the creation of knowledge-bases, developing human capital, knowledge diffusion and use and knowledge maintenance. However, regions have distinct local capabilities and so this means the knowledge infrastructure can be regionally specific. In some cases, regional clusters of firms and local innovation networks develop (see OECD, 2007c). Innovation involves interactions and knowledge flows between actors, so geographical proximity can be an important part of the innovation process. Technology transfer and collaborative relationships between local firms and local TEIs fosters interactive learning and knowledge diffusion. Regions also have specific training requirements, particularly at the vocational level.

Many OECD governments have sought to improve regional economies innovation capacity by integrating TEIs within regional development strategies. Some countries have developed initiatives aimed at strengthening the linkages between TEIs and regional employers (*e.g.* the **Czech Republic**) while others have focused on creating virtual clusters to enable small regional institutes to play an active role in research at the European level (*e.g.* **Belgium**). In **Norway**, some TEIs have been involved in setting up science parks in their vicinity, while in **Iceland** an initiative to foster regional entrepreneurship was a scheme to encourage graduates to found their own firms. **Chile** has a programme that develops closer associations between TEIs, firms and the productive sectors in the regions. It focuses on providing high-quality and regionally relevant technical training – *Chile Education and Permanent Training Qualifies* programme. The programme promotes the formation of regional networks of institutions that have been designed to link technical training with priorities for the region.

The Russian Federation's *Innovation Education Programme* was implemented in 2006 under the aegis of the President. The programme develops students' competencies and skills in a number of areas including capabilities for research-based activities and the practical use of results from fundamental and applied studies. The programme is competitively based and 57 TEIs (around 10% of all TEIs in the Russian Federation) have received funding. Most of these are leading regional TEIs, and it is expected that they will become the basis for innovation clusters in regions through the development of partnerships with other regional TEIs as well as with other regional stakeholders. The TEIs participating in this programme have established small-sized science and research institutions, centres and laboratories that focus on inter-disciplinary research and new scientific pathways. They have also raised project-based funding on a competitive basis. These new structural divisions integrate different TEI stakeholders such as students, Doctoral students, teachers and researchers into an innovation-based economy.

In some countries, direct support for regional TEIs is provided by Education Ministries. In **Korea**, for example, Divisions of Industry/University Cooperation (DIUC) have been established to build relations with companies or groups of companies to target development and training needs, and universities designated as a regional hub receive subsidies over 5 years. Cluster programmes have been introduced in some countries to improve linkages and economic development. The **Finnish** Centres of Expertise focus on key industries in many different sectors including culture, media and digital content. In **Japan**, the Knowledge Cluster Programme of MEXT (Ministry of Education, Culture, Sports, Science and Technology) aims to create a "concentration of knowledge and talent" (*i.e.* a Knowledge Cluster) for internationally competitive technological innovation, cooperating with the Industrial Cluster programme of METI (Ministry of Economy, Trade and Industry). For further details about these programmes see OECD (2007c).

Despite these initiatives, an issue emerging from the country reviews was the lack of co-ordination and collaboration between ministries responsible for regional issues, and institutions at the regional level. In **Iceland**, for instance, it was noted that a greater degree of coherence was needed across different Ministries with oversight for the regional dimension.

Several countries have established new organisations or consolidated existing government organisations to centralise or streamline policy development. For example, in Switzerland, a new constitutional framework for the education system was passed in 2006 which enables better co-ordination among the cantons as well as between the cantons and the federal government. In Poland, the National Centre for Research and Development was established in 2007. It is a central government agency responsible for implementing R&D and innovation policy, managing strategic R&D programmes, facilitating technology transfer, enhancing scientists' career development including supporting the involvement of young scientists in the implementation of research programmes and

international mobility. In England, the Department for Innovation, Universities and Skills was formed in 2007 by bringing together functions from two former departments – the Higher Education, Further Education and Skills Directorates from the former Department of Education and Skills and the Science and Innovation Directorates of the former Department of Trade and Industry. Similarly, in 2007 the Australian Government, with the goal of promoting national leadership in innovation, formed the Department of Innovation, Industry, Science and Research. In Finland, a new Ministry of Employment and the Economy was launched on the 1st of January 2008 by merging the previous Ministry of Trade and Industry, the Ministry of Labour and the Regional Development Department from the Ministry of the Interior. A National Innovation Strategy – the first of its kind – was prepared in early 2008. France has launched a series of reforms to strengthen the quality of higher education and research as well as to support innovation. Two major legislative acts in research and higher education have followed; the *Loi de programme pour la recherche* of 2006 which created a new framework for research funding, notably for project-based funding, and reformed Ministerial structures to bring more coherence to national research policy making and focus research in key areas such health, ICTs and nanotechnology; and the 2007 *Loi sur les libertés et responsabilités des universités* which grants universities greater autonomy on administrative, financial and human resources matters. In addition, responsibility for higher education and research has been placed under the autonomous Ministry for Higher Education and Research, independent from the Ministry of Education. The government established a new advisory body, the High-Level Council for Science and Technology (*Haut Conseil de la Science et de la Technologie*) reporting to the President of the Republic. (For a comprehensive overview of policy reforms and initiatives see OECD, 2006a; and OECD, 2008b, forthcoming.)

A number of countries have quantitative targets for R&D spending, and have substantially increased public funding for R&D. The EU Lisbon Agenda objective is to increase R&D expenditures to 3% of GDP by 2010 (with 2% in the private sector and 1% in the public sector), and both EU and non-EU countries have established their own goals in this respect. For example, Finland has an R&D target of 4% of GDP by 2011, whereas OECD countries such as Japan and Korea have directed their national targets for R&D spending towards the public sector. Japan's objective is to increase government R&D investment to 1% of GDP by 2010 and Korea plans to raise the ratio of government R&D investment in GDP from 0.86% in 2006 to 1% in 2012. In non-OECD countries R&D spending objectives are similar: China's target is to reach 2.5% of GDP by 2020 and the Russian Federation's objective is to reach 2% of GDP by 2010.

The European Commission has launched an integrated action plan to upgrade the conditions of research and innovation in the member States. Measures include regulatory reform, increasing funding for research and innovation, strengthening IPRs, and improving HRST mobility (European Commission, 2006). The European Research Council (ERC) was launched in February 2007 to support frontier research. According to its mission statement, the ERC approach "allows researchers to identify new opportunities and directions for research, rather than being led by priorities set by politicians. This approach ensures that funds are channelled into new and promising areas of research with a greater degree of flexibility" (European Research Council, 2007).

National innovation policy frameworks have an important impact on the governance of TEIs, since TEIs are often integrated into specific policy initiatives that can be used by governments to affect overall TEI management and direction. Innovation policies are now

characterised by new organising concepts, new agencies for implementation, and wider rationales. The main areas of innovation policy development relevant to TEIs include:

- Education and training (specifically related to innovation – skills acquisition, distance learning, lifelong learning, *etc.*);
- Mobility of students, teachers and researchers (through international mobility programmes, which are having large effects in some countries);
- Raising public awareness of science and innovation (including entrepreneurship);
- Management of innovation ("watch" capabilities and foresight activities which keep institutions abreast of design and production trends, organisational change, commercial and management consultancy and science developments);
- Innovation and the public sector (infrastructure, public procurement, monitoring and analysis, statistics and indicators, innovation in the public sector, policy capabilities); and
- Promotion of clustering and collaboration (regional initiatives, cluster-wide services and regional TEI capabilities).

Despite the development of national innovation strategies and policy frameworks, there is still a need for improved policy coherence among different policy arenas. In terms of HRST, a relatively well-known coherence problem for some countries has taken the form of difficulties in integrating such areas as science policy, TEI funding and HRST mobility into immigration policy. As a result of more stringent visa and immigration conditions for students and researchers in recent years, United States universities experienced falls in foreign student enrolments, with implications for TEI funding, course viability and longer term labour shortages in the science and engineering workforce. This has led to debate between universities and the federal government, with easing of visa restrictions and a recovery in numbers in 2007 (Open Doors, 2007 and NSF, 2008). Coherence issues of this type can be found throughout TEI research and innovation policies: for example, between objectives to enhance research quality using publication metrics, and efforts to increase the involvement of TEI researchers in industrial applications through collaboration with industry, the protection of IPRs through patenting and/or the commercialisation of TEI research. The establishment of R&D targets and research priorities provide further examples of policy coherence issues. Boosting R&D spending requires a substantial increase in R&D personnel but it can take many years to educate and train new R&D personnel, particularly researchers. Moreover, the introduction of research priorities may lead to HRST shortages in certain fields.

7.4.2 Priority setting

Many countries are implementing research priority setting measures to enhance outcomes by focusing efforts within their research and innovation systems. These priority-setting exercises face two challenges. First, "a major problem inherent of every priority setting process is to find a feasible methodology for the identification, selection and definition of thematic priorities or specific technologies" (Gassler *et al.*, 2007). Second, there is the implementation problem of linking the activities of the system effectively with the priorities that have been chosen.

Very few countries appear to have a systematic method for analysing and selecting priorities. One of the striking features of R&D priority setting across the OECD is the persistent focus on the knowledge bases underlying three technology fields: ICT, biotechnology and nanotechnology. At the present time the formal priority setting exercises of OECD countries appear to have little connection with actual patterns of technological specialisation, but it should also be said that in many countries the actual pattern of allocation of public R&D resources does not necessarily correspond to the formal R&D priorities. A recent development in monitoring priorities is the EU's ERAWATCH system, which is dedicated to monitoring the implementation of the European Research Area policy (European Commission, 2007). ERAWATCH contains detailed information on R&D policy across all of the EU's member States and associated countries, plus such countries as Brazil, China and India, and major OECD members such as Japan, Korea and the United States. At a broad policy level, the information suggests that countries do not have differentiated policy goals, but rather they have a common set of priority S&T fields that recur regularly. These are biotechnology and life sciences, ICT, and nanotechnology (Box 7.5). Given that OECD countries have differences in industrial structure, this uniformity across priority fields may suggest a lack of specificity in priority setting across countries.

Box 7.5. Examples of national R&D priorities

Australia – Research priorities focus on "frontier technologies", meaning ICT, biotechnology and nanotechnology, as well as environmental sustainability, promoting and maintaining good health and safeguarding Australia.

Japan – The Third Basic Science and Technology Plan has identified four priority areas for R&D: life science, ICT, environment and nanotechnology.

Korea – The 2004 Science and Technology Plan priorities include IT technology, biotechnology, alternative energy technology, technology for high value-added industries, and technology for national safety.

Norway – Thematic priority areas are energy and environment, oceans, food and health. ICT, biotechnology, new materials and nanotechnology are prioritised technologies, and there is an increased focus on natural sciences and mathematics.

Portugal – The *Commitment towards Science* initiative, launched in 2006, while covering the whole spectrum of scientific fields (including the social sciences), comprises priorities around thematic R&D activities, such as ICT, nanotechnology, bioengineering, energy systems, transport systems and engineering design.

7.4.3 Funding of research

A central element of governance is funding, namely the methods for allocating resources among competing needs within research systems. There is some evidence that although the array of methods remains generally unchanged, the balance among them has been changing across the OECD. There are three main government allocation mechanisms that are used to fund research activities in TEIs:

- ***Research core funding***: a fixed block grant that is provided periodically (*e.g.* annually);
- ***Research centre funding***: funds are allocated to specific research centres (*e.g.* centres of excellence); and
- ***Project-based funding***: funds are granted to an individual researcher or group of researchers to carry out a specific research project on the basis of a project application.

These three allocation mechanisms are subject to further allocation criteria including historical trends, political decisions, negotiations with funding authorities, research funding formulas (which are performance-oriented in most cases), and competitive processes. Table 7.3 provides an overview of the mechanisms used in each country to allocate public funds to TEIs for research activities.[24] It shows a combination of allocation mechanisms are used, but project-based funding is now prevalent and is used in all countries.[25] In the majority of countries private institutions are eligible for public funds, and the allocation mechanisms are mostly similar to those utilised in the public sector. However, some countries have different allocation mechanisms for private institutions depending on the type of allocation. For instance, in Croatia and Mexico, private institutions are not eligible for public "research core funding" and there are some restrictions in terms of project-based funding. In New Zealand private institutions are eligible for public research core funding, but they are not entitled to public research centre funding or project based funding from the education budget. They can however access project-based funding from the government's allocation for "public-good" research, science and technology. The funding of research capital expenditure differs across countries, but tends to be either partially or fully included in the allocation methods described above. In Sweden, TEIs are entitled to borrow money from the State for research capital expenditure.

In addition, Table 7.3 shows that Australia, the Czech Republic, Estonia, Finland, Korea, the Netherlands, New Zealand, Norway, Poland, Portugal, and the United Kingdom use a funding formula to determine allocations, but in most cases it applies to research core funding. The performance measures attached to funding formulas include the number of post-graduate students, the number of research degrees awarded, the number of scientific publications, the number of patents and licences issued, the number of spinoffs, research contracts with companies and external research income. The allocation of research funds is made by an intermediate agency (such as a Research Council or Science Foundation) in more than half of the countries shown in Table 7.3.

24. Research funding is also addressed by Table 4.3 in Chapter 4 (funding of teaching and learning activities) insofar the block grant for teaching and learning activities also includes research funding. That is, Table 7.3 does not provide the full picture of research funding allocation mechanisms.

25. While Table 7.3 highlights the research block funding scheme administered at the Government Departmental level in Australia, it should also be noted that project-based funding is rewarded in Australia through agencies such as the Australian Research Council and the National Health and Medical Research Council.

Table 7.3. Mechanisms to allocate public funds to tertiary education institutions for research activities, 2007

	Allocation mechanisms used by government authorities and/or intermediate agencies to primarily fund TEIs' research activities	Are private institutions eligible for public funds under each mechanism?	Is funding for research capital expenditure included?	Who is responsible for the allocation of funds?	Bases for allocation	Criteria used in funding formulas
Australia[1]	**Research core funding**	**Yes, in a way similar to public institutions**	**Yes, partially**	**Government authorities**	**Funding formula**	Number of: full-time equivalent student load, research degrees awarded, scientific publications; external research income; Australian Competitive Grants Research income
	Research centre funding	**Yes, in a way similar to public institutions**	**No**	**Intermediate agency** (Australian Research Council)	**Competitive basis** (based on a quality evaluation by a peer review panel)	*a*
	Project-based funding	**Yes, in a way similar to public institutions**	**Yes, partially** (medium-sized equipment under a single scheme aimed at encouraging collaborative development of infrastructure)	**Intermediate agency** (Australian Research Council)	**Competitive basis** (based on a quality evaluation by a peer review panel)	*a*
Belgium (Flemish Community)	**Research core funding**	**Yes, but with some restrictions** (only private TEIs under public responsibility)[2]	**Yes, partially** (includes budget for equipment)	**Government authority**	**Funding formula**	Number of: master's degrees awarded, doctoral degrees awarded, scientific publications, citations, patents, spinoffs, research contracts with companies
	Project-based funding	**Yes, but with some restrictions** (only private TEIs under public responsibility)[2]	**Yes, partially** (includes budget for equipment)	**Intermediate agency** (Research councils)	**Competitive basis**	*a*
Chile	**Project-based funding**	**Yes, in a way similar to public institutions**	**Yes, fully**	**Intermediate agencies** (National Commission for Scientific and Technological Research; National Agency for Economic Development)	**Competitive basis**	*a*
	Research centre funding	**Yes, in a way similar to public institutions**	**Yes, fully**	**Government authorities/Intermediate agencies** (National Commission for Scientific and Technological Research; Millennium Initiative-Ministry of Planning)	**Competitive basis**	*a*
China	**Project-based funding**	**Yes, in a way similar to public institutions**	**Yes, fully** (public institutions) **Yes, partially** (private institutions)	**Government authorities/Intermediate agency** (National Foundation of Natural Sciences)	**Competitive basis**	*a*
Croatia	**Research core funding** (includes teaching and learning at the ISCED level 6)	**No**	**No, integrated in another budget item**	**Government authorities/ Intermediate agency** (Research Council)	**Historical trends** (based on the number of staff)	*a*
	Project-based funding	**Yes, in a way similar to public institutions**	**No, integrated in another budget item** (separate proposals)	**Government authorities/Intermediate agencies** (Research Council, Technology Council, The National Foundation for Science, Higher Education and Technological Development)	**Competitive basis**	*a*
Czech Republic	**Research core funding** (for institutional research plans, mainly higher education institutions)	**Yes, in a way similar to public institutions**	**Yes, partially**	**Government authorities**	**No competition** (assessment of applications)	*a*
	Research core funding (includes teaching and learning at the ISCED level 5 and 6)	**No**	**No, integrated in another budget item**	**Government authorities**	**Funding formula**	Number of: doctoral students, master's degrees awarded; level of qualifications of academic staff; volume of external research income
	Research centre funding (mainly higher education institutions)	**Yes, in a way similar to public institutions**	**Yes, partially**	**Government authorities**	**Competitive basis**	*a*
	Project-based funding (mainly higher education institutions)	**Yes, in a way similar to public institutions**	**Yes, partially**	**Government authorities/Intermediate agencies** (Czech Science Foundation; Academy of Sciences)	**Competitive basis**	*a*
Estonia	**Project-based funding**	**Yes, in a way similar to public institutions**	**Yes, partially**	**Intermediate agencies** (Research Competency Council; Estonian Science Foundation)	**Competitive basis** (based on a quality evaluation by a peer review panel)	*a*
	Research core funding	**Yes, in a way similar to public institutions**	**No**	**Government authority**	**Funding formula**	Number of research articles and patents; financial volume of research projects for industry; doctoral degrees awarded; volume of research in areas of national importance
Finland	**Research core funding** (only for universities) (includes teaching and learning at the ISCED level 6)	*a*	**Yes, partially**	**Government authorities**	**Funding formula**	Research degrees targets; volume of external research income; number of: research degrees awarded, scientific publications, study places in graduate schools
	Research centre funding (only for universities)	*a*	**Yes, partially**	**Intermediate agency** (Academy of Finland)	**Competitive basis**	*a*
	Project-based funding	**Yes, in a way similar to public institutions**	**Yes, partially**	**Government authorities** (public institutions), **Intermediate agencies** (Academy of Finland; Finnish Funding Agency for Technology and Innovation)	**Competitive basis**	*a*
Greece	**Research centre funding** (includes teaching and learning at the ISCED level 6)	**No**	**Yes, partially**	**Government authorities**	**No competition** (assessment of applications)	*a*
	Project-based funding (includes teaching and learning at the ISCED level 6)	**No**	**Yes, fully**	**Government authorities**	**Competitive basis**	*a*

Table 7.3. Mechanisms to allocate public funds to tertiary education institutions for research activities, 2007 (continued)

	Allocation mechanisms used by government authorities and/or intermediate agencies to primarily fund TEIs' research activities	Are private institutions eligible for public funds under each mechanism?	Is funding for research capital expenditure included?	Who is responsible for the allocation of funds?	Bases for allocation	Criteria used in funding formulas
Iceland	**Research core funding**	**Yes, in a way similar to public institutions**	**Yes, fully**	**Government authorities**	**Negotiations with government authorities**[3]	*a*
	Research centre funding	**Yes, in a way similar to public institutions**	**Yes, fully**	**Government authorities**	**Negotiations with government authorities**[3]	*a*
	Project-based funding	**Yes, in a way similar to public institutions**	**No**	**Intermediate agency** (Research council)	**Competitive basis**	*a*
Japan	**Project-based funding**	**Yes, in a way similar to public institutions**	**Yes, partially**	**Government authorities/Intermediate agencies** (Japan Society for the Promotion of Science; Japan Science and Technology Agency)	**Competitive basis**	*a*
Korea	**Research centre funding**	**Yes, in a way similar to public institutions**	**Yes, partially**	**Government authorities**	**Competitive basis** (based on the number of post-graduate students, research degrees awarded, scientific publications, patents and licences issued)	*a*
	Project-based funding	**Yes, in a way similar to public institutions**	**Yes, partially**	**Government authorities**	**Competitive basis** (based on scientific publications, patents and licences issued and research plan)	*a*
Mexico	**Research centre funding** (includes teaching and learning at the ISCED level 6)	**No**	**Yes, fully**	**Government authorities**	**Historical trends**	*a*
	Project-based funding	**Yes, but with some restrictions** (only in the context of certain government's projects/programmes)	**Yes, fully**	**Intermediate agency** (National Council for Science and Technology)	**Competitive basis**	*a*
Netherlands	**Research core funding**	**Yes, but with some restrictions** (only publicly-subsidised private TEIs)	**Yes, fully**	**Government authorities**	**Historical trends; Funding formula**	Number of: post-graduate students, doctoral degrees awarded
	Research centre funding	**Yes, but with some restrictions** (only publicly-subsidised private TEIs)	**Yes, fully**	**Intermediate agency** (Research Council NWO)	**Competitive basis** (based on number of scientific publications, number of patents and licenses issued and quality evaluation by a peer review panel)	*a*
	Project-based funding	**Yes, but with some restrictions** (only publicly-subsidised private TEIs)	**Yes, fully**	**Government authorities**	**Negotiations with government authorities**	*a*
New Zealand	**Research core funding**	**Yes, in a similar way to public institutions**	**Yes, fully**	**Government authorities**	**Funding formula**	Number of research degrees awarded; volume of external research income; and quality evaluation by peer review panel.
	Research centre funding	**No**	**Yes, partially** (only strategic research assets except buildings)	**Government authorities**	**Competitive basis** (based on ranking criteria on themes of excellence (40%), relevance (20%), knowledge transfer (20%) and governance (20%))	*a*
	Project-based funding	**No**	**Yes, fully**	**Government authorities** (including those that administer non-education research, science and technology funding)	**Competitive basis** (based on themes of collaboration, excellence and relevance)	*a*
Norway	**Research core funding**	**Yes, in a similar way to public institutions**	**Yes, partially**	**Government authorities**	**Historical trends; Funding formula**	Number of: doctoral degrees awarded, scientific publications; volume of external research income
	Research centre funding	**Yes, in a similar way to public institutions**	**Yes, partially**	**Intermediate agency** (Research Council of Norway)	**Competitive basis** (based on a quality evaluation by a peer review panel)	*a*
	Project-based funding	**Yes, in a similar way to public institutions**	**Yes, partially**	**Intermediate agency** (Research Council of Norway)	**Competitive basis** (based on a quality evaluation by a peer review panel)	*a*
Poland	**Research core funding**	**Yes, in a way similar to public institutions**	**Yes, fully**	**Government authorities**	**Funding formula**	Number of: research degrees awarded, scientific publications, patents and licences issued, researchers only, awards and prizes; volume of external research income; level of qualifications of academic staff
	Research centre funding	**Yes, in a way similar to public institutions**	**No**	**Government authorities**	**Competitive basis**	*a*
	Project-based funding	**Yes, in a way similar to public institutions**	**Yes, partially**	**Government authorities**	**Competitive basis**	*a*
Portugal	**Research centre funding**	**Yes, in a way similar to public institutions**	**No, integrated in another budget**	**Intermediate agency** (Foundation for Science and Technology)	**Competitive basis** (followed by funding formula)	Quality evaluation by a peer review panel; number of researchers with a doctorate
	Project-based funding	**Yes, in a way similar to public institutions**	**No, integrated in another budget**	**Intermediate agency** (Foundation for Science and Technology)	**Competitive basis**	*a*

Table 7.3. Mechanisms to allocate public funds to tertiary education institutions for research activities, 2007 (continued)

	Allocation mechanisms used by government authorities and/or intermediate agencies to primarily fund TEIs' research activities	Are private institutions eligible for public funds under each mechanism?	Is funding for research capital expenditure included?	Who is responsible for the allocation of funds?	Bases for allocation	Criteria used in funding formulas
Russian Federation	**Research core funding** (minor)	**Yes, but with some restrictions** (only in the context of certain government's projects/programmes)	**No, integrated in another budget item**	**Government authorities**	**Historical trends; Negotiations with government authorities and/or intermediate agencies**	*a*
	Research centre funding	**Yes, in a way similar to public institutions**	**Yes, partially**	**Government authorities /Intermediate agency** (Federal Agency on Science and Innovations)	**Competitive basis**	*a*
	Project-based funding	**Yes, in a way similar to public institutions**	**Yes, partially**	**Government authorities/Intermediate agencies** (Federal Agency on Science and Innovations and Public Science Foundations *e.g.* Foundation for Humanities, Foundation for Basic Research, Foundation for Assistance to Small Innovative Enterprises)	**Competitive basis**	*a*
Spain[1]	**Project-based funding**	**Yes, in a way similar to public institutions**	**Yes, fully**	**Government authorities** (national and regional)	**Competitive basis**	*a*
Sweden	**Research core funding** (including teaching and learning at ISCED level 6)	**Yes, in a way similar to public institutions**	**Yes, partially** (entitled to borrow money from the State)	**Government authorities**	**Historical trends; Political decisions**	*a*
	Research centre funding (for research centres) (including teaching and learning at ISCED level 6)	*a*	**Yes, partially** (entitled to borrow money from the State)	**Government authorities**	**Historical trends; Political decisions**	*a*
	Research centre funding (for Centres of Excellence) (including teaching and learning at ISCED level 6)	**Yes, in a way similar to public institutions**	**Yes, partially** (entitled to borrow money from the State)	**Intermediate agencies** (research councils and other national agencies)	**Competitive basis** (competitions open to TEIs)	*a*
	Project-based funding (including teaching and learning at ISCED level 6)	**Yes, in a way similar to public institutions**	**Yes, partially** (entitled to borrow money from the State)	**Intermediate agencies** (research councils and other national agencies)	**Competitive basis**	*a*
Switzerland	**Research core funding** (for universities and universities of applied sciences)	**No**	**No, integrated in another budget item**	**Government authorities**	**Funding formula**	Universities of applied sciences: knowledge transfer from R&D to teaching (share of lecturers employed); volume of external research income
	Project-based funding (for universities and universities of applied sciences)	**No**	**Yes, partially**	**Intermediate agencies** (Swiss National Science Foundation for universities and Commission for Technology and Innovation for universities and universities of applied sciences)	**Competitive basis**	*a*
United Kingdom[4]	**Research core funding**	**Yes, but with some restrictions** (only publicly-subsidised private TEIs)	**No, integrated in another budget item**	**Intermediate agencies**[5] (The Funding Councils)	**Funding formula**	Results of a periodic Research Assessment Exercise[6]; number of research-active academic staff; subject cost-weightings
	Project-based funding	**Yes, but with some restrictions** (only publicly-subsidised private TEIs)	**No, integrated in another budget item**	**Intermediate agencies** (Research Councils)	**Competitive basis**	*a*

Definitions: This table deals with the allocation mechanisms used by government authorities and/or intermediate agencies to fund primarily 'research activities' (*i.e.* training of researchers, basic and applied research) at the institutional level. It might include the funding of teaching and learning activities at ISCED level 6 only. Note that research funding is also considered in Table 4.3 (Chapter 4) insofar it is included in the allocation mechanisms primarily dedicated to fund teaching and learning activities at ISCED levels 5 and 6 (or ISCED level 5 exclusively). For the countries where this occurs, this is signalled in Column 1 of Table 4.3.
Public funds refer to expenditure of public authorities at all levels of government (central, regional, local). They include spending on education/research activities by ministries or equivalent institutions dealing with different areas (*e.g.* Research, Science, Technology and Industry) as well as spending channelled through intermediate agencies.
Allocation mechanisms refer to schemes to allocate public funds directly to TEIs to conduct their activities. Both public and private institutions are considered in this table (Column 2 assesses the differences between these two types of institutions regarding the allocation of public funds).
Research refers to publicly-funded research conducted by TEIs or research organisations to which TEIs contribute (*e.g.* Centres of Excellence, research consortia etc.).
Research core funding refers to a fixed block grant provided periodically (*e.g.* annually) by government authorities and/or intermediate agencies to TEIs for research activities.
Research centre funding (*e.g.* Centres of excellence, Chairs of excellence *etc.*) refers to funding allocated by government authorities and/or intermediate agencies to specific research centres. Such research centres focus on a specific research/scientific area and can be part of a TEI, associated to a TEI or involve researchers from several TEIs and other research organisations.
Project-based funding refers to funds conferred by government authorities and/or intermediate agencies to an individual researcher or group of researchers to carry out a specific research project. It is granted on the basis of a project application (*i.e.* an application is required in order to obtain funding).
Research capital expenditure refers to spending on fixed capital assets for use in R&D activities. Capital expenditures are composed of expenditures on: (1) Land acquired for R&D (*e.g.* testing grounds, sites for laboratories and pilot plants) and buildings constructed or purchased (including improvements); (2) Major instruments and equipment; and (3) Computer software, including annual licensing fees. Small tools and instruments and minor improvements to existing buildings will normally be excluded in measuring capital expenditure as in most systems these items are usually carried on current cost accounts.
Research *funding formulas* refers to a formally defined procedure (a formula) used by government authorities and/or intermediate agencies to determine the level of public funds allocated to TEIs based on a set of predetermined criteria, which in most cases are input-, output- or performance-oriented.
Competitive basis refers to a process by which a TEI (a researcher or a group of researchers) is selected from among two or more contestants for the allocation of limited resources. If the granting of project-based funding results from the assessment of individual applications from institutions/researchers/group of researchers (*i.e.* the decision of whether or not to grant funding on the basis of an application is unrelated to applications by other institutions/researchers), then the basis for allocation is considered 'No competition'.

Notes: *a* : Information not applicable because the category does not apply; *TEI* : Tertiary education institution
1. Information concerns universities only and does not account for the non-university sector.
2. Private TEIs that are not under public responsibility are not eligible for public funds but can offer accredited master's courses.
3. Research core funding and research centre funding are allocated through performance contracts, which are negotiated with the government authority. The performance contract is based on national priorities, work with other research institutions, tender for international funding and management of research quality.
4. All higher education institutions in the United Kingdom are legally private independent bodies with a charitable status, most of which are publicly funded.
5. In Northern Ireland, funding is made directly to TEIs by the Department for Employment and Learning, and not via an intermediate agency.
6. Research evaluation is carried out through the UK-wide Research Assessment Exercise. It is intended to introduce a more metrics-based approach after 2008. The publicly available reports consist of ratings/quality profiles.

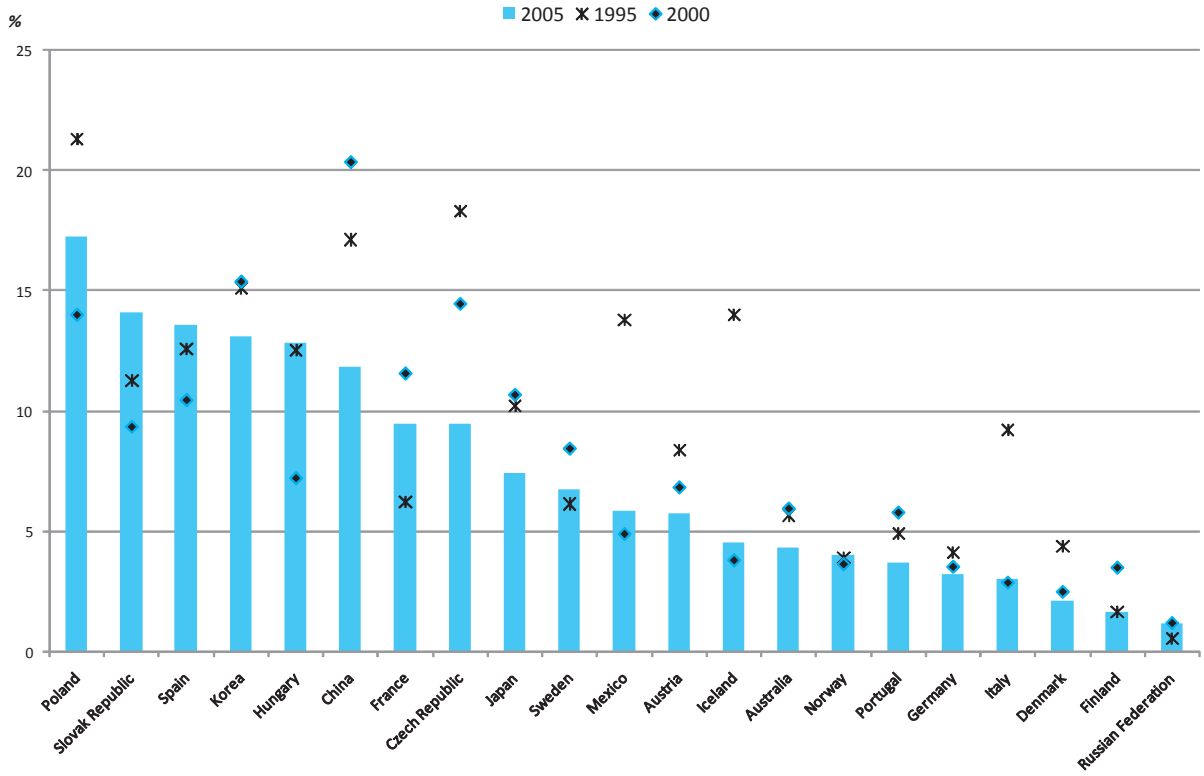
Source: Derived from information supplied by countries participating in the project. The table should be interpreted as providing broad indications only, and not strict comparability across countries.

The shift to project-based research funding in TEIs raises a number of issues that need to be considered in relation to the long-term development of the research and innovation system. Competitive funding may promote more *ad hoc* and short-term research in cases where evaluation mechanisms and incentive structures focus on quantifiable and "immediate outputs". As a result, researchers may be reluctant to engage in research that will not produce results that can be demonstrated over short time-spans. In addition, precisely because project-based funding is competitive, sustained funding is not guaranteed, which may impede the autonomy of researchers working in controversial fields. If project-based funding has a short duration, it may also mean that researchers need to spend time preparing applications to secure funding on a more frequent basis. Atkinson (2007) remarks that young faculty in particular spend an excessive amount of time preparing project proposals. Liefner (2003) found that competitive or performance-based funding could have an impact on the type and field of research because some academics avoided research with riskier outcomes. Likewise, Geuna (2001) notes that short-term research and less risky research may reduce the likelihood of "scientific novelty". Furthermore, Geuna and Martin (2003) argue that research may become "homogenised" because "safer" research is rewarded. Morris and Rip (2006) point out that the stage of a researcher's career needs to be considered in relation to the type of research undertaken. Some of the questions raised are: "does the researcher need quick results to bolster his or her next job application? Is he or she senior enough to get a five-year rather than a three-year grant?" (Morris and Rip, 2006), and these questions are pertinent in the context of project-based funding.

There may be a trend towards diminishing infrastructure funding at the present time. It is difficult to quantify precisely whether trends toward project-based funding have had an impact on investment in research infrastructure, but there are indications that investment is falling in TEIs. Figure 7.16 shows expenditure on major instruments and equipment acquired for use in the performance of R&D as a proportion of all types of R&D costs in higher education institutions. In 14 of the countries shown in Figure 7.16, the share of expenditure towards instruments and equipment decreased over the period 1995 to 2005. In China, the Czech Republic, Iceland, Italy and Mexico the share fell by more than 5 percentage points over the 10 year period. It is interesting to note that the share of expenditure increased slightly in Iceland and Mexico between 2000 and 2005. These decreases may represent a fall in the cost of instruments and equipment relative to other costs such as salaries for R&D personnel, other current costs (*e.g.* water, electricity, subscriptions to libraries, administrative costs) and land and buildings. Equally, there may simply be decreasing real expenditure on instruments and equipment. Without more detailed investigation, these results are inconclusive, although changing funding practices may have a bearing on investment in equipment and should be taken into account. For example, a comparative study of large-scale research equipment purchase and use in United Kingdom and United States universities found that limited funding and purchase delays could impede international competitiveness (Flanagan *et al.*, 2002). The authors of the report suggest problems were more pronounced in the United Kingdom because funding research infrastructure was largely piecemeal and involved submitting independent and successive research grant applications. In addition to the costs of purchasing equipment, support costs (*e.g.* maintenance, support personnel) were excluded, and uncertain and short-term funding exacerbated these issues.

Figure 7.16. Expenditure on R&D instruments and equipment in the higher education sector, 1995, 2000 and 2005

As a percentage of all types of R&D costs



Countries are ranked in descending order of the expenditure on R&D instruments and equipment in the higher education sector in 2005.

Note: For '1995' data, the reference year is 1998 for China, 1997 for Sweden, 1996 for Korea and the Slovak Republic, 1993 for Austria, and 1992 for Italy. For '2000' data, the reference year is 2001 for Sweden, and 1998 for Austria. For '2005' data, the reference year is 2003 for Mexico, Portugal and Sweden, and 2004 for Australia, Austria, Denmark, France, Germany, Italy and Spain.

Source: OECD, R&D database, 2007.

There may also be impacts of project-based funding on the training of researchers. It was noted above that one of the key functions of the TEI system is competence building and research training. No major studies have yet been undertaken on the effects of governance reforms on such training. However, research in Australia has shown that the introduction of performance indicators can have an impact on teaching. For example, Taylor (2001) found that some academics encouraged their research students to undertake "easier projects" to ensure the research could be completed in a short period of time.

Some countries combine project-based funding with core research funding and research centre funding, which provides TEIs with a stable funding stream as well. For example, in Japan, MEXT (Ministry of Education, Culture, Sports, Science and Technology) has shifted public R&D expenditures away from recurring funding awarded to institutions on a formula basis towards funds that are awarded on a competitive basis. These have taken the form of *Grants-in-Aid for Scientific Research,* the *21st Century Centers of Excellence* programme (the 21st COE) and the *Global Centers of Excellence*

programme (the Global COE). Taken together these programmes have provided a foundation of peer-reviewed, competitive funding for university-based research. In Portugal, the share of competitive and semi-competitive funding was to increase from 26% in 2006 to 37% in 2007 as a part of the increased public funding of S&T. Liefner (2003) notes that while the competitive allocation of resources can provide positive incentives, such as increased scholarly activity, it can also have unintended consequences, such as the avoidance of risky projects. Therefore, Liefner (2003) argues that one of the positive aspects of stable core funding is it enables researchers to "follow new ideas and concentrate on pure research". A combination of funding mechanisms can be used to ameliorate the negative effects of one type of funding.

It should be remembered, however, that the allocation of core research funding and research centre funding can also be competitively-based. The archetype of competitively based core funding is the United Kingdom's Research Assessment Exercise (RAE), which is a periodic national exercise that assesses the quality of research and is used to inform the distribution of public funds for research.[26] The RAE has inspired other models based on similar principles because it attempts to raise the quality and visibility of research universities. Hong Kong (China) and New Zealand have adopted RAE evaluation principles.[27] In Australia, the Research Quality Framework (RQF) was cancelled by the new Australian Government on 21 December 2007. The Government has since announced a new system called the Excellence in Research for Australia (ERA) initiative. The initiative will be developed by the Australian Research Council (ARC) during 2008 and will assess research quality using a combination of metrics and expert reviews by committees comprising experienced, internationally-recognised experts. The RAE may be seen to have had positive effects in terms of directing funds selectively to the most highly rated, raising the profile of research and stimulating the development of supporting infrastructure, and consequently improving the quality of research. On the other hand, negative effects have included: unintended and inappropriate uses made of results as a guide to under-graduate education; reducing the status of teaching among academics; raising concerns about inhibiting industry and community links; concerns about the treatment of applied and interdisciplinary research; concerns about treatment of women and new entrants to the profession; the emergence of a transfer market for academics as universities seek to buy in leading researchers to enhance their profiles; hostility to the exercise from industry and other users who see it drawing research away from their interests and towards purely academic issues; and it places an undue administrative burden on the sector.

7.4.4 Evaluation and the quality assessment of research

In recent years public support for R&D and innovation activities have been undertaken not simply as supports for the science system, but have been seen as instruments towards wider objectives related to growth, employment, competitiveness and welfare. These wider objectives have made governments more conscious of the need for impact assessments. Enhanced attention has therefore been given to evaluation

26. For example, the RAE "informs the main allocation (90%) of research funds by the Funding Councils… In England, nine universities out of over 130 institutions receive about one half of the total funding allocated on the basis of research quality" (Country Background Report for the United Kingdom).

27. It should be noted that the systems in each country have developed progressively, which has enabled the countries to learn about unintended impacts.

activities that seek to explore the relations between funding inputs and a wide range of possible outcomes. Evaluation has become a basic element of the management of public research funding. The main aim has been to help governments assess the appropriateness, efficiency and effectiveness of public funding, as well as their joint effects (which may be intended or unintended). However the increased emphasis on evaluation has raised a number of important conceptual and methodological challenges.

Changes in the governance and financing of TEIs have led to increasing attention to commercialisation of research results, and to the use of IPRs by TEIs. These shifts in some ways simplify evaluation tasks, because they permit a greater focus on outcome evaluation. But changes of a less tangible kind remain difficult to evaluate, and research conducted in TEIs continues to pose important methodological challenges for evaluators. Four basic problems arise when assessing the impact of research activities (OECD, 2006a):

i. *timing:* the effects of research often emerge long after the research has been completed;

ii. *attribution*: a given innovation may draw upon many research projects and a given research project may affect many innovations;

iii. *appropriability:* because the beneficiaries of research may not be the people or organisations that perform the research, it may not be obvious where to look for effects; and

iv. *inequality:* in a given project portfolio the distribution of impacts is typically highly skewed, as a small number of "blockbuster" projects may account for most effects, while around half often only advance knowledge in a general way.

Table 7.4 shows the variety of mechanisms used to measure the quality of research conducted in TEIs. Most countries report evaluations are periodic, but there is wide variation in terms of the frequency. For example, in the Czech Republic the whole R&D system is evaluated every year whereas in Estonia, evaluations are conducted every 8 years. In Finland research evaluation is carried out on an *ad hoc* basis. There is also wide variation regarding the unit of evaluation which ranges from an evaluation of the whole R&D system, to the institutional level (the department, faculty or research group) and to the research field. In Finland, Mexico, New Zealand, the Russian Federation and Spain, individual academic staff are evaluated.

Table 7.4 also shows there is greater consistency across countries in terms of the indicators used to assess research quality. The use of publication data is prevalent. With the exception of New Zealand and Norway, publications contribute to the evaluation process. Patents and patent citations, and the relevance of research to business, including securing external research income, are common indicators as well. Peer reviews, awards and prizes, academic staff data and research student data also play a role in some countries. A less frequent indicator used to assess research quality is the alignment of research with national strategic priorities. In all countries apart from Spain, reports of the quality monitoring process are publicly available. However in the Czech Republic and the Russian Federation, this is at the discretion of the TEI, whereas in Mexico positive evaluations are publicly available.

Table 7.4. Evaluation of research quality, 2007

	Is general research evaluation carried out?	Unit of the evaluation	Types of evidence used to assess research quality	Are reports of the quality monitoring process publicly available?
Australia[1]	No[2]	*a*	*a*	*a*
Belgium (Flemish Community)	No	*a*	*a*	*a*
Chile	No	*a*	*a*	*a*
China	Yes, periodic evaluation (every 5-8 years)	Department or faculty	Research students' data, publication data, relevance of research to business and internal efficiency of TEI	Yes, in all cases
Croatia	Yes, periodic evaluation (every year for research plans)	Research field	Publication data and patents citation	Yes, in all cases
Czech Republic	Yes, periodic evaluation (every year for the whole R&D system)	The whole R&D system	Publication data and patents citation	Yes, in all cases
	Yes, periodic evaluation (every 2-3 years for research plans)	Research group	Academic staff data, publication data, patents citation and peer reviews	At the discretion of the TEI
Estonia	Yes, periodic evaluation (every 8 years)	Research group; research field	Academic staff data, research students' data, publications, patents, previous peer-reviews, infrastructure, cooperation with industry and participation in research programmes (such as centres of excellence)	Yes, in all cases
Finland	Yes, on an *ad hoc* basis	Individual academic staff; research group; department or faculty; TEI; and discipline	Academic staff data, research students' data, publication data, peer reviews, awards and prizes, relevance of research to business, alignment of research with national strategic priorities and internal efficiency of TEI	Yes, in all cases
Greece	No[3]	*a*	*a*	*a*
Iceland	Yes, periodic evaluation (every 3 years)	Department or faculty; field of study	Research students' data, publication data, relevance of research to business and internal efficiency of TEI	Yes, in all cases
Japan	National universities, public universities, public university corporations, private institutions: Yes, periodic evaluation (every 7 years)	TEI	At the discretion of intermediate agencies	Yes, in all cases
	National universities: Yes, periodic evaluation (every 6 years)	Department or faculty; TEI	At the discretion of TEIs (in most cases: publication data, patents citation, peer reviews, awards and prizes, relevance of research to business and alignment of research with national strategic priorities)	Yes, in all cases
Korea	Yes, periodic evaluation (every 5 years)[4]	TEI	Academic staff data, research students' data, publication data, relevance of research to business and internal efficiency of TEI	Yes, in all cases
Mexico	Yes, periodic evaluation (every 3-5 years)	Individual academic staff	Research student's data, publication data, relevance of research to business, supervision of post-graduate students and internal efficiency of TEI	Yes, for positive evaluations
Netherlands	Yes, periodic evaluation (every 6 years)	Department or faculty; research programme	Academic staff data, publication data, peer reviews, relevance, productivity, quality and feasibility	Yes, in all cases
New Zealand	Yes, periodic evaluation (every 6 years)	Individual academic staff; TEI	Individual academic staff: quality of research outputs, peer esteem and contribution to the research environment TEI: relevance of research to business (external research income) and research students' data (number of post-graduate research degree completions)	Yes, in all cases
Norway	Yes, on an *ad hoc* basis	Research group; department or faculty; research field/discipline	Peer reviews	Yes, in all cases
Poland	Yes, periodic evaluation (every 4 years)	Faculty (or other organisational unit of the TEI)	Academic staff data (*e.g.* number of staff, staff qualifications), publication data, patents citation, licenses and practical application of research	Yes, in all cases
Portugal	Yes, periodic evaluation (every 3 years for research centres and every 5 years for associate labs)	Research centres; associate labs	Academic staff data, research students' data, publication data, patents citation, peer reviews, awards and prizes, relevance of research to business, alignment of research with national strategic priorities, internal efficiency of TEI and international reference criteria	Yes, in all cases
Russian Federation[5]	Yes, periodic evaluation (every 5 years by accreditation expert teams)	Individual academic staff; TEI	Academic staff data, research students' data, publication data, relevance of research to business	At the discretion of the TEI[6]
Spain[1]	Yes, periodic evaluation (every 6 years)	Individual academic staff	Publication data and patents citation	No
Sweden	No[7]	*a*	*a*	*a*
Switzerland[8]	Yes, on an *ad hoc* basis	TEI	Universities: No standardised criteria at the national level Universities of applied sciences: academic staff data, publication data and peer reviews	At the discretion of the TEI
United Kingdom	Yes, periodic evaluation (every 5-7 years)	Department or faculty	Peer review, sample of publications (including patents citations), academic staff data, research students' data, research income, research environment and esteem (including awards and prizes)	Yes, in all cases[9]

Definition: The table addresses the mechanisms used to measure the quality of research conducted in TEIs. Only formal external evaluations are considered.
Research refers to publicly-funded research conducted by public or private TEIs and includes both research activities and the training of researchers.
General research evaluation refers to the existence of a national framework for the external evaluation of the research capacity of units assessed and their ongoing and/or completed research. General research evaluation also includes the evaluation of institutional research plans in countries where such plans exist. However general research evaluation excludes both 'project-based evaluation of research' (*i.e.* evaluation of a research project proposal) and 'internal evaluation' (*i.e.* self-evaluation carried out within TEIs without the involvement of an external panel).

Notes: *a*: Information not applicable because the category does not apply; *TEI*: Tertiary education institution
1. Information concerns universities only and does not account for the non-university sector.
2. The Australian Government is developing a new system called the Excellence in Research for Australia (ERA) Scheme. The scheme will use leading researchers to evaluate research activity progressively in each of the six ARC (Australian Research Council) discipline clusters and several clusters covering health and medical research that will be informed by experts from the National Health and Medical Research Council (NHMRC). It is expected that each cluster report will detail by institution and by discipline those areas that are internationally competitive together with emerging areas where there are opportunities for development and further investment.
3. A general research evaluation is planned. It will be carried out at least every 4 years. The unit of the evaluation will be TEIs, departments and research programmes and the report on quality monitoring process will be publicly available.
4. Evaluation cycles vary according to research projects. However for most multi-year research projects, external evaluation is conducted every year.
5. Research evaluation is part of accreditation procedures, but a systemic and comprehensive system of research evaluation was under elaboration at the time this Table was prepared.
6. The reports of the quality monitoring process are available to accreditation expert teams as well as to assessed TEIs. TEIs can make these reports publicy available at their own discretion.
7. Although there is no national framework for the external evaluation of research, research funding agencies evaluate most subjects on a regular basis (usually every 10 years).
8. Research is also evaluated through the accreditation process. Please see Table 5.2 (Chapter 5) for more information.
9. Reports of the quality monitoring process are not publicly available in Northern Ireland.

Source: Derived from information supplied by countries participating in the project. The table should be interpreted as providing broad indications only, and not strict comparability across countries.

However, linking output to funding may have unintended impacts on research quality. For example, Butler (2002 and 2003) found that Australian universities' share of publications in the Science Citation Index increased when funding agencies started to link the allocation of research funds to the number of publications. Moreover, the strongest growth was in journals with a below-median impact, and this pattern was found across the social sciences, humanities and sciences. Other studies have found that publication practices have changed. Data collected from nine upper tier American universities by researchers at the National Science Foundation[28] found that respondents reported it was now easier to publish because the volume of scientific articles had increased, though it was also noted that standards for publishing in high impact journals had risen as well (Bell *et al.*, 2007). Nevertheless, given the adjustments required to make publications a valid measure of scientific impact all respondents concluded that this was not a viable mechanism to evaluate a faculty. The same study also found that competitively obtained external research funding was viewed as the most relevant quantitative measure of research activity (Bell *et al.*, 2007). However, this assumes that external funding is readily obtainable across all disciplines.

Another common output indicator is patenting, but it is not a reliable general indicator of the impact of scientific output on innovation. Patenting behaviour is highly skewed towards particular fields, relatively few inventions actually make it into innovations, and the majority of patent revenue comes from a few successful innovations. Moreover, the growth of university patents has had an impact on the quality of patents. For example, research has found that "the relative importance and generality of university patents has fallen at the same time as the sheer number of university patents has increased. This decrease appears to be largely the result of a very rapid increase in the number of 'low quality' patents being granted to universities" (Henderson *et al.*, 1998).

Butler (2007) argues that "any research assessment process, particularly one with significant funding consequences, will affect the way people behave." Despite the difficulties associated with evaluating the impact of research in TEIs, it is necessary to ensure the system is efficient and effective. Butler (2007) suggests that perverse outcomes can be minimised if assessment exercises combine peer review with a range of indicators. Nevertheless, policy makers need to be mindful of the complexities, unintended side-effects and long-term impacts on the research and innovation system. These problems suggest continuing and unresolved challenges for evaluation methodologies.

7.4.5 Creating critical mass – centres of excellence

Centres of excellence have been established as a means of creating critical mass and excellence in specific research areas, promoting interdisciplinary research and encouraging public-private collaboration. Under this system, public funding is increasingly concentrated in a limited number of institutes or centres. While the concept of centres of excellence is used and interpreted in many ways, the term implies performing measurable world standard research. According to the European Commission (2002), some of the key features of a centre of excellence are:

- a "critical mass" of high level scientists and/or technology developers;
- a well-identified structure;

28. It should be noted that this study focused on science and engineering disciplines.

- capable of integrating connected fields and to associate complementary skills;
- capable of maintaining a high rate of exchange of qualified human resources;
- a dynamic role in the surrounding innovation system (adding value to knowledge);
- high levels of international visibility and scientific and/or industrial connectivity;
- a reasonable stability of funding and operating conditions over time; and
- sources of finance which are not dependent over time on public funding.

The notion of critical mass continues to play a strong role in tertiary education R&D in many countries, and it is clearly linked to the funding and evaluation mechanisms discussed above. This concept contains a number of problems, however, that remain unresolved at the present time. The most important point is actually identifying what critical mass means across different fields. It is unclear, for example, how many researchers need to be brought together to create a critical mass, do they need to be co-located or can the mass be created through virtual contact, networks and collaboration? Is a critical mass in astronomy the same as a critical mass in computer sciences or economics? These unanswered questions suggest further research is required to inform policy development.

7.5 Pointers for future policy development

The policy suggestions that follow are drawn from the experiences reported in the Country Background Reports, the analyses of external review teams, and the wider research literature. Not all of the policy implications apply equally to all reviewed countries. In a number of cases many or most of the policy suggestions are already in place, while for other countries they may have less relevance because of different social, economic, research and educational structures and traditions. The implications also need to be treated cautiously because in some instances there is not a strong enough research base across a sufficient number of countries to be confident about successful implementation. The discussion attempts to distil potentially useful ideas and lessons from the experiences of countries that have been searching for better ways to enhance the role of tertiary education in research and innovation.

Improve knowledge diffusion rather than strengthening commercialisation via stronger IPRs

There has been, in recent years, a stronger policy emphasis on the commercialisation of university R&D results. This has been implemented via such measures as the Bayh-Dole Act in the United States and its equivalents in other countries, and via the very frequent establishment of university technology transfer offices (TTOs). While patenting and other commercialisation activities may provide revenue for TEIs it is important to remember that the results are highly skewed. This suggests that the ongoing existence of TTOs in many TEIs should be assessed. Moreover, a common criticism of commercialisation is it takes at best a restricted view of the nature of innovation, and of the role of universities in innovation processes. In essence, such measures assume that innovation is the outcome of a discovery process that is then commercialised, and that R&D is the initiating phase of innovation. However it is widely held among innovation analysts that innovation often has wider origins in the development of new product

concepts by firms, and that R&D is a problem-solving activity along the "innovation journey" rather than a point of departure for it (van der Ven *et al.*, 1999). This latter approach suggests that the diffusion capabilities and interactive support activities of TEIs may be at least as important as discovery processes. Methods and instruments for such support deserve closer policy consideration at present.

Improve and widen channels of interaction and encourage inter-institutional collaboration

Linkages and collaboration between the tertiary education sector and other actors in the research and innovation system, such as firms and public research organisations, need to be further developed, with the aim of improving knowledge diffusion. Linkages range from formal strategic alliances to informal interactions and partnerships. Informal interactions, personal contacts and networks between TEIs and other organisations are critical, but tend to be outside the policy scope because these relationships are based on trust and other social mechanisms. Nevertheless, the tertiary education sector, including non vocational TEIs, should be flexible and responsive to industry needs in terms of co-operative projects. Policy needs to ensure that small and medium-sized enterprises (SMEs) and firms from all technological sectors are considered when programmes are designed. This is particularly important given the results presented above which showed that small and medium-sized firms reported considerably less co-operation with TEIs. Moreover, some existing linkage programmes are largely suited to longer-term arrangements, and this may hinder participation by some firms, particularly SMEs. While most partnerships with industry tend to have a research or innovation focus, they can be broadened to include industry representation on boards of management or the development of co-operative education programmes (for example industry can play an advisory role in curriculum design).

Foster mobility across the research and innovation system

Inter-sectoral mobility is one of the main carriers of knowledge diffusion. Mobility between firms, TEIs and public research organisations should be more actively encouraged. Staff mobility enhances tacit knowledge flows and stimulates the circulation of ideas and the development of new capabilities. Each individual's skills and expertise can improve as a result of even short-term moves, thus increasing the global stock of skills. Moreover, human capital could be used more efficiently, resulting in an increase in the global production of research results and more innovation. Policy makers need to provide incentives to facilitate mobility, and ensure that barriers are removed such as inflexible pension schemes and restrictive leave of absence policies in TEIs.

Develop policies for both international as well as intra-national mobility

An increasing number of countries are focusing on international mobility, rather than intra-national mobility. Many countries are implementing policy measures to attract foreign students and foreign researchers and to facilitate their access to the labour market. However, competition for students and skilled workers is increasing, and policy makers need to be concerned with measures both to attract students and researchers and to retain them. Although policy has less influence on cultural and structural barriers, it can focus on improving visa regulations and other immigration conditions, housing policies, and education access for children.

Despite increasing international flows, policy makers cannot ignore the development of human capital at the national level, and its mobility between domestic sectors. The global market for the highly skilled is becoming more competitive and opportunities in the main supply countries are improving. However it should be remembered that international mobility is largely a supplement to domestic human capital creation, not a substitute for it, even in economies with relatively high levels of immigration. Therefore, policy also needs to focus on building attractive research environments in TEIs, which includes the availability and quality of research infrastructure.

Improve research career prospects

While there is, at least in aggregate, an increasing supply of HRST graduates, there is no concomitant expansion of tertiary education career opportunities, and there has been a significant increase in part-time work, temporary employment, and time-limited contracts in tertiary institutions across the OECD. In addition, during review visits, some academic staff expressed that professional expectations and demands have been rising. In order to maintain current levels of research staff, attract young researchers, and attenuate the effects of an ageing workforce, the attractiveness of research careers in TEIs must be improved. Policy issues include addressing the impacts of insecurity on the attractiveness of research careers, improving the flexibility of public sector employment policies, and ensuring that salaries remain commensurate with other professions.

Monitor the supply and demand of human resources

The nature of demand for human resources in research and innovation is evolving in both the public and private sectors, which has implications for supply-side education and training policies. Ultimately, the successful match between supply and demand for HRST depends on a flexible and rapid response from TEIs as well as greater institutional and market incentives for mobility. An important policy challenge is improving information on supply and demand mismatches, and overall labour market trends. Although the data situation has improved, there is still considerable scope for improving policy-relevant data on HRST, and this should be an important common priority across countries in the near future.

Ensure a variety of skills for innovation

Innovation is a complex phenomenon that requires a broad mix of skills and competencies. While S&E graduates are a key component of HRST and crucial for R&D activities, persons with technical skills and vocational training are also a central part of the research and innovation system. Innovating firms are not necessarily engaged in the development of radical, new to the world goods, services or processes, therefore many innovation activities are a key function of vocationally trained personnel. Moreover, the content of research work is changing. Globalisation and the growth in outsourcing and inter-institutional collaboration has changed the way firms innovate which means employees need to develop new work methods and adapt to research and production methods that are increasingly conducted outside the firm. It is important to combine technical skills with "soft" skills such as problem-solving capabilities and communication and management skills. The education of S&E graduates should prepare them for careers outside the traditional research path, and all TEIs, including non-research institutions should focus on providing their students with flexible and transferable skills and competencies.

Maintain adequate research infrastructure

Research infrastructure, instruments and equipment need to be maintained and updated regularly. This has two dimensions. On the one hand there is the basic fabric and resources of the tertiary education system with respect to its teaching, routine research and knowledge storage functions. On the other, there is the more specialised area of large scientific facilities. The replacement of large infrastructures must be carefully planned both nationally and in individual institutions. However, this is not simply a national matter because large science facilities are increasingly transnational in funding and operation, and this imposes a need for collaborative policies across countries. It is helpful to see this against the background of the increasing internationalisation of R&D.

Use the tertiary education sector to foster the internationalisation of R&D

Until recently, R&D policy has largely been national in scope, often supporting the development of critical knowledge bases and technologies or particular national specialisations. However, the internationalisation of R&D is now a key dimension of globalisation, with important implications for economic development and public policy. Multinational enterprises (MNEs) play a major role in this process since they account for the major share of global business R&D. While corporate R&D activities still maintain a home-country bias – in the sense that firms continue to carry out R&D predominately where their head offices are located – MNEs are changing how they innovate and this involves building global distributed R&D networks. MNEs are increasingly establishing R&D facilities at many locations worldwide. These changes have important implications on tertiary education policies because innovation and research networks span national boundaries. A key policy problem is how to integrate essentially national measures and instruments – such as education and training policies and infrastructure policies – and companies' globalised knowledge strategies.

Improve methods for priority selection

Many countries, facing the reality of resource constraints, argue a need for setting research priorities and building centres of excellence. These often consist of specific scientific and/or technological fields. However, it is common for countries to select the same areas – usually biotechnology, ICT and nanotechnology – and relatively rare for them to select priorities that relate clearly to their actual areas of technological specialisation. Few countries have a systematic approach to priority selection. Given that the OECD as a whole exhibits considerable diversity in industrial structures and technological fields, this may be an important issue for future work. Moreover, once priorities are selected the activities need to be linked to the research and innovation system.

Many countries in the Review are striving to create world-class centres of excellence – *i.e.* sufficiently concentrated research capacity to ensure that graduate student training and scientific activities are carried out at the highest international levels, and to attract international researchers. This needs to be approached with some caution. While it is important to ensure that resources are used efficiently and research funding is effectively targeted at the national level, and resources are not distributed too thinly, many countries – as noted above – are concentrating on similar priorities. Therefore, creating a world class international centre of excellence is a very difficult challenge for an individual country in the global research context. Policy makers need to ensure that the

tertiary education sector retains sufficient diversity so it can respond to future needs in the innovation system. The bias towards "frontier research" or "cutting-edge science" might be evaluated, in view of the fact that most innovation is incremental in character, and it involves non-scientific and non-R&D based knowledge such as design, marketing and tooling-up. In addition, a balance needs to be achieved between supporting basic and applied research. Policy needs to take account of non-technological, or organisational innovation by ensuring that the social sciences and humanities are not neglected. The establishment and maintenance of centres of excellence should be linked to national strengths and align with national industry priorities, as well as retaining enough flexibility to support emerging areas.

Broaden the criteria used in research assessments

A variety of indicators are used to measure the quality of research conducted in TEIs, but these indicators are problematic. Linking funding to quantifiable output measures, such as publications and patents, has had unintended impacts on the quality of research. This suggests a broad range of robust performance indicators should be developed and used to ensure the quality of TEI research is maintained and enhanced. Indicators can also be supplemented with other evaluation mechanisms such as peer review. Particular care needs to be taken to ensure that research assessments capture the wide differences across disciplines and significant time lags.

Ensure the shift towards project-based funding is monitored and provide a mix of funding mechanisms

The shift to competitive and project-based funding in TEIs needs to be examined in relation to the long-term development of the research and innovation system. Investment in equipment and instruments and the share of basic research conducted in TEIs is declining in many countries. The type of research undertaken seems to be shifting towards shorter and safer projects, and this is also linked to performance measures. It is unclear if project-based funding is having an impact on the training of researchers. These issues should be carefully monitored over the coming years. In the meantime, a mix of competitive and non-competitive mechanisms can be used to balance undesired effects.

Provide a long-term perspective to research and innovation policies

Knowledge production is a cumulative process that often involves very long time-lags between discovery and application. Therefore, it is essential that research and innovation policies take a long-term perspective to ensure the system is capable of contributing to future economic growth, technological progress and sustainable development. In particular, TEIs have an important role to play in terms of understanding and developing solutions to global challenges such as environmental, health and energy issues. Moreover, TEIs play multiple roles in knowledge economies. This means the governance of TEIs cannot focus on one-dimensional or short-term needs.

Evaluate and co-ordinate policy instruments across the research and innovation system

The policy instruments that have an impact on the development of the research and innovation system are diverse and multi-faceted. The governance structures related to policy making cut across administrative, judicial, regulatory and ministerial boundaries. Furthermore the decentralised nature of tertiary education policy in many countries limits

the scope and coverage of national policy measures. Such a policy landscape makes it extremely difficult to assess the effectiveness of individual policies and measures, many of which take place at the grass-roots or institution level and whose impact (or lack of) may depend on the success of other measures at different levels and under the competence of different actors (*e.g.* schools, local governments, national education ministries, research funding agencies) and require time to be evaluated. The tertiary education sector is an integral part of the science and innovation system. Different policies interact and influence wider performance so policies need to be coherent and co-ordinated across government, and evaluated across the entire innovation system.

References

Aho, E. (2006), *Creating an Innovative Europe: Report from the Independent Expert Group on R&D and Innovation appointed following the Hampton Court Summit*, January.

Archibugi, D. and M. Pianta (1992), *The Technological Specialisations of the Advanced Countries*, Kluwer, Dordrecht.

Arundel, A. and C. Bordoy (2006), "Developing internationally comparable indicators for the commercialization of publicly-funded research", paper presented at the OECD Blue Sky II Conference, September 26-28, Ottawa, Canada.

Atkinson, R. (2007), "Research Universities: Core of the US Science and Technology System", Center for Studies in Higher Education, University of California, Berkeley, Paper CSHE5'07.

Auriol, L. (2007), "Labour Market Characteristics and International Mobility of Doctorate Holders: Results for Seven Countries", *STI Working Paper 2007/2*, OECD, Paris.

ABS (Australian Bureau of Statistics) (2004), *Research and Experimental Development: Higher Education Organisations*, Cat. No. 8111.0, Australian Bureau of Statistics, Canberra.

ABS (Australian Bureau of Statistics) (2006), *Patterns of Innovation in Australian Businesses*, Cat. No. 8163.0, Australian Bureau of Statistics, Canberra.

ABS (Australian Bureau of Statistics) (2007), *Innovation in Australian Business 2005*, Cat. No. 8158.0, Australian Bureau of Statistics, Canberra.

AUTM (The Association of University Technology Managers) (2007), *AUTM U.S. Licensing Activity Survey FY2006*, *www.autm.net/surveys/index.cfm,* accessed 22 January 2008.

Balconi, M., S. Breschi and F. Lissoni (2004), "Networks of inventors and the role of academia: An exploration of Italian patent data", *Research Policy*, 33, pp. 127-145.

Basri, E. (2001), "Inter-firm technological collaboration in Australia in an international context: Implications for innovation performance and public policy", *Innovative Networks: Cooperation in National Innovation Systems,* OECD, Paris, pp. 143-168.

Basri, E. (2006), *Technological Collaboration and the Innovation Activities of Australian Firms*, PhD Thesis, Australian National University.

Bell, R., D. Hill and R. Lehming (2007), "The Changing Research and Publication Environment in American Research Universities", *Working Paper SRS 07-204*, National Science Foundation [NSF], Arlington.

Bok, D. (2003), *Universities in the Marketplace*, Princeton University Press, Princeton.

Butler, L. (2002), "A list of published papers is no measure of value", *Nature*, 419, p. 877, 31 October 2002.

Butler, L. (2003), "Explaining Australia's increased share of ISI publications – the effects of a funding formula based on publication counts", *Research Policy*, 32, pp. 143-155.

Butler, L. (2007), "Assessing university research: a plea for a balanced approach", *Science and Public Policy*, 34(8), pp. 565-574.

Cohen, W. and D. Levinthal (1989), "Innovation and Learning: the two faces of R&D", *The Economic Journal*, 99, pp. 569-596.

Colyvas, J., M. Crow, A. Gelijns, R. Mazzoleni, R. Nelson, N. Rosenberg and B. Sampat (2002), "How do university inventions get into practice?", *Management Science*, 48 (1), pp. 61-72.

Crespi, G., A. Geuna and B. Verspagen (2006), "University IPRs and Knowledge Transfer. Is the IPR Ownership Model More Efficient?", *SPRU working paper series*, No. 154.

DEST (Department of Education, Science and Training) (2003), *Mapping Australian Science and Innovation*, Commonwealth of Australia, Canberra.

D'Este, P. and P. Patel (2007), "University-industry linkages in the UK: What are the factors underlying the variety of interactions with industry?", *Research Policy*, 36, pp. 1295-1313.

Dosi, G., P. Llerena and M. Sylos Labini (2005), "Science-technology-industry links and the 'European Paradox': Some notes on the dynamics of scientific and technological research in Europe", *LEM Working Paper Series*, 2005/02, Italy.

European Commission (2002), *Action for "centres of excellence" with a European Dimension. http://ec.europa.eu/research/era/pdf/centres.pdf,* accessed 30 July 2007.

European Commission (2006), *Putting Knowledge into Practice: A Broad-based Innovation Strategy for the EU*, Brussels.

European Commission (2007), *http://cordis.europa.eu/erawatch/index.cfm,* accessed 30 July 2007.

European Research Council (2007), Mission of the ERC, accessed 30 July 2007 *http://erc.europa.eu/index.cfm?fuseaction=page.display&topicID=12*

Eurostat (2004), *The Fourth Community Innovation Survey (CIS) Harmonised Survey Questionnaire*, Eurostat.

Flanagan, K., K. Malik, P. Halfpenny and L. Georghiou (2002), *A Comparative Study of the Purchase, Management and Use of Large-scale Research Equipment in UK and US Universities*, PREST and CASR, The University of Manchester.

Gassler, H., W. Polt and C. Rammer (2007), "Priority Setting in Research and Technology Policy – Historical Developments and Recent Trends", *InTeReg Working Paper No. 36-2007*, Joanneum Research Institute of Technology and Regional Policy, Austria.

Geuna, A. (2001), "The Changing rationale for European university research funding: Are there negative unintended consequences", *Journal of Economic Issues*, 35(3), pp. 607-632.

Geuna, A. and B. Martin (2003), "University research evaluation and funding: an international comparison", *Minerva*, 41, pp. 277-304.

Gibbons, M. and R. Johnston (1974), "The role(s) of science in technological innovation", *Research Policy*, 3 (3), pp. 220-242.

Henderson, R., A. Jaffe and M. Trajtenberg (1998), "Universities as a Source of Commercial Technology: A Detailed Analysis of University Patenting, 1965-1988", *Review of Economics and Statistics*, 80, pp. 119-127.

Industry Canada (2007), *Mobilizing Science and Technology to Canada's Advantage*, Public Works and Government Services, Canada.

Liefner, I. (2003), "Funding, resource allocation, and performance in higher education systems", *Higher Education*, 46, pp. 469-489.

Lundvall B.-A. and B. Johnson (1994), "The learning economy", *Journal of Industry Studies*, 1 (2), pp. 23-42.

Mansfield, E. and J-Y Lee (1996), "The modern university: contributor to industrial innovation and recipient of industrial R&D support", *Research Policy*, 25, pp. 1047-1058.

Martin, B. (2003), "The changing social contract for science and the evolution of the university", in Geuna, A., A. Salter and E. Steinmueller (eds.), *Science and Innovation: Rethinking the Rationales for Funding and Governance*, Edward Elgar, Cheltenham, pp. 7-29.

Meri, T. (2007), "How Mobile are Highly Qualified Human Resources in Science and Technology?", *Statistics in Focus, Science and Technology*, 75/2007, Eurostat.

Ministry of Education, New Zealand (2006), *The System in Change: Monitoring Report 2005 – Tertiary Education Strategy 2002/07*, Ministry of Education, Wellington.

Ministry of Education, New Zealand (2007), *Comparing the Academic Impact of Research by New Zealand and Australian universities 1981-2005*, Ministry of Education, Wellington.

Ministry of Research, Science and Technology, New Zealand (2006), *Vision Mātauranga: Unlocking the Innovation Potential of Māori Knowledge, Resources and People*, Advisory Group to the Ministry of Research, Science and Technology, Wellington.

Morris, N. and A. Rip (2006), "Scientists' coping strategies in an evolving research system: the case of life scientists in the UK", *Science and Public Policy*, 33 (4), pp. 253-263.

Mowery, D. and B. Sampat (2004), "Universities in national innovation systems", in Fagerberg, J., D. Mowery and R. Nelson (eds.), *The Oxford Handbook of Innovation*, Oxford University Press, Oxford.

Mowery, D. and S. Shane (2002), "Introduction to the special issue on university entrepreneurship and technology transfer", *Management Science*, Vol. 48 (1), pp. v-ix.

Mowery, D. and A. Ziedonis (2002), "Academic patent quality and quantity before and after the Bayh-Dole Act in the US", *Research Policy*, 31 (3), pp. 399-418.

Nelson, R. (1986), "Institutions supporting technical advance in industry", *American Economic Review*, 76 (2), pp. 186-194.

NESTA (National Endowment for Science, Technology and the Arts) (2006), "Creative Industries Report", *NESTA Research Report*, April. *www.nesta.org.uk,* accessed 22 January 2008.

Nightingale, P. and A. Scott (2007), "Peer review and the relevance gap: ten suggestions for policy-makers", *Science and Public Policy*, 34(8), pp. 543-553.

NISTEP (National Institute of Science and Technology Policy) (2005), "Study for evaluating the achievements of the S&T Basic Plan in Japan: Quantitative and qualitative evaluation of outputs of scientific and technological research", *NISTEP Report No. 88*.

NSF (National Science Foundation) (2006), *Science and Engineering Indicators 2008*, National Science Foundation, Arlington.

NSF (National Science Foundation) (2008), *Science and Engineering Indicators 2006*, National Science Foundation, Arlington.

OECD (1995), *The Measurement of Human Resources Devoted to Science and Technology – Canberra Manual: The Measurement of Scientific and Technological Activities*, OECD, Paris.

OECD (2001), *Innovative Networks: Cooperation in National Innovation Systems,* OECD, Paris.

OECD (2002), *Proposed Standard Practice for Surveys of Research and Experimental Development – Frascati Manual*, OECD, Paris.

OECD (2005), *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*, OECD, Paris.

OECD (2006a), *Science, Technology and Industry Outlook 2006*, OECD, Paris.

OECD (2006b), *Women in Scientific Careers: Unleashing the Potential*, OECD, Paris.

OECD (2007a), *Science and Technology Scoreboard*, OECD, Paris.

OECD (2007b), "Research Careers for the 21st Century", Summary Report of the Joint OECD-Spanish Ministry of Education and Science Workshop, OECD, Paris. *www.oecd.org/dataoecd/39/58/39946722.pdf,* accessed 23 January 2008.

OECD (2007c), *Higher Education and Regions: Globally competitive, Locally Engaged*, OECD, Paris.

OECD (2008a forthcoming), *Adjusting to the Global Competition for Talent*, OECD, Paris.

OECD (2008b forthcoming), *Science, Technology and Industry Outlook 2008*, OECD, Paris.

Open Doors (2007), *International Students* 2007, Institute of International Education, United States.

Productivity Commission (2006), *Public Support for Science and Innovation*, Draft Research Report, Productivity Commission, Canberra.

Rosa, J. and A. Rose (2006), "Report on Interviews on the Commercialization of Innovation", *Working Paper, Science, Innovation and Electronic Information Division*, Statistics Canada.

Rosenberg, N. (1990), "Why do firms do basic research? (with their own money)", *Research Policy*, 19, pp. 165-174.

Statistics New Zealand (2004), *Innovation in New Zealand, 2003*, Statistics New Zealand, Wellington.

Statistics New Zealand (2007), *Innovation in New Zealand, 2005*, Statistics New Zealand, Wellington.

Taylor, J. (2001), "The impact of performance indicators on the work of university academics: Evidence from Australian Universities", *Higher Education Quarterly*, 55 (1), pp. 42-61.

Tether, B., A. Mina, D. Consoli and D. Gagliardi (2005), *A Literature Review on skills and Innovation. How Does Successful Innovation Impact on the Demand for Skills and How Do Skills Drive Innovation?*, ESRC Centre for Research on Innovation and Competition, University of Manchester.

Toner, P. (2007), *Skills and Innovation – Putting Ideas to Work*, NSW Department of Education and Training, Sydney.

Ven, A. van der, D. Polley, R. Garud and S. Venkataraman (1999), *The Innovation Journey*, Oxford University Press, Oxford.

8. The Academic Career: Adapting to Change

8.1 Introduction

Fundamental requirements for institutions of tertiary education to achieve their missions are that motivated people with high-level knowledge and skills choose to become academics, strategies to facilitate their work are in place, and that effective academics wish to remain in academia.[29] The academic profession needs to be competitive with other occupations in attracting talented people and the management of academic resources needs to ensure high levels of motivation within the profession. This Chapter reviews the trends and developments in the work of academics and analyses the main features of the academic profession in the countries reviewed. Whilst the tertiary education sector and the academic working environment are becoming increasingly diversified and complex, a number of broad trends affecting academic work and changes in staffing policies seem to be common to many countries. The Chapter further reviews factors which affect the attractiveness of the academic profession and those which influence the effectiveness of academics. It includes descriptions of policy initiatives in participating countries, and develops policy options for countries to consider.

8.2 Developments within the academic workforce

8.2.1 Demographic composition

Academic workforces are ageing in a number of countries

The ageing of academic workforces is a concern in most of the countries reviewed in the project. In the Netherlands, 47% of teaching staff in universities of applied science (HBOs) were aged 50 or over in 2005 (Ministry of Education, Culture and Science, the Netherlands, 2007). According to 2003 data from the University of Twente's Center for Higher Education Policy Studies (CHEPS) presented in Enders and Musselin (2005), in Austria, the Flemish Community of Belgium, France and Sweden over 50% of professors, at the highest rank of the career, were over 55. This proportion was between 40 and 50% in Australia, the Netherlands and Germany. In the Czech Republic, in 2000, the average age of full and associate professors was 63 and 57 respectively. This, in part, reflects long career structures in which access to the highest ranks occurs late (the average age of those

29. The teaching and research staff at tertiary education institutions are the primary focus of this Chapter, with other staff, such as those involved in administration or support, lying outside of its scope. The participation of academics in institutional leadership and management is covered in Chapter 3. Although some of the existing literature includes doctoral students in the definition of "academics", in this Chapter the term "academic" excludes doctoral students.

newly appointed as full and associate professors was 55 and 49, respectively). In Iceland, the average age of tenured academic staff, in 2004, was 51.3 (54.6 for full professors) while, in Norway, the average age of academic staff was 52.7 in 2003.

A study by Hugo (2005) indicates that Australian universities face a massive recruitment task over the next decade due to the retirement of the large numbers of academics who began work in the 1960s and 1970s. The author demonstrates that the Australian academic workforce has four key demographic characteristics: an older age structure than the workforce as a whole, concentration of its population into a narrow range of age groups, a lack of net growth in recent years and, despite improvements over recent decades, a significant gender imbalance. The study shows that the proportion of staff of Australian universities aged over 45 has increased from 45% in 1998 to 49% in 2004 while that aged 55 and over increased from 13 to 18%. In addition, the proportion aged 35 or under has decreased from 25 to 23%. The author concludes that Australian universities over the next decade will be faced by their largest recruitment task for three decades.

The ageing of the academic workforce raises several concerns. First, it has budgetary implications since in most tertiary education systems there is a link between pay and years of experience. An increase in institutions' costs due to academics ageing can limit the capacity of tertiary education systems to take other initiatives. Second, although a more experienced academic workforce can bring benefits to institutions, it can also be the case that additional resources are needed to update skills, knowledge and motivation among those who have been in the profession for a long time. Third, unless appropriate action to prepare and recruit more academics is taken, shortages might arise as an increasing proportion of academics retire.

A concern for institutions is the performance and motivation of older academics. Some studies suggest a negative correlation between seniority and productivity (Moore *et al.*, 1998; Bratsberg *et al.*, 2003). Koopman-Boyden and MacDonald (2003) suggest a number of arrangements that can help institutions cope with the issue of their ageing workforce. Flexible working arrangements such as annualised working hours, work on a consultancy basis or mentoring younger staff might offer working conditions that are more accommodating to older academics. Carefully designed professional training programmes can also allow them to keep up-to-date with rapid developments in knowledge and technology. The importance of valuing the accumulated work experience of older academics is also highlighted.

Some countries, concerned that the ageing of academic workforces might lead to blockages in the career progression of young academics, are taking some initiatives. For instance, some tertiary education institutions (TEIs) in the Flemish Community of Belgium have encouraged early retirements by providing full pensions to academics who reach 60 years of age (Verhoeven and de Wit, 2001). In the Netherlands, universities have implemented several initiatives to attract young academics. These include the recruitment of research trainees from abroad, funding for post-doctoral research with the possibility of a two-year extension on the condition that the institution offers a permanent position afterwards. In addition, measures to reduce the working hours of staff aged over 55, while keeping attractive financial conditions, were introduced. The hours available as a result of such measures have been used to recruit young academics to additional permanent posts. This "double staffing" strategy aims at ensuring an adequate supply of suitable academics to replace those who are expected to retire soon, while keeping the knowledge and experience of older academics (de Weert, 2001). This goes along governmental

programmes to attract and retain young academics such as the *Innovation Research Incentives Scheme* that provides subsidies at different stages of the research career, including to researchers coming from abroad.

Hugo (2005) proposes a number of strategies for Australian universities to face their recruitment challenge. These include "new blood programmes, early recognition of new talent, family-friendly policies (especially for women), 'bringing them back' programmes to repatriate former staff and students of the university, developing joint international exchanges in teaching and research, incentives to keep 'high fliers' in the university, gradual retirement programmes for selected staff and accelerated promotion for key staff".

Gender inequalities remain within the academic profession

In virtually all of the reviewed countries, women are considerably under-represented in the academic profession. A number of authors also report that the proportion of female academics is particularly low in higher academic ranks (Chevaillier, 2001; Kwiek, 2003; Mora, 2001). In the Netherlands, in 2005, for the university sector, the proportion of females among the academic staff, senior university lecturers and full professors was 27, 16 and 10% respectively (Ministry of Education, Culture and Science, the Netherlands, 2007). In Iceland, the proportion of females among full professors was 15% in 2004. In Australia, in 2001, among the older lecturing staff, there were four men for every woman aged over 55 (Hugo, 2005). This is despite the fact that in recent years there has been a growing inclusion of female academics within the academic profession. Enders and Musselin (2005) report that, within the last decade, there has been an increase in the proportion of females both among academic staff overall and the higher ranks of the academic profession, in all the systems for which data were available for their analysis (Australia, Austria, the Flemish Community of Belgium, Finland, France, Germany, the Netherlands, Sweden and the United Kingdom). In Australia, the proportion of academics who were female increased from 27% in 1988 to 33% in 1995 and 53% in 2004 (Hugo, 2005).

Ehrenberg (2005) examines the under-representation of women in the academic profession at research universities in the United States. Among possible factors impacting on female participation, the author proposes female PhD's preferences for teaching over research and perceptions that research universities offer less friendly environments for them (including engaging in more gender discrimination). The difficulty in combining family life with a research career is also an important factor as indicated by the findings of a large-scale study (Mason and Goulden, 2004). Mora (2001) proposes two possible explanations for the particularly low proportion of women in higher academic positions in Spain. The first is age: the expansion in the participation of women in the academic profession is a relatively recent phenomenon. As there is a correlation between age and career stage attained, the lower average age of female academics compared to their male colleagues could partly account for the under-representation of women in higher academic ranks. The second explanation proposed by Mora is the potential existence of discrimination.

A large number of studies have addressed the issue of gender discrimination in the academic labour market. A brief review of the existing literature in the United States by Toumanoff (2005) suggests that there is a gender gap in current earnings even when human capital and productivity measures are held constant. Using data from a university in the United States, he also found that, controlling for a range of other determinants of

salary, there was a statistically significant difference in the salary-at-hire between men and women (Toumanoff, 2005). McDowell *et al.* (1999, 2001) found that female academic economists were discriminated against their male colleagues in promotion processes, although the negative effect appeared to be decreasing. A study by Booth *et al.* (2001) of academic economists in the United Kingdom concluded that there was a significant difference in salary between male and female academics, even when a range of other explanatory factors (including measures of productivity) were held constant. Furthermore, the study found gender differentials in outside job offers and differences on the impact of outside offers. Controlling for a range of variables, male academics received more outside offers than their female colleagues. Also, while outside offers had a positive impact on men's earnings, the coefficient was negative for female academics. This suggests that relatively low-paid women search more for outside offers (Booth *et al.*, 2001). In the Czech Republic, a 2004 survey of academics concluded that women earned significantly less than men not only overall but even within similar hierarchy levels in the same age group (Matějů and Vitásková, 2005).

Some countries have taken initiatives to improve the participation of females in academic workforces. In Sweden, for instance, gender equality among academics is considered as a central policy objective. Each TEI is required to design the necessary measures to address the issue, including a strategic plan to recruit more female academics. Most institutions have established equal opportunity plans and produce annual reports to the government with their progress. The government also aims to promote gender equality through a number of professorships, research assistant posts and doctoral studentships specifically for women (Askling, 2001). A number of institutions in the United States have developed "family friendly" policies in order to make the academic career more attractive to young female academics. Examples of such measures include the availability of child-care; support with spouse/partner employment; and a year extension on the academic's tenure clock after having a new child (Ehrenberg, 2005).

8.2.2 Challenges in the recruitment of academics

Some countries reveal difficulties in the recruitment of high-quality academics. While a critical situation of shortage is not present in any of the reviewed countries, some express concerns about the quality of a proportion of newly appointed academics. In Korea, for instance, although it is not difficult to fill vacant positions, recruiting high-quality candidates is considered more challenging in certain fields such as engineering given the competitive salaries of the private sector. Other countries indicate recruitment concerns in particular areas such as the non-university sector (*e.g.* Finland, see Kaipainen *et al.*, 2001), the private sector (*e.g.* Poland), outside traditional university locations (*e.g.* the Czech Republic), or in less central areas (*e.g.* Croatia, Iceland). Some countries express concern about the low number of individuals applying for academic positions. The Estonian *Country Background Report* cites the "limited supply of the number of qualified candidates for academic positions" as "being one of the most strategic issues for higher education institutions in Estonia". The extent of competition for professorial positions is argued to be low – in 2004, there were 0.7-1.7 applicants per position in universities.

Ensuring an adequate supply of quality academics is also more challenging in disciplines in which the private sector offers much higher salaries and/or better career prospects. Such disciplines typically include computer sciences, business and economic studies and engineering (*e.g.* England, see Shattock, 2001a). A report by the Flemish

Science Policy Council (VRWB, 2002) showed that, in the Flemish Community of Belgium, there were major problems in hiring academic personnel in engineering and, to a lesser extent, in the biosciences and the social sciences. Another study by the Flemish Science Policy Council (S'Jegers *et al.,* 2002) revealed that the reasons for choosing a non-academic career include the lack of long-term prospects for a research career at a university, including stability and job security *vis-à-vis* other sectors; a more dynamic work environment outside universities; and, to a lesser extent, less attractive remuneration prospects. In Sweden, studies by the National Agency for Higher Education (Högskoleverket, 2003) and the Swedish Research Council (Vetenskapsrådet, 2003) coincide in concluding that no major recruitment concerns in the academic profession are expected within the next decade except, possibly, in the social sciences and the humanities.

Regarding the difficulties in recruitment due to relatively low academic salaries, Chevaillier (2001) suggests that offering academics opportunities for private employment can contribute to limit the problem. Similarly, Mora (2001) argues that external contracts in market-oriented fields can allow academics to complement their income.

8.2.3 Mobility and internationalisation

Countries have different traditions of within country academic mobility

The degree of within country academic mobility varies strongly across countries. In a great number of them, there is a strong tradition of "in-breeding", in other words that graduates who move on to further study and indeed to academic employment tend to do so, wherever possible, within the same institution in which they were under-graduates. This is a complex and to some extent a cultural issue which is ingrained in a great number of tertiary systems. It can be partly a matter of student choice – no doubt partly connected, at least outside the big cities, to the need to reduce their cost of living by staying at home – and partly a matter of preference by selectors and recruiters among the academic staff. There are a number of clear risks: reduction of competition, lack of refreshment from outside and a potential for patronage (or the reverse) which can only increase students' and junior staff's dependency.

In Japanese universities, the percentage of faculty members who were graduates of the institution where they were employed stood at 34% in 2001. A study by Yamanoi (2005) also revealed that such proportion ranged between 64% and 78% in top-ranked Japanese universities. Kim (2001), exploring the case of Sweden, shows that of those continuing to doctoral education, 85% did so at the same institution where they received their under-graduate degree. Considering the transition to academic employment, Kim reports that about 66% of professors and between 80 and 85% of other teaching staff received their doctorate from the institution where they were employed. According to the author, reasons for the low academic mobility in Sweden include the conception of relative uniformity between institutions, considerable geographical distances and strong local traditions. The Portuguese *Country Background Report* reveals that a study conducted at the two largest engineering schools in the country showed *in-breeding* rates of between 60 and 80% at the Assistant Professor level between 1990 and 2003. For the case of Poland, where academic mobility is also low, Kwiek (2003) proposes the following explanations: staying in the same institution, particularly in the case of the major research universities, is embedded in the academic tradition of the country; salary

levels are similar in all institutions of the public sector; changing one's residence is difficult in terms of housing; and there are no mechanisms to promote mobility.

By contrast, the academic career system in Germany provides strong incentives for mobility. Promotion from a junior academic position to a professorial position within the same institution is forbidden by law (Enders, 2001a). Institutional mobility is thus a condition for promotion. Moreover negotiation of higher remuneration or better work conditions is only possible when a staff member is offered a post by another institution.

Cross border academic mobility is increasing

Although international mobility has always existed in the academic profession, it has been reinforced by recent trends such as the expansion and convergence of national tertiary education systems, the emergence of programmes aimed at promoting mobility, and improved means for travel and communication (Welch, 1998) (see also Chapter 10). In the Netherlands, an estimated 25% of all faculty members in research universities have foreign origins. As in other nations the main internationalisation of faculty is comprised by short-term leave, exchange visits and research collaboration (Enders and de Weert, 2004a). A total of 38% of faculty in Dutch research universities had foreign experience in the previous five years with three fifths spending time in Europe and two fifths in the United States.

Based on data from the International Survey of Academic Staff carried out under the *aegis* of the Carnegie Foundation (Altbach, 1996), Welch examines patterns of internationalisation within academia in 14 countries. Findings of the study compare "peripatetic" staff (*i.e.* staff with highest degree from abroad) with "indigenous" staff. Firstly, it is suggested that some disciplines such as business, computer science, physics, humanities and the social sciences are more "peripatetic", while health, technical and educational sciences are rather "indigenous". Secondly, "peripatetic" staff are less likely to be employed on a full-time basis. There are also marked gender disparities with men being more likely to be among the "peripatetic" group than women. Finally, "peripatetic" academics are more likely to be in higher academic ranks, prefer research to teaching activities, and participate more in international activities than "indigenous" staff (Welch, 1997).

Enders (1999) examines the role of international exchange and relationships in the academic profession in a comparative perspective. The tertiary systems included in the analysis were those of Germany, Japan, the Netherlands, Sweden, England and the United States. It is argued that the size of the country, the centrality or marginality of its tertiary education system, the relevance of its language for international academic communication and traditional international links are major factors that determine the role of international relationships in the academic profession. In Sweden academics have a strong international orientation. In Germany and Japan academics might decide to focus their work primarily either on the national or the international sphere. Finally, many academics in England and in the United States regard "internationalisation through import" as taken for granted.

According to some authors there has also been a growing global competition for researchers. The growing emphasis on university rankings, particularly the annual Shanghai Jiao Tong University ranking, is leading many countries and universities to focus on acquiring the personnel who drive improved performance in the ranking index, notably Thomson/ISI-classified "HiCi" researchers and Nobel Prize winners. This has

generated intensified global competition at the peak of the researcher labour market, a competition affected by relative salaries, conditions of work and research infrastructure (Marginson and van der Wende, 2007) (see Chapter 10). Hugo (2005) argues that the international competition for the highly skilled has never been fiercer and stresses that the academic labour market is increasingly internationalised. He emphasizes that some countries have modified immigration regulations to facilitate the recruiting of the highly skilled researchers, scientists, and technologists (see Chapter 10). In this context, it should be noted that there are some interesting cases of pairs of countries with few restrictions to the mobility of labour and reasonably compatible systems (*e.g.* Australia and New Zealand; Ireland and the United Kingdom).

Musselin (2004) provides an analysis of academic labour markets in Europe suggesting that a number of factors hinder mobility and make the comparison of labour market opportunities more difficult. The legal status of academics varies among countries, which implies radical statutory changes for a mobile academic. In addition, procedures for determining salaries, as well as recruitment procedures are different.

8.3 The changing roles of academics

Academia in virtually all reviewed countries continues to be held in high regard as a career and, in most countries, there are many more qualified aspirants than posts available. The great majority of academics see their profession very positively with unique comparative advantages such as professional autonomy and the intellectual stimulation it brings. However, there are a number of contextual trends which are modifying the nature of the work of academics and, in some cases, making it more challenging. This Section focuses on those aspects of contextual trends that may make the daily work of academics more challenging. It does so in the recognition that the contextual trends described below have a range of positive effects.

8.3.1 The nature of academic work has been affected by a number of trends in tertiary education

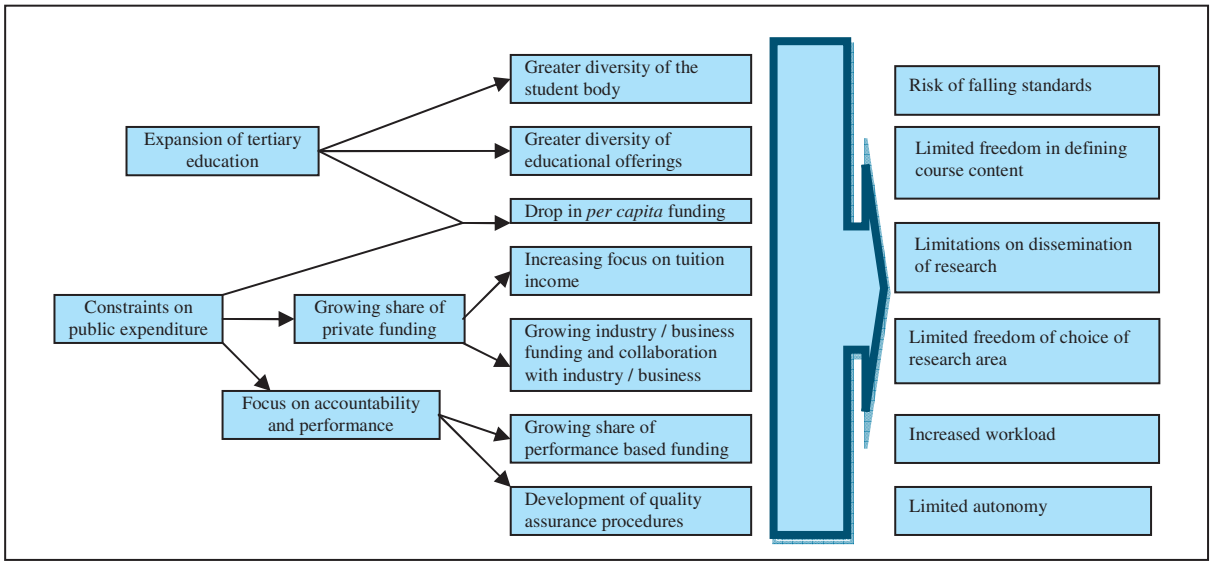
Figure 8.1 provides an overview of trends that have had an impact on the academic profession and some of the potential challenges faced by academics. Although it does not fully capture the complexity and multiplicity of trends and challenges, it provides a summary of some of the key changes. This figure shows the potential negative consequences of contextual trends on the work of the academics.[30]

The transition towards mass participation in tertiary education is one of the most commonly mentioned factors as having affected the working environment for academics (Blaxter *et al.*, 1998; Coaldrake and Stedman, 1999; Kwiek, 2003; Mora, 2001). The rise in student numbers has led to a greater diversity within the student body including in academic preparation and socio-economic background (Coaldrake and Stedman, 1999). The resulting increased diversity of student needs and interests, the changes in student-staff ratios and the increasingly impersonal relationship between students and academics impacted on academic work (El-Khawas, 1996). The growing pressure on governments to limit public expenditure together with the rapid expansion of tertiary education resulted,

30. However, Figure 8.1 does not portray the many positive effects of the same contextual trends such as the benefits of a more diverse student body, the new research and practice opportunities generated by private funding, or the enhanced autonomy associated with the academic's ability to generate revenues.

in a number of cases, in a decline in *per capita* funding (Blaxter *et al.*, 1998; Coaldrake and Stedman, 1999; Kwiek, 2003). Finally, in most cases, there has been a shift from a uniform and centralised system towards greater diversity within the tertiary education sector in terms of power and prestige, with likely effects on academic work (Askling, 2001).

Figure 8.1. Contextual trends affecting academic work and potential challenges



The mechanisms for financing tertiary education have also evolved. First, there is a greater reliance on non-public sources of revenue. Coaldrake and Stedman (1999), examining academic work in Australia, suggest that some of the consequences of greater reliance on non-public money include differential income generation across departments and a further complexity in the funding of research and teaching, since private sponsors may not consider that these two activities are intertwined. Separate funding streams have also emerged, in particular for research. In addition, the allocation of public funding for tertiary education is increasingly characterised by greater targeting of resources, performance-based funding, and competitive procedures. All these developments affect the context in which academic work is undertaken.

The increasing focus on accountability and performance has also affected the academic profession. For instance, many countries have implemented policies linking research funding and salary differentiation to performance. Institutions and academics face growing pressures not only for performance, but also for accountability (Blaxter *et al.*, 1998).

Important changes have also occurred in the leadership of TEIs, including the emergence of new perspectives on academic leadership and new ways of organising the decision-making structure. This has affected the way individual academics relate to institutions' leadership. Henkel (2002) explores academic leadership and its implications for roles and relationships within TEIs in the United Kingdom. It is argued that academic leaders have had to reshape their identities in order to integrate managerial thinking into their leadership. The author suggests that the authority of institutional leaders has increased. However "the pulls between centralisation and decentralisation, between control and trust of the basic units are strong. Negotiation, iteration and influence remain

important for successful leadership". It is further suggested that the authority of academic leaders in the basic units is rather uncertain. Heads of department have varying experiences of the balance between demands and support coming from the institutional level.

The following Section explores what new expectations and demands are put on academics as a result of these trends.

8.3.2 New expectations and demands on academics

Increased workload

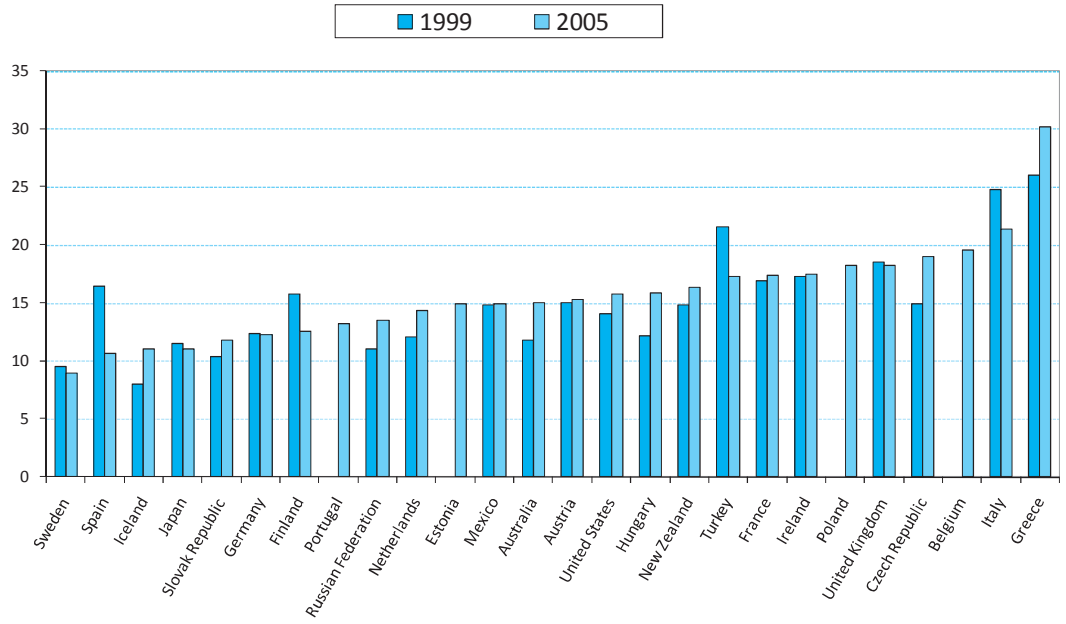
Increasing workload is one of the trends most commonly cited as affecting academic work. First, the greater diversity of educational offerings and the increased share of private funding and collaboration with industry and business require academics to perform new tasks. Examples of these include new responsibilities in the field of internationalisation, interdisciplinarity, new pedagogies, the delivery of online and overseas courses, externally-funded research often in a collaborative context, and networking with industry, community and government, including various domains of new income generation. This increased workload is claimed to limit the time available for teaching and research. Second, the expansion of competitive funding arrangements implies more time spent on preparing funding proposals (Kayrooz and Preston, 2002). Third, the development of quality assurance procedures also requires academics to perform more administrative tasks and imposes a considerable workload on them (Askling, 1997; Harvey, 2002).

The expansion of tertiary education, a positive and desirable trend as described in Chapter 2, is often claimed to impose extra workload on academics in at least two additional ways. First, the greater diversity of the student body, in terms of prior knowledge, abilities and expectations, entails some new challenges for academics. In the United Kingdom, there are claims that efforts to widen participation have led to a relaxation of academic standards, which resulted in an increased workload for academics (Baldauf, 2001). Reporting on the case of Australia, Coaldrake and Stedman (1999) note similar changes arguing that the expansion of tertiary education has led to a greater diversity in the student body in terms of academic preparation and socio-economic background. Second, in some countries, the growth in student numbers was not followed by a proportional growth in the number of teaching staff. Figure 8.2 shows the ratio of students to teaching staff in TEIs in 1999 and 2005. In 14 out of the 22 countries for which data are available for both years, there was an increase in the student-teacher ratio. In 2005 the student-teacher ratio was highest in Belgium, the Czech Republic, Greece, Italy, Poland and the United Kingdom. Considering the case of France, Chevaillier (2001) argues that these trends have had a considerable impact on working conditions.

Overall the *Country Background Reports* convey the view that expectations and demands placed upon academics have been rising (see also Huisman and Bartelse, 2001). The pressure to respond to societal and student needs, the growing levels of accountability, the mounting competitive environment, while delivering at three levels – teaching, research, and service – have possibly led to higher levels of stress and heavier workloads. A study undertaken at a university in New Zealand (Houston *et al.*, 2006) reveals that 94% of academic staff who completed the 2003 "Work Environment Survey" indicated that that they had worked after hours in the week preceding the survey (39% by

more than 10 hours beyond full-time). Five main areas where work demands were perceived to be expanding were identified: compliance requirements and information requests; administrative duties associated with the introduction of new systems and changes to university policies; increasing numbers of programme and paper offerings; increased workload resulting from the variety of delivery modes supported by the university; and increasing demand for a longer teaching year (*i.e.* Summer school).

Figure 8.2. Ratio of students to teaching staff in tertiary education institutions, 1999 and 2005



Countries are ranked in ascending order of the ratio of students to teaching staff in tertiary education institutions in 2005.

Note: Data refer to Tertiary-type A and advanced research programmes (ISCED levels 5A and 6) only for Australia and Finland in both 1999 and 2005 and for the Netherlands in 2005. Data refer to public institutions only for Australia in 2005.

Source: OECD, 2001; OECD, 2007.

Some countries are creating administrative units to assist academics with administrative tasks. For instance, in Norway, while the proportion of clerical assistants has declined, there has been a significant increase in the number of consultants, advisors and administrative leaders (Gornitzka *et al.*, 1998) with the objective of reducing the administrative burden on the academics (Gornitzka and Larsen, 2001). Many institutions, typically larger ones, are creating special support units such as research policy centres, technology transfer offices, evaluation or teaching/learning centres. In other countries, the financial constraints have prevented the number of support staff increasing to the necessary extent. Hence the frequent complaints from academics who have to perform administrative tasks that could otherwise be done by specialised support staff (Chevaillier, 2001; Kim, 2001).

According to some authors, the development of special support units and the growing number of administrative tasks performed by academics are leading to an increasingly blurred boundary between academics and administrators, since senior academics often

work in the special support units (Pickersgill *et al.*, 1998). By contrast, Conway (1998) suggests that overlaps between academic and administrative work do not necessarily mean that boundaries between the two roles are blurring. She argues that the work of the two groups is of a very different nature and requires different skills and knowledge. Therefore what is needed is a clarification of the respective roles of academic and administrative staff in order to facilitate their collaboration in institutional management. Coaldrake and Stedman (1999) support Conway's conclusions suggesting that the recognition of the complexity, diversity and growing specialisation of non-academic work is essential. In particular, it is crucial to acknowledge the value of specialist support staff in areas such as human resource management, marketing and strategic planning.

Challenges for research activities

Changing funding patterns also entail a number of challenges for research in TEIs. The growing emphasis on performance-based funding is often claimed to limit academics in their choice of research area. When academics make decisions about research, the potential of a project to attract funding is an important factor to be considered. This might encourage academics to avoid risky areas and prefer to carry out research in "safe", established fields (Kayrooz and Preston, 2002). This tendency might discourage "curiosity-driven" research, inquiry that aims at exploring new areas and that is attracted by the unpredictable (SNAHE, 2004).

A more short-term vision of research is also likely to be stimulated by performance-based funding, since academics will aim at meeting the short-term goals defined by funding agencies. As performance is often measured by economic and commercial criteria, long-term engagement in basic research might be discouraged. The increasing share of private funding might have similar limiting effects. Since the interests of private firms are given more attention, applied research might be emphasised at the expense of basic research. Furthermore, academics might have limited possibilities to publish on contentious areas or publish findings that contrast with sponsors' interests (Kayrooz and Preston, 2002).

The possibility of restrictions on the dissemination of research privately funded is another challenge for academic research. Academia and business or industry might have diverging interests and objectives. For instance, openness versus secrecy in research or patent ownership are issues where academe and private companies have differing viewpoints (Ashford, 1983). TEIs increasingly aim at fostering links with business and industry. The creation of science-parks, spin-off companies and business ventures provide common examples of such collaboration. However, contractual agreements may impose limits on the publication of research results (Altbach, 2001; UNESCO, 1998).

Time available for research may also be limited by increased workloads. In analysing the findings of a comparative study which included Germany, the Netherlands, Sweden and England, Enders and Teichler (1997) report that some academics express concerns about the lack of time available for research, due to the growing number of teaching and administrative tasks that they need to perform. A study mentioned in the Norwegian *Country Background Report* suggests that academics in Norway were somewhat dissatisfied with the working conditions for conducting research in 2000. In that year, 29% of Norwegian faculty members reported that opportunities for carrying out research were "very good" or "good"; 30% stated they were "satisfactory"; and 42% described the opportunities as "bad" or "relatively bad".

A new relationship with institutional governance

A trend highlighted by several studies is the shift from *primus inter pares* decision-making towards more managerial approaches. De Weert (2001) reports on changes in the Netherlands resulting from the new legislation on the governance of TEIs. It is suggested that while formerly deans were elected as *primus inter pares*, since the reforms they act more as professional managers with increased budgetary responsibilities and authority for staffing issues. As de Weert (2001) puts it "This changing university governance structure tends to transform the traditional task-oriented organisation, in which academics have a large amount of professional autonomy, into a market-type organisation, which stresses the managerial aspects of teaching and research" (de Weert, 2001).

Askling (2001) highlights similar processes in the Swedish tertiary education system. It is argued that traditional collegial decision making and the role of institutions' leaders as *primus inter pares* have eroded since the introduction of new managerial approaches. The appointment of external representatives as chairs of university boards has further reinforced this shift away from the collegial tradition and provoked strong criticism from many academics.

These new management approaches have implications for the work of academics. De Weert (2001) suggests that TEIs are seen more as product-oriented, professional organisations. There is an increased focus on the achievement of certain objectives at institutional and departmental level. As a result, academics not only pursue their own objectives but they also have to take into account the performance of their own unit in relation to institutional goals. It is argued that although these developments certainly impose new pressures on academics and limitations on their traditional freedoms, it is too early to assess to what extent there might be a "clash of cultures". Moreover, it is suggested that widening breaches between academics and managers are not an inevitable consequence of changes in the context of the academic work.

Askling (2001) argues that, in Sweden, the decentralisation process has devolved a number of new responsibilities to TEIs, requiring them to develop institutional leadership and executive capacity. This implied challenges for the academic body: "What we can notice today is a confusion about how to handle the traditional collegial decision-making procedures at a time when a more executive and managerial style of leadership is expected" (Askling and Henkel, 2000).

Other studies highlight the importance of institutional leadership for academic achievement. Ramsden (1998) focuses on leadership at departmental level in the United States providing an empirical account of the links between academic leadership, departmental environments and academic outcomes. The author suggests that academic outcomes and staff commitment can be enhanced through effective leadership. Martin (1993) examines the roles and characteristics of effective academic leaders at research universities in the United States. The findings of five case studies suggest that successful deans are cultural representatives of their institutions and aim to achieve a more efficient and more inclusive communication structure. Furthermore they are skilled managers, good planners and analysts, and advocates for their institution. Finally, they promote links with different groups and individuals in the institution.

Coaldrake and Stedman (1999) summarise changes in academic management and academic work. They stress that contextual trends such as the increasing complexity of academic work perceived by academics and financial constraints reinforce the need to improve the connection between institutional strategic goals and the work of individual

academics. It is argued that "this will require not only management initiative, but also a renegotiation of the balance between institutional objectives and individual academic freedom, and a reconceptualisation of what comprises academic work". They suggest that the following changes in academic management will help to achieve this:

- Frameworks for linking institutional goals with individual academic work (including comprehensive performance management and workforce planning).
- Staff management systems which recognise and coordinate the contribution to university objectives of the work undertaken by all groups of staff (*i.e.* including part-timers and general staff).
- More flexible criteria used in the assessment of the performance and prospective work of academics. Such criteria need to be part of a performance management system that determines expectations for staff and provides feedback and opportunities for professional development.
- More flexible procedures for defining the workload of staff.
- Increased interaction and transfer of staff between TEIs and non-academic organisations and between academic and non-academic positions.
- Improved capacity for collaboration among TEIs and between these and non-academic organisations.
- Improved capacity to reward performance (*e.g.* salary differentiation led by market factors and personal performance).

Traditional academic values challenged

A number of studies suggest that recent developments in tertiary education represent a threat to traditional academic values and the autonomy of academics. The trend towards increasing collaboration between TEIs and the private sector raises numerous questions about academic values. For instance, collaboration with the private sector involves negotiation over issues of ownership and design of course content and research. These are issues over which traditionally academics had full control (Coaldrake and Stedman, 1999). Furthermore, the complete autonomy of academics over curriculum design is also claimed to be limited by the increasing reliance on income from tuition fees. Kayrooz and Preston (2002) suggest that courses that have more potential to generate private income are likely to be favoured over curricula of a more critical or speculative nature. This may also imply pressures to adapt the curriculum to "the latest wave of academic trendiness" (Kayrooz and Preston, 2002). Furthermore, some academics claim that the need to attract and retain fee-paying students carries the potential risk of declining educational standards.

The growing power of professional managers and external governing bodies as opposed to that of academics is also often claimed to threaten academic freedom.[31] It is argued that academics have less authority to determine the direction of the university, they are less free to elaborate the curriculum and to make decisions on research (Altbach, 2001). Similarly, Newton (2002) argues that managers have an increasing power in the

31. Berdahl (1990) defines *academic freedom* as "that freedom of the individual scholar in his/her teaching and research to pursue truth wherever it seems to lead without fear of punishment or termination of employment for having offended some political, religious or social orthodoxy."

academic domain as a result of the increasing importance of quality assurance issues. Pressures for greater transparency also result in perceptions of diminished autonomy and integrity among some academics (Askling, 1994).

The 1997 *UNESCO Recommendation concerning the Status of Higher Education Teaching Personnel* (UNESCO, 1997), partly as a response to the "… concern regarding the vulnerability of the academic community to untoward political pressures which could undermine academic freedom", provides basic guidelines for enhancing the position of higher education personnel in the interests of providing quality higher education for all. It states that:

> *"Higher-education teaching personnel are entitled to the maintaining of academic freedom, that is to say, the right, without constriction by prescribed doctrine, to freedom of teaching and discussion, freedom in carrying out research and disseminating and publishing the results thereof, freedom to express freely their opinion about the institution or system in which they work, freedom from institutional censorship and freedom to participate in professional or representative academic bodies."* (UNESCO, 1997)

A number of other authors defend that recent developments in tertiary education might actually improve academic freedom. They argue, for instance, that private funding is not necessarily a threat to academic freedom. To begin with, solely public funding implies homogeneity in structure and governance of public institutions and constraints on diversity. Some degree of control will always be associated with government funding and carries a potential threat of government monopoly on academic freedom. In this sense, private funding can bring diversity of financial resources and support academic freedom (Kerr, 1998). Furthermore, industrial financial support can counterbalance the uncertainties of public funding. It brings temporal stability to research and improves the relevance of academic research to society (Grey, 1982). Finally, the potential limitations imposed by financial constraints on academic freedom are highlighted. It is argued that the freedom to determine areas of teaching and research is a key element of academic freedom. However, this freedom is always subject to financial constraints. Chipman (2000) points out that "poor Australian universities have always been just as free to conduct research into nuclear physics and space travel as the rich have". Academic freedom is more likely to be furthered in a well-managed institution that has a broad and diversified funding base. Furthermore, recent trends towards growing "managerialism" can also be considered as a means to achieve a successful working environment for academics. It is argued that ensuring good management in an institution is crucial. A poorly managed higher education institution is unlikely to succeed (Chipman, 2000).

This line of thought also argues that pressures for accountability can contribute to protect academic freedom. It is argued that accountability not only does not limit academic freedom, but it is required to maintain it. The key role of academics is the pursuit of knowledge, by this they render a service to society which can be performed only in an atmosphere free from constraints on thought. Academic freedom and accountability are, thus, related: academic freedom is not a right that is lodged in an individual academic but "is a set of arrangements that are derived from the university's obligation to society" (Whitaker, 1994).

8.3.3 Job satisfaction and the attractiveness of the academic profession

Job satisfaction is influenced by a range of factors

Low salary levels, in particular when compared to the private sector, are a commonly cited source of dissatisfaction in many countries, for instance Poland (Kwiek, 2003), the United Kingdom (Shattock, 2001a), and the Netherlands (de Weert, 2001). In Estonia remuneration is a sensitive issue in disciplines where the number of fee-paying students is low or where academic work implies a considerable amount of personal supervision. By contrast, Mora (2001) reports that, although there is a lack of reliable evidence on the satisfaction of academics with their remuneration in Spain, complaints about salaries are relatively infrequent. Similarly, Chevaillier (2001) suggests that, in France, although there is no systematic evidence on this issue, there is a general feeling among academics that their remuneration is fairly adequate.

Remuneration is not, however, the only factor that influences job satisfaction among academics. Numerous studies suggest that recent developments in academic work have affected job satisfaction among academics. Askling (2001) draws on studies carried out in Sweden during the 1990s (Westling *et al.*, 1997; Blomqvist *et al.*, 1996). These showed an overall satisfaction among academics, who had a positive view of their students, appreciated their freedom, independence and opportunities for professional development, although they were not satisfied with financial and other material conditions. The author further argues that recent changes such as the increased workload and complexity in academic work resulting from the sharp increase in student numbers, changes in academic programmes, new funding patterns and the devolution of authority from central authorities to institutions have resulted in greater stress for academics. Similarly, a number of studies on the academic profession in the United Kingdom suggest that increasing workload and pressures on academics have had a negative impact on their satisfaction. Growing job insecurity and declining salary levels compared to other relevant sectors have contributed to lower levels of job satisfaction (Baldauf, 2001; Shattock, 2001a).

In another study, Enders and Teichler (1997) examine different aspects of job satisfaction in a comparative perspective drawing on some findings of the "International Survey of the Academic Profession" (Boyer *et al.*, 1994). Comparing Germany, Japan, the Netherlands, Sweden, England and the United States, the authors report the following results. First, regarding remuneration levels the majority of academics in high-rank positions were satisfied in Germany, the Netherlands and the United States. The majority of middle-rank and junior staff was, however, dissatisfied with their income. In Japan, Sweden and England, academics were dissatisfied with their salaries regardless of academic rank. Second, concerning job security, most high and middle-rank academics expressed satisfaction. Junior staff employed on fixed-term contracts seemed to have considerable lower levels of satisfaction in this respect. Finally, as regards promotion prospects in academia, middle-rank staff in Germany, Japan, the Netherlands and England seemed to perceive limited opportunities. On the contrary, middle-rank staff in the United States expressed a relatively high level of satisfaction regarding opportunities for advancement. Drawing on the studies mentioned above, Enders (1999) points out that while scarcity of resources, excessive teaching load – and among junior staff job insecurity and limited promotion prospects – often result in dissatisfaction, the relatively independent nature of academic work is a major source of job satisfaction.

Lacy and Sheehan (1997) examined factors influencing job satisfaction among Australian academics. Their findings suggest that the strongest predictors were those related to work climate, including intellectual atmosphere, faculty morale, sense of community, and relationships with colleagues. The authors conclude that enhancing the working environment of academics is essential to achieve higher levels of job satisfaction: "Those things which develop a sense of community – acknowledgment, support and appropriate levels of participation in decision making – are important to academics. Nurturing of the intellectual environment, clarity of institutional mission and faculty-administration relations are, however, just as important and are clearly related to the climate factors" (Lacy and Sheehan, 1997).

The attractiveness of the academic profession has deteriorated in a number of countries

Enders and Teichler (1997) examine the academic profession in Europe and argue that it is undergoing a process of "downgrading" as a result of financial constraints faced by TEIs, increasing pressures for accountability and the relative decrease of academics' prestige. This happens in spite of the crucial role that the academic profession plays in societies where knowledge and highly qualified labour are of increasing importance. Enders (1999) claims that with the expansion of tertiary education and the "scientification of society" the socio-economic status of tertiary education has declined. It is suggested that TEIs have lost the monopoly and exclusiveness over the production and dissemination of scientific knowledge. Moreover, they have to face growing competition with the multitude of suppliers of tertiary education and research.

Several studies highlight the lack of attractiveness of academic work.[32] For instance, Mora (2001) reports that, in Spain, it is often claimed by older academics that the prestige of the academic profession has been declining. The author suggests that this is mostly due to the huge increase in the number of professors, which followed the expansion of tertiary education in Spain. In Finland, as well, the academic profession has lost some of its attractiveness which used to be based on tenured positions and academic freedom. The salary gap between the private sector and academia is increasing and the academic profession is increasingly insecure as a job (Kaipainen *et al.*, 2001).

A study on staffing policies in Dutch tertiary education (Huisman and Bartelse, 2001) highlights the poor image of academe in the labour market. It is argued that the academic profession is not attractive to students and graduates. Institutions face more and more difficulties in playing a distinguished role in the knowledge society. Although work autonomy and relatively flexible working hours are highly appreciated aspects of academic work, careers outside academia are more attractive in terms of salary and terms of employment.

32. See Enders and de Weert (2004b) for a review of the attractiveness of the academic workplace in a range of European countries.

8.4 Features of the academic profession

8.4.1 Responsibility for the management of the academic career and employment status of academics

Academics are employed under a great variety of conditions across countries

Employment conditions of academics differ considerably across countries as well as the relative responsibilities of educational authorities and TEIs in the management of the academic career. Tables 8.1 to 8.3 summarise features of the academic profession in the reviewed countries, including employment conditions, career structure and mechanisms for setting salaries.

As shown in Table 8.1, in almost all countries the TEI is considered the formal employer of academics, the exceptions being Greece, Japan (for public universities) and Switzerland (for certain institutions) where government authorities are considered to be the formal employer. In 13 out of 23 countries, academics are employed on a contractual basis under general employment legislation (salaried employee status). Among these countries, academics are considered to be State servants (rather than public servants) in New Zealand and to have public service status (rather than civil service status) in Sweden. In eleven out of the 23 countries shown in Table 8.1, academics are employed as civil servants, that is under conditions applicable to public sector employment in general. Such conditions normally include legislation or regulations specifying criteria for employment selection, salary and other benefits, and career advancement. Civil servants generally have lifelong tenure, and their employment can usually only be terminated under exceptional circumstances. In Japan, while academics in public universities have civil servant status, academic staff in national universities and public university corporations are salaried employees. In Spain, while part of the academic staff are employed as civil servants, a good proportion of academics are hired directly by institutions on a contractual basis. In Switzerland academics can also hold either civil servant or salaried employee status.

Table 8.1. Employment of academic staff, public institutions, 2007

	Employer of academic staff	Employment status of academic staff	Can academic staff hold academic appointments with teaching responsibilities in more than one tertiary education institution (including in the private sector)?
Australia[1]	TEI	Salaried employee	At the discretion of TEIs
Belgium (Flemish Community)	TEI	Civil servant (contract research staff are salaried employees)	Yes, but with some restrictions (maximum of one day per week for full-time academic staff)
Chile	TEI	Salaried employee	Yes, but agreement must be sought from the TEI identified as the main employer (for full-time academic staff)[2]
China	TEI	Salaried employee	Yes, without restrictions
Croatia	TEI	Civil servant (part-time academic staff are salaried employees)	Yes, but with some restrictions (maximum of one third of full-time equivalent and agreement must be sought from the TEI identified as the main employer)
Czech Republic	TEI	Salaried employee	Yes, without restrictions
Estonia	TEI	Salaried employee	Yes, but agreement must be sought from the TEI identified as the main employer
Finland	TEI	Civil servant	Yes, but agreement must be sought from the TEI identified as the main employer
Greece	Government authorities (TEI for part-time academic staff)	Civil servant (part-time academic staff are salaried employees)	Yes, but agreement must be sought from the TEI identified as the main employer
Iceland	TEI	Civil servant (part-time academic staff are salaried employees)	At the discretion of TEIs
Japan	National universities and public university corporations: TEI	National universities and public university corporations: Salaried employee	National universities and public university corporations: At the discretion of TEIs
	Public universities: Government authorities	Public universities: Civil servant	Public universities: Yes, but with some restrictions (agreement must be sought from the local government)
Korea	TEI	Civil servant	Yes, but agreement must be sought from the TEI identified as the main employer
Mexico	TEI	Salaried employee	Yes, but with some restrictions (maximum of 8 hours per week for full-time academic staff)
Netherlands[3]	TEI	Salaried employee	At the discretion of TEIs
New Zealand	TEI	Salaried employee[4]	Yes, but agreement must be sought from the TEI identified as the main employer
Norway	TEI	Civil servant (special provision for temporary staff)[5]	Yes, but agreement must be sought from the TEI identified as the main employer
Poland	TEI	Salaried employee	Yes, but agreement must be sought from the TEI identified as the main employer (for more than two academic appointments)
Portugal[6]	TEI	Civil servant	Yes, but agreement must be sought from the TEI identified as the main employer
Russian Federation	TEI	Salaried employee	Yes, but agreement must be sought from the TEI identified as the main employer
Spain[1]	TEI	Civil servant (contract research staff and initial academic ranks are salaried employees)	Yes, but with some restrictions (allowed to give a limited number of lectures in other TEIs)
Sweden	TEI	Salaried employee[7]	Yes, without restrictions
Switzerland	Government authorities and TEI	Salaried employee and civil servant	At the discretion of TEIs
United Kingdom[8]	TEI	Salaried employee	At the discretion of TEIs

Definitions: *Academic staff* refers to a body of people who are engaged in teaching and/or research activities at the tertiary level of education. It includes personnel whose primary assignment is instruction and/or research, personnel who hold an academic rank (*e.g.* professor, associate professor, assistant professor, instructor, lecturer, *etc.*), and personnel with other titles (*e.g.* dean, director, associate dean, assistant dean, chair or head of department) whose principal activity is instruction or research. Academic staff include both tertiary teaching staff and researchers involved exclusively in research activities. Both full-time appointment and part-time position staff are considered. Academic staff do not include technicians and equivalent staff.
Salaried employee : Employed on a contractual basis under general employment legislation.

Notes: *TEI* : Tertiary education institution
1. Information concerns universities only and does not account for the non-university sector.
2. Working at several TEIs is usually observed in practice among part-time staff, which constitute over 60% of the total academic workforce.
3. Issues covered in this table refer to publicly-subsidised TEIs.
4. Academic staff are considered as state servants rather than public servants. Collective employment agreements are negotiated at the institutional level, but the chief executive of each TEI must consult with the State Services Commissioner over the conditions of employment to be included in the final agreement.
5. Doctoral and post-doctoral fellows are treated as staff rather than students.
6. The status of academic staff was under discussion in the Portuguese Parliament at the time this Table was prepared.
7. Academic staff have public service rather than civil service status. Therefore, there are specific regulations regarding professional misconduct and appointment.
8. Issues covered in this table refer to publicly-subsidised private TEIs. All higher education institutions in the United Kingdom are legally private independent bodies with a charitable status, most of which are publicly funded.

Source: Derived from information supplied by countries participating in the project. The table should be interpreted as providing broad indications only, and not strict comparability across countries.

In some countries, the management of human resources is highly decentralised

In Australia, Chile, New Zealand and the United Kingdom, TEIs are the employers of academic staff, academics are employed on a contractual basis under general employment legislation, TEIs set academic salaries and there is no framework establishing a national career structure for academic staff. The situation is similar in: Spain (for academic staff with no civil servant status) with the difference that salaries are set by institutions within guidelines established by educational authorities; and the Netherlands, with the distinction that a common national career structure exists that, however, gives considerable discretion to TEIs. Overall, in these cases, the primary responsibility for defining the terms and conditions of employment in the tertiary education sector rests with the TEIs. They typically directly negotiate human resource policies with staff representatives or individual academics. Aspects generally covered include recruitment and appointments; performance and career management; professional development; research and teaching obligations; leave entitlements; remuneration; and consultation with staff representatives. However, in these systems, while individual employment contracts are common, cases of negotiated institutional collective agreements, some of which involving a multitude of institutions, exist. In some cases, broad features of the academic career structure end up, in fact, being shared among institutions.

A number of other countries can also be considered to have a decentralised approach to the management of academic human resources. In the case of China, the Czech Republic (for higher education institutions only), Estonia, Japan (for national universities and public university corporations), and Sweden, the approach is similar to that described for the previous group of countries except that there is a framework establishing a career structure for academic staff at the national level. In Mexico, Poland and the Russian Federation institutions benefit from a similar level of autonomy in human resource management except for the additional requirement to set salaries within guidelines established by government authorities.

In these countries, staff management policies are largely decentralised as a result of reforms carried out mainly in the 1990s. In Sweden, such reforms have given institutions considerable freedom to define their own staff management policies, including the creation of positions, recruitment and determination of salaries (Askling, 2001). Similar changes have occurred in the Netherlands, where the decentralisation of personnel policies has given TEIs the possibility to define their own rank structures and salaries. TEIs are the legal employers, organise recruitment, determine pension facilities, bonuses, teaching load, sick leave and sick pay arrangements, maternity leave, recruitment, appointments and salaries (de Weert, 2001). However, a study by Huisman and Bartelse (2001) points out that, in practice, institutions make little use of the possibility of defining own rank structures and salaries.

In some other countries the management of human resources in academia is more centralised

In Croatia, Greece, Japan (for public universities), Korea, Portugal and Spain (for part of the academic workforce) academics have civil servant status, government authorities set salaries directly, and there is a common career structure at the national level (in Greece the government is also formally the employer and in Japanese public universities local governments are the employers). In the Flemish Community of Belgium, Finland,

Iceland, and Norway the approach is similar except that institutions are allowed to set salaries within the guidelines established by government authorities.[33]

An example of a highly centralised management of academic resources is that of Portugal. While the situation varies between the university and polytechnic sectors (the latter having less autonomy), the overall situation is one of academics being employed by the institutions as civil servants, the Ministry of Finance controlling the overall numbers of staff as well as those who can be hired on a permanent basis, salaries and conditions of service (including teaching loads which are nationally monitored) being set on a national basis with very little room for institutional innovation or merit-based reward systems, and the academic career structure being prescribed in law for both the university and polytechnic sectors. However, as of October 2007, the new legal regime for higher education provides institutions with the option of gaining the status of private foundation, which encompasses full autonomy in the management of human resources.

Institutional autonomy in human resource management might be sensible

An argument for institutional autonomy in the management of human resources is that institutions are in a better position than central authorities to assess their needs, adapt to specific local circumstances and improve their ability to cope with external constraints (de Weert, 2001). Centrally-dictated controls run the risk of creating inflexibilities and damaging the capacity for innovation. For instance, they tend to be ineffective in responding to the need to recruit staff in new academic disciplines, in promoting interdisciplinary studies and research, and in recruiting staff from overseas or with overseas qualifications.

Furthermore, central staffing policies might be considered a contradiction in systems where TEIs are considered to be autonomous (see Mora, 2001, for the case of Spain). Delegating authority on staffing issues to institutions is a logical step to ensure the coherence of systems where institutional autonomy is legally granted.

Decentralised staffing policies are faced with some difficulties

A number of studies highlight reasons why the implementation of decentralised staffing policies may be difficult. Mora (2001) suggests that most academics and governmental officials would not support a reform towards the decentralisation of staffing policies through the elimination of both academics' civil servant status and national salary scales. A major reason behind this opposition according to Mora is the embeddedness of the civil servant culture in Spanish society and in particular, academia.

Similar challenges in the implementation of decentralised staffing policies in France are suggested by Chevaillier (2001). It is argued that strengthening institutional autonomy and encouraging the development of institutional policies regarding staffing are among the priorities of policymakers. Creating better incentives for staff and improving the evaluation system are claimed to be urgently needed changes in this respect. However, in practice it is very difficult for institutions to mobilise their human resources and create such incentives given that the autonomy of individual academics conflicts with the autonomy of institutions. The statute and traditions of universities, the national framework of employment and the power of discipline-based bodies are considerable

33. In Norway, TEIs set salaries within salary guidelines negotiated between government authorities and national trade unions.

barriers for the implementation of decentralised staffing policies. It is further suggested that the question of abandoning the civil servant status of academics is not seriously debated in France. Initiatives aimed at increasing the decision-making power of institutions on issues related to academic tenure provoke strong opposition by trade unions.

De Weert (2001) provides a brief account of different stakeholders' views on the decentralisation of staffing policies in the Netherlands. It is suggested that despite diverging viewpoints on the speed and possible implications of the decentralisation, overall the process had a rather wide support. According to the author, although the Minister was hesitant to engage in a process that would diminish his authority, the advantages of decentralised policies turned out to be convincing and gained the support of the trade unions. They regarded institutions as better bargaining parties due to their sensitivity to the needs of academics. In addition, since both trade unions and institutions oppose attempts to reduce public funding for higher education, institutions were perceived as partners by trade unions. TEIs generally supported the decentralisation of staffing policies. Although such changes implied extra responsibilities for salary demands instead of the government, institutions appeared to be ready to take up such responsibilities.

8.4.2 Employment conditions and career structure

Contractual arrangements

There are two main types of contractual relationships

There are two main types of contracts in the academic profession. On the one hand, academics may benefit from tenure and be employed on a permanent basis. This is typically the case in those countries where academics are employed as civil servants but is also common in those countries where academic staff are hired on a contractual basis. On the other hand, academics can be employed on a fixed-term basis either on a tenure-track or a non-tenure track position. This arrangement is more typical of countries where employment conditions are subject to negotiation between employers and academics. However, in most countries, both types of contracts co-exist in the academic profession. Depending on the type of contract, there are considerable differences in terms of working conditions and job security. De Weert (2001) highlights this in the case of Netherlands, underlining the divide between staff on relatively well-paid permanent contracts and tenured posts on the one hand, and less well paid staff on fixed-term contracts on the other hand.

Some countries have a strong tradition of academic tenure

In some countries, tenure is deep-rooted in the academic profession. In France, most academic staff are offered tenure and have civil servant status. The number of non-tenured fixed-term contracts is limited, academics employed on this basis are mostly either young academics waiting for appointment to tenured positions or professionals, business executives or administrators. A third type of academic staff are employed part-time, on an hourly basis (Chevaillier, 2001). In Spain, academics with civil servant status are in tenured positions, while most of those who are under contract with their institution

are on fixed-term positions. Similarly to the case of France, untenured positions are seen as a provisional situation for academics at the beginning of their career (Mora, 2001).

There is some variation across countries regarding the stage at which academics are typically granted tenure. In France, for instance, access to tenured positions happens rather early (candidates must be under 31 to apply to lower tenured positions, while the average access to a tenured post as assistant professor is 33). In Germany, on the other hand, at least until recent reforms, the average age of access to tenured posts was 42 (Mayer, 2000 in Musselin, 2004).

In Poland, academics are not civil servants but they enjoy many advantages of civil servants, including permanent employment. They are guaranteed raises in salaries each year slightly above the expected inflation rate similarly to other public sector employees. Moreover, academics in the public tertiary education sector enjoy a relatively non-competitive working environment. Part-time appointments remain fairly uncommon in the public sector. One of the main reasons for this is that part-time positions do not entitle employees to pension schemes, social security and medical benefits (Kwiek, 2003).

In the United States two career patterns co-exist: one with possibility of gaining tenure (tenure-track) and one without such perspective (non tenure-track). There is great variation in the role of non tenure-track academics among institutions, departments and schools. Non tenure-track staff members sometimes hold a primary employment elsewhere; others are employed part-time to fill an unexpected vacancy or are employed full-time with a multiyear contract (AAU, 2001).

Some other countries offer few opportunities for academic tenure

In a number of countries, there are fewer opportunities for academic tenure. However, differences may exist in terms of job security between teaching and research positions, or university and non-university sector. In the United Kingdom, academic tenure was abolished in the late 1980s, and since then academics can be made redundant if the institution faces financial difficulties. However, the large majority of lecturer positions are permanent and offer thus more job security than research positions. On the other hand most of the staff employed on a fixed-term basis are researchers who work in a less secure environment (Baldauf, 2001).

In Estonia, academics are not offered tenure. Academic staff are employed on fixed term contracts for a period up to five years (in the case of a position filled through a competitive process) or three years (in the case of a position which, for one reason or another, has not been filled competitively). Since 2003, indefinite employment contracts may be offered to academics with the rank of *Professor* who have been employed at the same university for at least eleven years. The situation is different for academics in the vocational tertiary education sector where employment is on a permanent basis.

In recent years, the proportion of academic staff employed on a non-tenure basis has increased

Over the last two decades the proportion of academics employed on part-time and non tenure-track positions has significantly increased in tertiary education in the United States (Ehrenberg and Zhang, 2004). The reasons behind this trend include, according to Ehrenberg and Zhang (2004), increasing financial pressures on institutions and the lower cost of non tenure-track academics. A survey of 25 universities carried out by the

American Association of Universities suggests that the growing share of non-tenured posts is mainly due to the creation of new positions rather than to the substitution of tenured posts by non-tenured ones (AAU, 2001). Based on a large-scale quantitative study of colleges and universities in the United States, Ehrenberg and Zhang (2004) conclude that the increase of part-time and non tenure-track faculty is associated with lower graduation rates among students. The strength of the correlation is larger in public institutions than private ones and at master's level than at under-graduate level. Ehrenberg (2005) suggests several reasons that might explain these findings. Full-time non tenure-track staff often have more teaching loads than their tenure-track colleagues, hence they may have less time for individual students. In addition, part-time academics lack sufficient time and place to meet students outside of class, since they frequently need to hold part-time positions at several institutions. Finally, tenured and tenure-track academics may provide better support to students, since they are likely to work more closely with the institution and to be more up-to-date on their department's curriculum.

There is also some anecdotal evidence in some countries reviewed in the project of greater levels of casual and fixed-term employment agreements in tertiary education. In some cases, there is high reliance for teaching on casual staff on short-term contracts. In Korea, there's been an increase in the proportion of part-time faculty, in both colleges and universities. In colleges this proportion has increased from 57% in 1995 to 66% in 2004; in universities the increase has been from 47% to 55%. In general this trend has been intended to reduce costs, though the higher proportion in colleges than universities may be due to the tendency to hire part-time individuals from industry with more extensive experience and useful knowledge in vocational programmes.

The debate on academic tenure

The literature provides a number of arguments supporting tenure…

Academic freedom is one of the most commonly used arguments supporting tenure. It is argued that tenure is a crucial condition to sustain academic freedom. Without tenure academics would hesitate to express freely their thoughts and ideas. Controversial issues would likely be avoided and there is a risk that both lectures and research concentrate on "safe" areas (Hohm and Shore, 1998).

Another frequently cited argument for maintaining academic tenure is that it allows TEIs to reduce expenses. Tenure reduces job insecurity, and since most people are risk-averse, academic tenure has some economic value. Therefore academics who are granted tenure or expect to receive it will accept to work for lower salaries than those who cannot be tenured (McGee and Block, 1991).

Carmichael (1988) argues that the abolition of academic tenure can have disastrous effects on the recruitment of young academics. TEIs aim to attract highly qualified staff, but administrations rely to a large extent on incumbent academics' judgment on candidates. If tenure did not exist, older staff members would be afraid of losing their posts and be replaced by more productive young academics. As a result, a system where tenure is not guaranteed would provide an incentive for academics to avoid the recruitment of the best possible candidates. Guaranteeing job security through tenure would, on the other hand, provide an incentive for academics to reveal their real judgments about candidates and hire the best young academics. Similar arguments about

incentives for incumbent academics to hire new quality staff are put forward by McKenzie (1996).

A number of authors argue that tenure does not encourage academics to slack off. Hohm and Shore (1998) argue that "deadwood" exists in academia just as in other professions where tenure is not guaranteed. Moreover "deadwood" is the exception and not the rule. Li and Ou-Yang (2003) examine the impact and productivity of more than 300 economists before and after they were granted tenure. The study concludes that incentives such as becoming a leader in their research field encouraged tenured academics to work hard and prevented them from slacking off after receiving tenure. Euben *et al.* (2005) suggest that a number of strategies can be employed to assure that tenured academics remain productive, engaged with their work and keep their knowledge up-to-date.

Supporters of tenure underline the highly specialised nature of academic work. Exploring new areas of research requires considerable time and effort, hence the need to focus one's work on a specialised field over the long-term. Proponents of tenure suggest that such activities would be very risky for staff on fixed-term contracts (de Weert, 2001). Furthermore, the benefits of certain research activities can only be perceived in the long-run (McPherson and Schapiro, 1999). Finally, academic tenure also allows for long-term institutional planning. Developing a particular part of a discipline in a department might take several years. Tenure releases academics from pressure to produce short-term results and allows them to engage is such long-term plans (Hohm and Shore, 1998).

… but it also provides a number of arguments opposing tenure

According to some authors, tenure does not necessarily promote academic freedom. Tenure is supposed to guarantee independency and freedom to academics and protect them from threats from outsiders. However, McGee and Block (1991) cast doubt on the justification of such freedom and independence from consumers of education and taxpayers. If students or taxpayers disapprove of the work of academics, tenure prevents them from dismissing these academics and they will still have to support their careers through taxes. Another argument put forward by the authors is that tenure does not necessarily promote academic freedom. Without tenure, it is often argued, academics would be reluctant to speak out on controversial issues. However, McGee and Block (1991) suggest that it is precisely tenure that is likely to prevent academics to speak out freely on such issues. Tenure is awarded to untenured academics by tenured staff. In these conditions, untenured academics might hesitate to present their views on controversial issues that might be discordant with those of members of the tenure committee by fear of being denied tenure.

McGee and Block (1991) highlight the limits of the cost-effectiveness argument. A simple empirical argument is that if guaranteeing life-time employment were cost-effective, then this practice should be widely spread in the private sector as well. A major drawback of guaranteeing life-time employment is that it results in reduced flexibility. If the demand from educational consumers (students) changes, institutions can respond through hiring new staff in highly demanded fields. However, this capacity of adaptation is limited due to financial constraints. Since institutions cannot dismiss unneeded or ineffective academics, without extra funds they are not able to hire new staff. Therefore institutions, at least in the short term, are not able to allocate their resources according to student demand. As a result, institutions will need to recruit additional staff to teach popular subjects, while unneeded staff teaching unpopular subjects will be still employed.

Hence, it is argued, although tenure allows to hire staff at lower salaries, it increases total salary costs and is not cost-effective. Breneman (1997, in McPherson and Schapiro, 1999) argues that "tenure is 'largely dysfunctional', and that by limiting institutional flexibility it leads to lower salaries and reduced levels of employment".

De Weert (2001) proposes an argument suggested by the rector of a Dutch university (Blom, 1999). According to this argument recruitment procedures in a system where tenure is guaranteed are rigorous and time-consuming. The burden implied by these may discourage some candidates – including those who might be the best ones – from engaging in the recruitment process. It is argued that fixed-term contracts would allow for the use of shorter and less burdensome procedures and avoid the risk of applicants quitting. Furthermore, such procedures would be more adapted to a market-like environment where institutions compete to attract the best academics (de Weert, 2001).

McGee and Block (1991) suggest that tenure does not necessarily ensure high quality teaching and research staff, since at some prestigious institutions "receiving an award for good teaching is considered the kiss of death for an untenured professor". The rationale behind is that an award for teaching is seen as a sign of spending much time on preparing for lectures and thus less time on research, which might result in lower quality research.

The argument put forward by Carmichael (1988) suggests that abolishing tenure would reduce the job prospects of young academics. However, empirical data do not seem to support this hypothesis. Dnes and Seaton (1998) tested the hypothesis suggested by Carmichael drawing on data from the United Kingdom, where tenure was abolished in 1988. Results of their analysis are not really consistent with Carmichael (1988) and show that softening tenure did not hinder the improvement of academic quality or the promotion of young academics.

It is argued that without tenure it would be easier to dismiss ineffective or unproductive staff. Requirements change and rigidities may have a high price. Teachers who have been tenured for a long time, may lose interest or may not be willing or able to invest in new developments (McGee and Block, 1991).

A number of alternative contractual arrangements are proposed in the literature

Some authors raise the possibility of choice between tenure and fixed-term contracts. Breneman (1997) argues that there is a widening gap in terms of availability of resources between institutions. Tenure, in such a context, might have an employment reducing effect in less well-off institutions. It is suggested that young academics might prefer a diversity of employment arrangements, including a possibility to opt out of tenure in exchange of higher salary. De Weert (2001) suggests that this alternative may be more costly because of the need to compensate in payment for the lack of tenure. However, it would be particularly attractive for part-time teachers who also work in industry.

Other authors raise the importance of appropriate post-tenure assessment procedures and incentives. De Weert (2001) suggests that tenure could be linked to an assessment procedure, similar to the post-tenure reviews applied in several states in the United States. Examples of such strategies are suggested by Euben *et al.* (2005). A strategy consists of post-tenure reviews used to monitor staff performance, although questions such as the purpose of such reviews (formative *vs*. summative), the consequences of negative reviews, or who will receive the results of the review still provoke much debate. Another strategy can be to grant or withhold financial rewards based on academics' performance. Variable teaching loads can also be part of such strategies, although they might result in

discrimination claims, particularly if older academics are concerned. Assigning underperforming academics to administrative tasks or to projects that fall within the academic's area of expertise can also be a response to low performance.

A number of authors refer to the importance of combining fixed-term contracts with measures to avoid high job insecurity. In the Netherlands, the collective agreement between institutions and trade unions imposes limitations on the use of temporary appointments. These have a maximum duration of two years, with a maximum of two successive extensions. The fourth appointment is made automatically on a permanent basis (de Weert, 2001). The expected advantage of such arrangements is that they allow that academics are shifted from one fixed-term contract to another without any prospect for permanent employment. On the other hand, this system also permits institutions to dismiss temporary academic staff in an early phase. In the Flemish Community of Belgium, the universities are given the possibility by national legislation to hire an academic staff on a trial period of three years at the most. The permanent appointment of the academic, in this case, will only be confirmed if his/her teaching and research activities are evaluated positively during the trial period.

Career structure

Most countries establish a career structure for academic staff at the national level

As illustrated in Table 8.2, in 18 out of 23 countries there is a national framework establishing a career structure for academic staff. The exceptions are Australia, Chile, New Zealand, Switzerland and the United Kingdom. However, in some of these countries (*e.g.* New Zealand, United Kingdom), career structures common to groups of institutions developed within the system, either through agreements between institutions or through informal arrangements.

Career structures are typically organised according to a number of career ranks associated with specific titles and duties. Positions are most often associated with both teaching and research but particular categories might be associated with teaching only, or research only. For instance, academic staff in Poland are divided into a number of ranks, from Full Professor through Associate Professor to Tutor and Assistant. There are also Lecturer titles (at two levels) for teaching-only staff. According to the Polish *Country Background Report*, in 2003-04 approximately 22% of full-time staff in the Polish system were full professors, 36% associate professors, 20% tutors and assistants, and 21% lecturers. In New Zealand, despite the decentralised approach to the management of human resources in tertiary education, many of the broad features of the academic career structure are shared among institutions. For example, there is a reasonably shared approach to the nomenclature used to describe staff positions. In broad terms, the titles "professor", "associate professor", "senior lecturer" and "lecturer" reflect the different stages of the academic career in universities.

Table 8.2. Academic career structure, public institutions, 2007

	Is there a national framework establishing a career structure for academic staff?	Who decides the advancement of academic staff from one rank to another within the national career structure?	Criteria which influence advancement from one rank to another (*i.e.* a promotion) within the national career structure	Is advancement from one rank to another (*i.e.* a promotion) within the national career structure only possible if a position is vacant?
Australia[1]	No, TEIs are legally authorised to establish their own career structure	*a*	*a*	*a*
Belgium (Flemish Community)	University Colleges: Yes, a common national career structure	TEI	Years of experience	Yes, a position needs to be vacant
	Universities: Yes, a common national career structure[2]	TEI	*a*	*a*
Chile	No, TEIs are legally authorised to establish their own career structure	*a*	*a*	*a*
China	Yes, a common national career structure	TEI	Accomplishments as a researcher; academic qualifications	Yes, a position needs to be vacant
Croatia	Yes, a common national career structure	TEI	Accomplishments as a researcher; experience as a teacher; years of experience	Yes, a position needs to be vacant
Czech Republic	Yes, a common national career structure	TEI, but decisions require Presidential approval for highest academic level	Academic qualifications	No, promotion is possible upon fulfilment of given requirements
Estonia	Yes, a common national career structure	TEI	Accomplishments as a researcher; academic qualifications	Yes, a position needs to be vacant
Finland	Yes, a common national career structure[3]	TEI	*a*	*a*
Greece	Yes, a common national career structure	TEI, but decisions require government approval	Experience as a teacher; accomplishments as a researcher; service to the TEI; academic qualifications; years of experience	No, promotion is possible upon fulfilment of given requirements
Iceland	Yes, a common national career structure	TEI (but decisions require an assessment by a peer review committee)	Experience as a teacher; accomplishments as a researcher; service to the TEI; academic qualifications; years of experience	No, promotion is possible upon fulfilment of given requirements
Japan	Yes, a common national career structure[4]	TEI	*a*	*a*
Korea	Yes, a common national career structure	TEI	Experience as a teacher; accomplishments as a researcher; service to the TEI; service to the community and industry; academic qualifications; years of experience	No, promotion is possible upon fulfilment of given requirements
Mexico	Yes, a common national career structure[5]	TEI, but decisions require government (financial) approval	Accomplishments as teacher and as researcher; service to the TEI; service to the community and industry; academic qualifications; years of experience	No, promotion is possible upon fulfilment of given requirements
Netherlands[6]	Universities: Yes, a common national career structure[7]	TEI	*a*	*a*
	Universities of applied science: Yes, a common national career structure[7]	TEI	*a*	*a*
New Zealand	No, but a career structure is common to groups of TEIs (*e.g.* polytechnics, universities)[8]	*a*	*a*	*a*
Norway	Yes, a common national career structure	TEI (but decisions require an assessment by a peer review committee)	Accomplishments as a researcher; academic qualifications; accomplishments as a teacher (alternate academic career path)	No, promotion is possible upon fulfilment of given requirements
Poland	Yes, a common national career structure	TEI, but decisions require Presidential approval for highest academic level	Experience as a teacher; academic qualifications	No, promotion is possible upon fulfilment of given requirements[9]
Portugal	Yes, a common national career structure[10]	TEI (by public tender)	Experience as a teacher; accomplishments as a researcher; service to the TEI; service to the community and industry; academic qualifications; years of experience	Yes, a position needs to be vacant[11]
Russian Federation	Yes, a common national career structure	TEI	Experience as a teacher; years of experience; and attestation based on an evaluation of experience, accomplishments as a researcher, academic qualifications and service to the TEI[12]	No, promotion is possible upon fulfilment of given requirements
Spain[1]	Yes, a common national career structure[13]	TEI (provided that candidates have national accreditation)	Accomplishments as a researcher; service to the TEI; academic qualifications; years of experience	Yes, a position needs to be vacant
Sweden	Yes, a common national career structure	TEI	Experience as a teacher; accomplishments as a researcher; academic qualifications	No, promotion is possible upon fulfilment of given requirements[14]
Switzerland	No, but a career structure is common to groups of TEIs[15]	*a*	*a*	*a*
United Kingdom[16]	No, TEIs are legally authorised to establish their own career structure	*a*	*a*	*a*

Definitions: The term *career structure* refers to a system of ranks and rules for advancement from one to another rank. Refer to Table 8.1 for the definition of *academic staff*.

Notes: *a*: Information not applicable because the category does not apply; *TEI*: Tertiary education institution

1. Information concerns universities only and does not account for the non-university sector.
2. The national career structure includes a system of ranks but promotion policies are at the discretion of institutions. Accomplishments as a researcher and as a teacher are typically used to influence advancement from one rank to another. In general, there is a promotion round each year within the budgetary constraints, but a position needs to be vacant.
3. The national career structure specifies ranks and requirements for academic staff in universities and polytechnics but does not include rules for advancement from one to another rank.
4. The laws stipulate requirements for academic staff but do not include rules for advancement from one to another rank.
5. Each type of institution has its own national career structure (*e.g.* federal and state public universities, technological universities, intercultural universities).
6. Issues covered in this table refer to publicly-subsidised TEIs.
7. The national frameworks include a system of ranks negotiated by a collective agreement but does not include rules for advancement from one to another rank. Years of relevant experience, valued knowledge, skills, attitude and competencies are typically used to influence advancement from one rank to another. Promotion is possible upon fulfilment of given requirements.
8. These structures are not formalised in legislation but are rather loose arrangements that have evolved over time.
9. However, a position may need to be vacant depending on the employment situation of the institution.
10. Polytechnics and universities have a distinct national career structure. Also, as of October 2007, the new legal regime for higher education provides institutions with the option of gaining the status of private foundation, which encompasses full autonomy in the management of human resources.
11. A position only needs to be vacant for full and associate professors in universities, and for adjunct and co-ordinating professors in polytechnics.
12. Academic staff are evaluated every five years.
13. Each autonomous region can establish additional ranks to the national career structure.
14. TEIs are required to promote academic staff to a higher rank upon application and fulfilment of the eligibility criteria, which vary according to the position.
15. Salary scales in each canton differ.
16. Issues covered in this table refer to publicly-subsidised private TEIs. All higher education institutions in the United Kingdom are legally private independent bodies with a charitable status, most of which are publicly funded.

Source: Derived from information supplied by countries participating in the project. The table should be interpreted as providing broad indications only, and not strict comparability across countries.

In Mexico, there is no formal career structure at the national level but broad features can be identified across institutions. As a rule, there are three different categories (Full Professor, Associate Professor and Assistant Professor) in the academic career structure each with three distinct levels (A, B and C). Within this broad framework, institutions establish the profile to be associated with each of the categories/levels (*e.g.* academic qualifications, experience as a teacher, accomplishments as a researcher). Even if these profiles differ across institutions, typically to become an Assistant Professor of any level or an Associate Professor of level A, an under-graduate degree is needed; to reach levels B or C of the Associate Professor category, holding or being a candidate for a master's degree is necessary; and a Doctorate is required to attain the category of Full Professor.

Some countries establish distinct career structures for different subsystems

The Portuguese case illustrates the fact that distinct national level academic careers co-exist for different subsystems. There are two distinct career paths for public university and public polytechnic academic staff. The public university career follows a five stage progression – Teaching assistant, Assistant, Auxiliary professor, Associate professor, and Full professor. The doctorate is the basic academic requirement in the university system, required at the Auxiliary Professor level. In turn, the academic career of the polytechnic staff follows a three stage progression: Assistant with 2 levels, Adjunct professor and Co-ordinating professor. An adjunct professor at a polytechnic is required to have completed some post-graduate studies or a master's degree and to have at least three years teaching experience. A doctoral degree is not essential in the polytechnic system. In addition, as of October 2007, the new legal regime for higher education introduced a second career path within the polytechnic sector ("specialists" category) to encourage the involvement of experts from industry and the surrounding community.

Systems with a long career ladder have been under scrutiny

There are systems with a very long career ladder, associated with long apprenticeship, which have recently been the subject of heated debate. Poland, with a career structure broadly similar to those obtaining in other northern European countries, is one of those systems. Beyond the bachelor's, master's and doctoral qualifications ladder there is the further step of *habilitation*. A second or "higher" research-based doctorate, the *dr.habil.* is a prerequisite for appointment to senior posts in the academic profession. It is inevitably a time-consuming further step beyond the doctorate. However, this is not the final step in the qualifications process. Academic staff who aspire to be appointed to the highest posts must also submit to a further assessment their research, and if successful will then be awarded the "academic title" of Professor. This assessment is quite distinct from appointment to a specific professorial post, and can best be seen as a further qualification prerequisite. It does not require a further thesis, but research outputs and indicators are comprehensively reviewed, and also the candidate's supervision of doctoral students. The average age of obtaining the doctorate is approximately 30, the *dr.habil.* around 45 and professorial title 60. A similar system of long and strenuous career requirements is that of the Czech Republic where one reaches the position of full professor, on average, by the age of 55, while the average full professor is 63 years old.

It is a matter of debate whether the apprenticeship period can truly be seen as lasting right up to the award of professorial title. But even if true apprenticeship ends with the production of a second doctoral thesis for the habilitation, the age at which this occurs is

typically very late. There are many academic systems which see it as essential to finish research training with a doctorate, which should be completed at the earliest possible moment, so that young academics (perhaps not even in their 30s) can build an independent research career at a stage when their energy and creativity may well both be at their height. Research in Germany, where a similarly long apprenticeship and double doctorate has been the norm but has become a matter of heated public debate in recent years, shows some of the dysfunctions of that system, especially from the point of view of younger researchers (Enders, 2001b).

The risks of the long system are numerous. Perhaps the most serious is the prolonged dependency on senior staff – first as supervisors and then as informal, if not formal, sponsors – which is inherent in it. Academics in their 30s and 40s should be free to range widely and "think the unthinkable": their achievements and publications must of course be subject to peer review, but this should include a wide selection of peers and not be restricted to the members of a single department, however distinguished. Inevitably, "junior" academics will lack the status to determine the future of their department or research group, and the dangers of even the most benign gerontocracy are well known. Other systems (*e.g.* the United Kingdom) have steadily reduced the average age of promotion to the highest rank of full professor, in the belief that this will not only increase the attractiveness of the profession but will bring great advantages to departments and institutions which enlarge their leadership and refresh it at a younger age. Finally, setting aside whether this career model is fit for the purpose of developing and sustaining world-class research institutions, it might not be suited to a tertiary system that is more strongly diversified, with a major emphasis on professionally-oriented bachelor degrees, shorter-cycle vocational programmes and life-long learning. This long career system does not encourage a strong engagement in bachelor's degree education, the cultivation of professional skills in young students, or towards working and professional life.

Appointment and promotion

Who decides on the appointment and promotion of academic staff?

In most reviewed countries, the decisions regarding the appointment and promotion of academic staff lie extensively within TEIs. This is certainly the case in those countries with no national career structure (Australia, Chile, New Zealand, Switzerland and the United Kingdom). Similarly, in most of those countries featuring a common national career structure, as illustrated in Table 8.2, TEIs have ample autonomy to make decisions on the advancement of academic staff from one rank to another within the national career structure. Autonomy of institutions, in this respect, is more restricted in Greece (where career advancement requires governmental approval); in Mexico (where career advancement requires financial approval by the government); in the Czech Republic and Poland (where the highest academic rank is only granted after the approval by the President); and in Iceland and Norway (where decisions require an assessment by a peer review committee).

In some countries, general criteria for appointment and promotion are defined in national legislation (*e.g.* Estonia, Poland). France and Spain have mixed systems whereby central authorities and TEIs share responsibilities in the hiring and promotion of academics. In France, the appointment of "maîtres de conference" (lecturers) and professors has two stages: firstly candidates are selected on a national basis, then

institutions make hiring decisions among those selected at the first stage. In some particular disciplines professors are selected through a national competition. Similarly, in Spain the recruitment of candidates for tenured positions within the civil service is organised on the basis of an initial selection at national level by a committee composed of members of the national body of professors followed by the choice of institutions from the pool of selected candidates (Mora, 2001). The recruitment of academics with no civil servant status is undertaken directly by institutions but candidates need to pass an accreditation process by the Spanish National Agency for Quality Assessment and Accreditation (ANECA).

However, in most countries, criteria for appointment and promotion are determined by individual TEIs in accordance with their missions. For example, in the Netherlands, the responsibility for determining criteria lies within individual institutions. Firstly, the criteria for a position are determined by the faculty board within the institution. Then suitable candidates are informed about the vacancy in all TEIs and the best candidate is selected and appointed by the institution (de Weert 2001).

What criteria influence advancement in the academic career?

De Weert (2001), describing the case of the Netherlands, points out that in the past, promotions were predominantly based on seniority. This has gradually changed and, as illustrated in Table 8.2, countries now feature a greater variety of criteria which influence advancement in the academic career. Although in about half of the countries which have a national career structure, seniority is still explicitly given as a criterion for career advancement, it is now clear that the research accomplishments of the academics have become the most dominant criterion together with academic qualifications.

The criteria for career advancement cover similar aspects in most countries. These virtually always include qualifications and achievements in research and teaching. However, there is some differentiation between countries in the importance of these criteria in the assessment of candidates. In many countries, achievements in research are more valued in the assessment of candidates than teaching skills (*e.g.* China, Estonia, Spain). In the United Kingdom, individual research performance has been claimed to be particularly important in the selection of staff since the introduction of the Research Assessment Exercise (RAE) (see Chapter 7). Results of this research quality assessment determine the amount of public funding for research that a department will receive. In light of this it is hardly surprising that there are "cases reported where star performers had been head-hunted from other universities to boost the institution's RAE performance" (Baldauf, 2001). Shattock (2001a) argues that the creation of an agency that reviews the quality of teaching has not counterbalanced this effect. De Weert (2001) examines the case of the Netherlands where research performance is the main criterion for promotion. It is suggested that the predominant tradition in the country is the Humboldtian one where research and teaching are intertwined. It is thus assumed that good researchers will be good teachers as well.

In order to change this situation where research performance is given priority over teaching skills, some countries have introduced specific measures. In Sweden, for instance, teaching and research skills are required to be given equal consideration in the evaluation of candidates to teaching positions. In the Netherlands, as a response to the increasing demand for evaluations of teaching, some TEIs have strengthened the weight of teaching skills and experience in their selection criteria (de Weert, 2001). In Norway, an alternate career path has been created for those academics who are accomplished

teachers and emphasise teaching in their academic activities. In Australia, there has been a strong push in recent years to give greater recognition to teaching performance and in some institutions it is possible to be promoted to the most senior levels as an outstanding teacher.

In addition to teaching and research achievements, some countries employ other criteria such as engagement with industry or the community (*e.g.* Korea, Mexico, Portugal) or service to the TEI (*e.g.* Greece, Iceland, Russian Federation, Spain). In terms of academic qualifications, holding a doctorate is a formal requirement for appointment to the highest academic ranks in most countries. However, in some countries such as Sweden a doctorate is not formally required.

Is the existence of a vacancy required for an academic to be promoted?

Another aspect of differentiation in staffing policies is whether a vacancy is needed for an academic to be promoted. In some countries, the number of positions at different stages is fixed, thus the existence of a vacancy is a pre-requisite for promotion. In France, institutions ask for a number of positions, then these are allocated to departments by the ministry of education. As a following step, a list of positions is published by the ministry and a national competition is announced. In Spain the existence of a vacant position is a pre-requisite for promotion, but sometimes a new position is created only when there is a suitable internal candidate and funding is available (Mora, 2001). As shown in Table 8.2, other countries in which a position needs to become vacant for a promotion to take place include the Flemish Community of Belgium (in university colleges), China, Croatia, Estonia and Portugal. However, in most countries, promotion is possible upon fulfilment of given requirements with no need for a position to become vacant. But, despite this freedom allowed by legislation, in practice institutions are often restricted in the number of promotions by financial constraints (as in the university sector of the Flemish Community of Belgium).

In Norway, as of 1993, associate professors in both the university and the university college sectors can apply for promotion to full professorship on the basis of an assessment of individual research competence. The Commission which proposed the reform put forward several advantages of this approach: it was considered a more just system (many faculty members were deemed to have a position and salary below their "true level" of qualification); motivation for scholarly work would be enhanced; it would be easier for institutions to recruit and retain academic staff because individuals could plan their careers without depending on professorships to become vacant; it would increase the number of female professors; and the scholarly and social climate of departments would improve. The reform led to a substantial increase in the number of professors in the university sector, from 38% of the tenured academic staff in 1991 to 47% in 2001. A review of the system concluded that the reform had positive effects on career possibilities among academics, and has had more positive than negative effects on scientific quality. On the other hand, the reform has led to lower mobility and an increase in the number of appointments from in house (Kyvik *et al.*, 2003).

In the United Kingdom, decisions on promotion only include a competitive element when the candidate aims at progressing to senior lecturer post. In principle, promotion from lecturer A to lecturer B is based on the fulfilment of a set of criteria without competition with other candidates. However, results of a staff survey suggest that academics often perceived an element of competition in this process (Court, 1998 in Baldauf, 2001).

Multiple employment

As illustrated in Table 8.1, it is possible for academic staff to hold academic appointments with teaching responsibilities in more than one TEI (including the private sector) in all reviewed countries. However, the conditions for such practice vary across countries. In about half of the countries shown in Table 8.1, academics need the prior agreement from the institution identified as the main employer in order to provide services to another institution. Some countries have also established some restrictions to multiple employments. In the Flemish Community of Belgium, an academic cannot work for more than one day per week in an institution other than that of main employment. In Mexico this maximum is set to 8 hours per week. In Poland, new legislation authorises an individual academic to work at most in one single other institution beyond the institution to which he or she is mainly attached unless the latter authorises his/her involvement with more institutions. In a range of other countries (*e.g.* Australia, Iceland, Netherlands, Switzerland, United Kingdom) the authorisation lies fully within the institution of main employment. Only in three countries – China, the Czech Republic, and Sweden – are there no restrictions to multiple employments.

In most Eastern European countries reviewed (Croatia, Poland, Czech Republic, Estonia and the Russian Federation) multiple jobholding is a burning issue. Academics often hold a position in more than one TEI in order to compensate for low salary levels. Typically, academics are employed full-time at a public institution and hold a part-time, contractual position at one or more (often private) institution. Focusing on the case of Poland, Kwiek (2003) raises a number of issues, many of which are common to other Eastern European countries. He argues that the possibility of multiple jobholding helped to avoid a mass exodus from academia in search for higher salaries during the 1990s. Another advantage of this phenomenon was that it facilitated the rapid expansion of the private tertiary education sector. However, he also points out that the drawbacks of multiple jobholding are considerable. It has negative implications for teaching and research quality: teaching is likely to be done in repetitive ways, while research activities risk being rather superficial.[34] He argues that this situation might have been acceptable for a limited period of time, but it is unsustainable in the long run. However, he suggests that working in both the public and the private tertiary education sector is not necessarily harmful. Therefore he defends a solution in which academics could hold one position at a public institution and another at a private institution, while their remuneration in the public sector would be reduced to some extent according to legal arrangements.

8.4.3 Compensation and rewards

The basis to set academic salaries differs noticeably across countries

Table 8.3 provides an overview of how salaries of academics are determined in public tertiary education sectors. In about half of the countries, salaries are set directly by institutions with no governmental intervention. This is the case in Australia, Chile, China, the Czech Republic (higher education institutions only), Estonia, Japan (for national universities and public university corporations), the Netherlands, New Zealand, Sweden and the United Kingdom. In some countries, however, institutions do not always make

34. There is also a considerable problem of public finance, since the marginal employment by the private sector of public employees with these attributes (teaching expertise, including teaching materials already developed at the institution of main employment) constitutes a very substantial hidden subsidy.

use of their autonomy in determining salaries. In Japan, for instance, although national universities and public university corporations are free to determine their salary structure, most of them apply the salary scales for civil servants. In a range of other systems – Flemish Community of Belgium, Finland, Iceland, Mexico, Norway, Poland, the Russian Federation, Switzerland and Spain (for non-civil servants) – institutions set salaries within guidelines established by government authorities (often negotiated with trade unions, as in Norway). For example, in Poland, educational authorities establish salary brackets within which institutions have discretion. Finally, in a minority of countries – Croatia, Czech Republic (for tertiary professional schools), Greece, Japan (for public universities), Korea, Portugal and Spain (for civil servants) – government authorities determine academic salaries.

In about two thirds of the countries a national salary scale provides the basis to define salary levels. This is typically the case in those countries where either government authorities directly set salaries (see list above) or institutions set salaries within guidelines established by the government (see list above). In the latter group of countries, institutions have discretion within the limits dictated by the national salary scale. In Portugal, there is a national salary scale for each of the two sectors of the tertiary education system (universities and polytechnics). In the United Kingdom, a sector agreed national salary spine negotiated between institutions, represented by an employers' body, and unions is taken as guidance by institutions when salaries are negotiated at the individual level between the institution and the academic. In another group of countries – Australia, Chile, Czech Republic (for higher education institutions only), Estonia, Finland (within collective agreements between staff organisations and government authorities), Japan (for national universities and public university corporations) and the Netherlands (within collective agreements between employers organisations and national government authority) -, salaries are dictated by an institutional-level salary scale.[35] Finally, case by case negotiation between the institutions and the individual academic staff is the most common approach to determine academic salaries in China, New Zealand (often within the scope of an institutional-level collective agreement), Sweden (within a central collective agreement between a government agency and trade unions), and the United Kingdom (guided by sector agreed national salary scales, as described above). Individual-level negotiated salaries are also common in Estonia and the Russian Federation.

In Sweden, as indicated above, salaries are based on performance and set individually for each academic. Salaries are negotiated at the level of the institution on the basis of a general agreement between the Swedish Agency for Government Employers (*Arbetsgivarverket*), acting on behalf of State employers, and national trade unions. The general agreement covers the general terms of employment and sometimes also the range for salary negotiations, either as an absolute amount or as a percentage. There are no government norms for how salaries are to be determined at the institutions, but such norms have developed locally and the criteria may differ between institutions and faculties. For instance, pedagogical and research ability, and leadership skills may be important criteria that could warrant higher wages.

35. In Estonia, TEIs set a scale for minimum salaries and the actual salary is negotiated at the individual level.

Table 8.3. Academic salaries, public institutions, 2007

	Who sets academic salaries?	Basis to determine academic salaries	Criteria which influence progression within the national salary scale
Australia[1]	TEI	Salary scale at the level of TEI	*a*
Belgium (Flemish Community)	TEI with salary guidelines established by government authorities[2]	National salary scales	Years of service
Chile	TEI	Salary scale at the level of TEI	*a*
China	TEI	Case by case negotiation between TEI and individual academic staff	*a*
Croatia	Government authorities	National salary scale	Years of service, teaching more classes than required, administrative responsibilities in addition to teaching or research obligations and academic qualifications
Czech Republic	Higher education institutions: TEI	Higher education institutions: Salary scale at the level of TEI	*a*
	Tertiary professional schools: Government authorities	Tertiary professional schools: National salary scale	Academic qualifications and years of service
Estonia	TEI	Case by case negotiation between TEI and individual academic staff and salary scale at the level of TEI	*a*
Finland	TEI with salary guidelines established by government authorities	Salary scale at the level of TEI (within the collective agreement negotiated between employees organisations and government authority (municipal or national))	Universities: performance in teaching, performance in research and administration responsibilities in addition to teaching or research obligations (depending on the requirements of the post); Polytechnics: years of service, field of expertise, outstanding performance and academic qualifications
Greece	Government authorities	National salary scale	Years of service
Iceland	TEI with salary guidelines established by government authorities	National salary scale (negotiated by a collective agreement between employers and academic staff)	Years of service, administrative responsibilities in addition to teaching or research obligations and academic qualifications
Japan	National universities and public university corporations: TEI	National universities and public university corporations: At the discretion of TEIs	*a*
	Public universities: Government authorities	Public universities: Local government salary scale	*a*
Korea	Government authorities	National salary scale	Years of service, administrative responsibilities in addition to teaching or research obligations, outstanding performance in teaching and in research
Mexico	TEI with salary guidelines established by government authorities	Salary scales covering groups of institutions (negotiated by a collective agreement)	Years of service, administrative responsibilities in addition to teaching or research obligations, outstanding performance in teaching and in research, academic qualifications and tutoring
Netherlands[3]	TEI	Salary scale at the level of TEI (within the collective agreement negotiated between employer organisations and national government authority)	Universities: performance in teaching, performance in research and administration responsibilities in addition to teaching or research obligations (depending on the requirements of the post); Universities of applied science: years of service, field of expertise, outstanding performance, academic qualifications and experience in industry
New Zealand	TEI	Case by case negotiation between TEI and individual academic staff (negotiated by a collective agreement at the institutional level when applicable)[4]	*a*
Norway	TEI within salary guidelines negotiated between government authorities and national trade unions	National salary scale (collective agreement); case by case negotiation between TEI and trade unions at the TEI level	Criteria agreed through negotiations between TEI leadership and trade unions within the TEI
Poland	TEI with salary guidelines established by government authorities	National salary scale	Years of service, administrative responsibilities in addition to teaching or research obligations and academic qualifications
Portugal	Government authorities	National salary scale (differs by group of TEIs, *i.e.* polytechnics, universities)[5]	Years of service, academic qualifications, administration and management responsibilities
Russian Federation	TEI with salary guidelines established by government authorities	National salary scale; case by case negotiation between TEI and individual academic staff[6]	Years of service, administrative responsibilities in addition to teaching or research obligations and academic qualifications
Spain[1]	Civil servants: Government authorities Non civil servants: TEI with salary guidelines established by government authorities	National salary scale	Years of service, administrative responsibilities in addition to teaching or research obligations and outstanding performance in research
Sweden	TEI	Case by case negotiation between TEI and individual academic staff (within the central agreement negotiated between trade unions and central government agency)	*a*
Switzerland	TEI with salary guidelines established by government authorities (usually at the regional level)	Salary scales covering groups of institutions[7]	*a*
United Kingdom[8]	TEI	Case by case negotiation between TEI and individual academic staff (sector agreed national salary spine is taken as guidance by institutions)	Years of service and performance against terms of contract

Definitions: The term *salary guidelines* refers to national rules provided by government authorities to guide TEIs in setting academic salaries. In case academic salaries set by TEIs require government approval or must respect government-formulated limits, it should be considered as a salary guideline. The term *salary scale* refers to a table which specifies, for each given job category, the wages paid to employees.

Notes: *a*: Information not applicable because the category does not apply; *TEI*: Tertiary education institution.
1. Information concerns universities only and does not account for the non-university sector.
2. Salary guidelines are stricter for university colleges than for universities.
3. Issues covered in this table refer to publicly-subsidised TEIs.
4. Chief executives of TEIs, either collectively or individually, are responsible for the bargaining of the employment conditions of their staff. Chief executives must consult with the State Services Commissioner over the conditions of employment to be included in collective employment agreements.
5. Allowances are permitted on a case by case basis.
6. National salary scale sets the basic salary, however allowances negotiated between TEIs and individual academic staff represent a significant part of academic salaries (in some cases up to 90% of the total salary).
7. Salary scales in each canton differ.
8. Issues covered in this table refer to publicly-subsidised private TEIs. All higher education institutions in the United Kingdom are legally private independent bodies with a charitable status, most of which are publicly funded.

Source: Derived from information supplied by countries participating in the project. The table should be interpreted as providing broad indications only, and not strict comparability across countries.

As shown in Table 8.3, seniority is still the dominant criterion dictating progression within national salary scales. In addition, in most countries where a national salary scale exists, additional compensation is provided to those academics who take administrative responsibilities in addition to teaching and research obligations. Some national salary scales make outstanding performance in teaching and/or research explicitly a criterion for salary progression (*e.g.* Finland, Korea, Mexico, Spain). However, as described below, merit-based pay is a widespread practice in most reviewed countries.

In some countries there are indications that relative salary levels of academics are low

Most *Country Background Reports* suggest that salary levels of academics are low compared to those available in the private sector at similar qualification levels. Differences between earnings in the private sector and tertiary education sector are particularly high in certain disciplines, such as business and computer sciences. Reasons often used to explain this differential include certain intrinsic advantages of the academic career such as greater control over the contingencies of work, professional autonomy and flexible schedules. Oliver (2005) argues that in the United Kingdom the salaries of researchers lag behind salary levels not only in the private sector but also in other areas of the public sector. This is claimed to be a major reason why academia struggles to recruit and retain the best researchers. In addition, she also points out that other trends such as the increasing use of fixed-term contracts and limited institutional resources have diminished the non-monetary benefits of a research career.

In addition, Oliver (2005) refers to a comparative study carried out by Enders (2000). This study argues that in numerous European countries, academic salaries have gradually eroded. This process is claimed to be particularly noticeable in certain disciplines. In a comparison in absolute terms of pay scales in a number of European countries, Enders (2000) found that academic earnings were the highest in Belgium, Italy and the Netherlands; and the lowest in Finland, Portugal and Spain. This study suggested that academic earnings were relatively low and/or declining in Norway, Sweden and the United Kingdom. Another study (Horsley and Woodburne, 2005) examined changes in Australian academic salary relativities over the period 1977-2002. The study concludes that nominal academic salaries in Australia have continued to decline relative to average weekly earnings in the country. A professor's salary, for instance, was 3.2 greater than average weekly earnings in 1977 but in 2002, it was only 2.4 times greater.

Metcalf *et al.* (2005) compared academic salaries in real terms in the United Kingdom to those in eight countries (Australia, Canada, Denmark, France, Japan, New Zealand, Sweden and the United States). Taking into account differences in purchasing power, the authors found that academic salaries in the United Kingdom are below those in the United States, are similar to those in Canada, Denmark and France; and higher than those in Australia, Japan, New Zealand and Sweden. Regarding the dispersion of academic earnings, this study found that academic salaries are more dispersed in the United States than in the United Kingdom, but less dispersed in the Nordic countries.

In some Eastern European countries, the widespread multiple employment among academics might indicate that relative salaries of academics are low. For instance, research in Poland (Dąbrowa-Szefler, 2001) suggest that low salaries are a reason why established academics take up additional employment in another (often private) institution or, in the case of young academics, any extra employment outside academia. In the Russian Federation, other than multiple job-holding in distinct institutions, there is

anecdotal evidence that a significant proportion of academics complement their income with private tutoring services for students.

In Mexico, a concern is the low level of the base salary of academic staff. Remuneration typically comprises three components: the base salary; the merit-based component (which requires a voluntary application by the academic); and a supplement if the academic is a member of the National System of Researchers (SNI) (access is selective and granted to the most productive scholars; in 2005, only about 17% of Mexican full-time academics had achieved SNI membership). For those who are members of SNI, the base salary might represent only about 30% of the overall remuneration. For the others, the merit-based supplement still represents a significant proportion of the remuneration. The base salary is considered too low to sustain a middle-class lifestyle and is perceived as not competitive with the private sector, especially in the early stages of the career.

Individual salary differentiation is common practice in the academic profession

Even in tertiary education systems where academic salaries are determined by a national or institutional scale, there is usually some room for individual differentiation in earnings. In the Flemish Community of Belgium, for instance, despite the existence of a national salary scale, individual salaries vary depending on various factors such as relevant experience and professional career, specific qualifications or the individual academic's "potential". A further possibility for salary differentiation is the award of a personal premium, with conditions for the award defined in the legislation. In university colleges, however, there is much less room for rewarding performance and work experience remains a major determinant of salaries. In Croatia, salary differentiation is possible through bonuses which are granted to academics in posts with special working conditions, according to rules centrally defined. In China, part of the salary of an individual academic is based on an annual assessment of performance.

In Mexico merit-based reward systems are widely used. Institutions develop their own evaluation mechanisms and obtain funds for rewarding excellence through the Programme for Encouraging Academic Excellence (*Programa de Estímulos al Desempeño del Personal Docente*) launched by the federal government in 1992. Access to such funds is granted to federal and state public universities and technological institutes and can be used to reward full-time academics in the categories of Associate and Full Professor. The financial reward is given for a fixed period of time (typically one year) and the participation in the reward programme is on a voluntary basis. Some studies, however, suggest that these systems might have become rather rigid and no longer provide evaluation based on merit. According to Altbach (2003), some of the reward schemes might have simply become a way to supplement inadequate base salaries, with entitlements given to all but the weakest.

In systems where institutions have more flexibility in determining academic salaries, individual differentiation is common practice. In Sweden, for instance, there is a relatively large room for individual salary differentiation (Kim, 2001). The competence of individual staff members and their value on the academic market form the basis for salary differentiation. A staff member's skills, performance and professional contributions are important factors that determine individual salary. Moreover, there are also non-monetary rewards. A reduction in teaching loads or the award of prizes (*e.g.* travel scholarships) are also often used to reward outstanding performance (Askling, 2001). In the United Kingdom, obtaining a research grant can make a considerable difference in salary levels.

However, in some cases, implementing salary differentiation is not always easy. For instance, a study on the Dutch academic labour market (Huisman and Bartelse, 2001) suggests that despite a legal framework that allows for individual differentiation in salaries, it is often difficult to move away from salary levels defined by the salary scales. In these cases, seniority would remain a major determinant of salaries, much more than individual performance.

A number of arguments make the case for flexible salary arrangements with large institutional influence

There seem to be few arguments in the literature supporting a large influence by central authorities on the determination of academic salaries, including the existence of national salary scales. Shattock (2001b) criticises national salary scales and calls for more flexible arrangements. He argues that national salary scales are not adapted to heterogeneous tertiary education systems for two main reasons. Firstly, systems of tertiary education are highly differentiated. He suggests that more prestigious and research intensive institutions aim at attracting staff from an internationally competitive market. Less research intensive and less prestigious institutions, on the other hand, have very different recruitment scopes and strategies. The existence of a national salary scale limits more research intensive institutions' capacity to offer competitive working conditions and attract high quality staff. Secondly, there is a great heterogeneity across disciplines. In some disciplines, such as business and computer sciences, recruitment and retention in TEIs face the challenge of the strong competition created by the private sector. Such market pressures do not apply in the same way across disciplines, for instance the situation is very different in the humanities. He argues that if departments aim at attracting high quality staff, they have to offer salaries that are competitive with those offered by the private sector. The author further points out that arrangements that offer attractive working conditions in order to recruit and retain high quality staff can only be organised at institutional level.

Mora (2001) suggests arguments supporting individual salary differentiation. The author examines the academic pay system in Spain and argues that national salary scales have negative implications for quality. It is argued that since salaries and working conditions of academics who are civil servants are defined at national level, there is little room for rewarding performance such as commitment to work, improved productivity or results at the individual level. In order to allow for greater income differentiation, academics are allowed to engage in "market activities" such as contracting for applied research work in addition to their duties at TEIs. While acknowledging the merits of such an approach in terms of increased income for academics, Mora points out two potential drawbacks for quality. Firstly, the institution where the academic works might benefit little from such activities, since these might be carried out at other institutions. Secondly, the involvement of academics in "market activities" might have adverse effects on their performance of teaching and research at their "home" institution.

De Weert (2001) highlights the advantages of collective negotiations as opposed to negotiations at individual level. The transaction costs of individual negotiations would be extremely high due to the high number of academics and to the socially sensitive nature of salaries. Collective negotiations are more efficient with the possibility of economies of scale. A further advantage of collective negotiations over individual ones is that the former "allow a more efficient response to signals from the market" (Willke, 1998 in de Weert, 2001).

8.4.4 Range of tasks performed by academics

The two essential tasks performed by academics are the generation of new knowledge (research) and the transmission of knowledge (teaching) (Coaldrake and Stedman, 1999). A third responsibility for academics, which is gaining in importance in recent years, is service to society through links with communities, industry and employers. In addition, administration and management are also commonly considered to be part of academic work. The proportion of time spent by individual academics on these task types varies among disciplines and institutions, and depends also on each staff member's seniority and permanence of position (Blaxter *et al.*, 1998).

Research versus teaching

Musselin (2004) examines academic labour markets in Europe and argues that there are considerable differences in teaching duties across countries. In addition, the definition of the very term "teaching duty" varies. For instance, in some countries it includes only classroom teaching, while in others it comprises the supervision of doctoral students as well.

A study by Enders and Teichler (1997) examines the proportion of time spent on teaching and research by academics at different career stages. The systems included in the study were Germany, Japan, the Netherlands, Sweden, England and the United States. It is suggested that during term-time, academics in higher positions dedicate more time to teaching than to research in all studied countries, except Japan. Including other periods of the year, academics in higher ranks spend more time on research in England, Sweden and the United States, while their colleagues in Germany and the Netherlands still dedicate slightly more time to teaching. Regarding academics in middle ranks and junior staff, comparison is more problematic since such positions are sometimes teaching only or research only posts. It is suggested that in England, the Netherlands and Sweden middle-ranked staff spend more time on teaching than higher-rank staff, while in Germany they tend to spend less time on teaching. In Japan there is no considerable difference in this respect between high and middle-ranking staff. Finally, the work of junior staff is primarily focused on research in Germany and the Netherlands, while junior staff in the United States concentrate mainly on teaching.

Some authors suggest that research evaluation procedures have resulted in an increased focus on research. Taylor (2001) based on a study of four Australian universities, suggests that the introduction of performance indicators has put more pressure on academics to increase external grant applications and publications. Reportedly, a considerable proportion of academics stated that they have increasingly focused on research at the expense of teaching. Similarly, Shattock (2001a) argues that the introduction of the Research Assessment exercise in England skewed academic work in favour of research. Similar concerns exist as to the effects of the Performance-Based Research Fund in New Zealand (Houston *et al.*, 2006). Askling (2001) suggests that in Sweden, until recently progress in the academic ladder was based on research performance. Teaching was thus seen as a hindrance and ambitious academics tended to have a strong preference for research. However, research at the end of the 1990s (SOU, 1996; Bauer *et al.*, 1999) indicated that academics had a holistic view of their profession and a balanced attitude towards teaching and research. Box 8.1 describes an initiative to raise the profile of teaching in Australian universities.

Box 8.1. The Learning and Teaching Performance Fund in Australia

The Australian Government's *Learning and Teaching Performance Fund* rewards universities that best demonstrate excellence in learning and teaching for under-graduate students.

To be eligible to participate in the fund, universities must first meet certain participation requirements which enable them to demonstrate their commitment to learning and teaching. Each participating university's learning and teaching outcomes are then assessed using a quantitative model. The quantitative model uses existing, nationally comparable measures of student satisfaction, student success, and graduate outcomes to compare learning and teaching performance. The model includes an adjustment process to remove identifiable external influences that may affect comparisons.

The fund measures universities' performance in the following broad discipline areas:

- Science, Computing, Engineering, Architecture and Agriculture;
- Business, Law and Economics;
- Humanities, Arts and Education; and
- Health

The results of the model are reviewed by an expert panel, which makes recommendations to the Australian Education Minister on those universities that should receive funding.

Funding of AU$220 million has been allocated to the Learning and Teaching Performance Fund over three years to 2008.

More information is available from:
www.dest.gov.au/sectors/higher_education/policy_issues_reviews/key_issues/learning_teaching/ltpf/

De Weert (2001) suggests that, in the Netherlands, initiatives allowing greater freedom in determining the distribution of tasks has contributed to limit the over-emphasis on research and reward other aspects of academic work such as teaching, community service, technology transfer, and dissemination activities. For instance, at Utrecht University teaching and research duties are present in different proportions in the workload of individual academics. Such arrangements allow individual staff members to concentrate more on either teaching or research for a fixed period of time.

The interaction between teaching and research

Coaldrake and Stedman (1999) provide an overview of different perspectives regarding the relationship between teaching and research. Some authors argue that teaching and research are intrinsically intertwined, since only active researchers can provide high quality teaching and interactions between researchers and students help to improve research (Ramsden and Moses, 1992 in Coaldrake and Stedman, 1999). The skills necessary for high quality teaching (*e.g.* strong commitment, spirit of inquiry and ongoing learning) are similar to those required for good research (Hattie and Marsh, 1996 in Coaldrake and Stedman, 1999). A weaker version of this viewpoint considers that good research is a condition to high quality teaching, but not vice versa. Conversely, it can be argued that research and teaching compete for the limited time of academics (Hattie and Marsh, 1996). Furthermore, teaching and research have very different approaches to knowledge, and the skills underlying both activities are different (Barnett, 1992 in Coaldrake and Stedman, 1999).

Countries have different traditions in relating teaching and research. A number of systems (*e.g.* Germany, Sweden) developed according to the noble Humboldtian vision of the *Einheit von Forschung und Lehre*, or the unity of research and teaching. Academic work takes place in laboratories or other forms of scholarly interaction. Teachers and students co-operate so closely that teaching and research are blended together. In most of these countries, this translates into the requirement that teaching be informed by research. Some countries have stricter requirements. For instance, in New Zealand, legislation requires that teaching at degree level is to be undertaken only by those actively involved in research. In Eastern European countries, the clear separation between teaching and research characteristic of tertiary systems under the pre-1990s socialist regimes came to an end and systems were restructured according to the Humboldt model. In Estonia this entailed a remarkable transformation with the integration of the former research institutes under the Academy of Sciences into the university system.

Other tasks

Blaxter *et al.* (1998) highlight the importance of writing and networking among academic tasks. These tasks are defined as follows:

- *Writing* concerns reporting on different aspects of academic work to wider audiences, which may be specialist or general. It may use print or electronic means for dissemination, and involve books, articles, course materials, reports, memoranda or other forms of presentation.
- *Networking* has to do with the development and use of personal and professional contacts (academics and non-academics), with a view to maintaining and furthering academic careers and projects. It may take place within, between or outside departments and institutions, and may or may not be confined to a particular subject area.

They suggest that academics who aim for a secure lecturing post are likely to focus initially on teaching, research and writing. Managing and networking become more important at later career stages, particularly for those who are highly successful in their institution or subject area. The authors also point to the importance of networking, writing and research in the process of building up academic reputation (Blaxter *et al.*, 1998).

8.4.5 Career management

Formative assessment is not a common practice in tertiary education systems

In general, in countries reviewed in the project, the individual formative assessment of academics – the periodical assessment of academics' performance to identify professional development needs and inform career development – is not common practice. This is in contrast to the somewhat widespread use of individual assessment of academics for purposes of research funding, promotion procedures, or performance-based pay schemes.

Mora (2001) examines the assessment of academics in Spain. For tenured staff, an evaluation of the teaching activities is carried out by individual institutions every five years. However, it is argued that virtually all professors receive positive assessments due to the lack of reliable criteria. Extremely rare exceptions to this happen only in cases of clear misbehaviour. The author argues that the impact of such evaluations is extremely

limited and staff do not use the results for professional development purposes. In most countries, while student surveys are used to evaluate courses, their use for career development is pretty much left to the individual academic.

An exception is Sweden, where individual academics are regularly evaluated by heads of department. This assessment takes into account students' course evaluations; individual performance in research, teaching and administrative tasks; professional development and has implications for promotion, remuneration and working conditions. This is in addition to the voluntary assessments in order to be promoted or to obtain research funding (Askling, 2001). In the Netherlands, while assessment procedures have mainly focused on research performance, increasing attention is paid to teaching performance and to contact with industry and business, particularly in the applied sciences (de Weert, 2001).

Responses to under-performance by academics are limited in some countries

The literature on possible responses to the under-performance of staff is rather scarce. De Weert (2001) suggests that, in the Netherlands, TEIs have the right to deny otherwise automatic annual salary increments from under-performing academics. Mora (2001) argues that in Spain there is a serious lack of mechanisms to assist institutions to deal with under-performing academics. He claims that the outcomes of the assessment procedures in place provide an insufficient response to under-performance. Most staff are civil servants, are granted tenure and market incentives are rather weak. Negative assessments for tenured staff do not affect their current positions, they only result in limited chances for both promotion and increases in salaries for productivity. It is argued that academic quality is driven by the professional integrity of most academics, rather than by reliance on economic incentives.

Systematic approaches to professional development are not common in tertiary education systems

Systematic approaches to the professional development of academics are not common among participating countries. They mostly consist of periodical sabbatical leaves and initiatives to improve the pedagogical skills of academics.

In Sweden, all academics are guaranteed a right to receive professional development. Consequently, institutions are obliged to offer opportunities for professional development and academics are required to participate in them. The right of academics to get release time for individual professional development is further defined. In the past, national regulations stipulated professors had the right to take a sabbatical leave every five years for a maximum duration of one semester. However, since 1999 this right has been replaced by the general right for all staff members to get professional development and time for research (Askling, 2001). In France, training programmes with funding provided are offered to staff, but participation is on a voluntary basis. Academics also have the possibility to take a sabbatical leave every six years. The maximum duration of such a leave is one semester and it can be used to help academics to update their knowledge and explore a new field or methods. Such possibilities for professional development are not linked to any type of formal evaluation (Chevaillier, 2001).

Some countries develop targeted programmes with the objective of improving the overall quality of the academic workforce. In Mexico, the main instrument in this effort has been the Faculty Enhancement Programme (PROMEP, *Programa de Mejoriamento*

del Profesorado) established by the federal government in collaboration with institutions. The objective of the PROMEP is twofold: *(i)* improve the qualification levels of full-time academic staff in public institutions; and *(ii)* foster the development of academic bodies with the capacity to undertake relevant research and disseminate innovation. The PROMEP awards scholarships to full-time academic staff for the completion of post-graduate degrees, and for the preparation or completion of post-graduate theses, and promotes other initiatives to improve the quality of academic bodies. Among these are the incentives provided for the formation of networks of academic teams so synergies are created between more and less mature research groups, tutoring is provided to newly-established researchers, and new research projects in strategic areas are jointly launched.

Box 8.2. Promotion of good practice in teaching and learning in England

The Higher Education Funding Council for England (HEFCE) promotes good practice in teaching and learning through initiatives such as:

- Centres for Excellence in Teaching and Learning
- Fund for the Development of Teaching and Learning
- Higher Education Academy
- National Teaching Fellowship Scheme
- Teaching and Learning Research Programme

One of these initiatives is the Higher Education Academy. The Academy's role is to be a nationwide focus for enhancing teaching, learning and students' experiences in higher education. Its objectives are:

- Informing policy: the Academy provides an authoritative and independent voice on policies that influence student learning experiences, with fostering debates or forum.
- Supporting institutions: it works with institutions to enhance the quality of teaching and student experiences. It liaises directly with institutions to identify priorities, needs and innovative practice.
- Research and evaluation: it leads the development of research and evaluation in improving the student experience by the means of funding some projects, literature reviews, surveys, *etc.*
- Professional development and recognition: to advance the professional status of staff, it confers Associate, Fellow and Senior Fellow status on individuals, and provides some fellowship schemes and a database of resources for new academic staff.
- Disciplines and networks: it works with institutions, individuals and groups and has formed many networks in order to coordinate the work of those groups.

For more information: *www.heacademy.ac.uk* and *www.hefce.ac.uk/learning/tinits*

Some countries are also launching initiatives to reinforce the importance of teaching performance. In Australia, a Learning and Teaching Performance Fund was established in 2006 to reward institutions that best demonstrate excellence in teaching and learning for under-graduate students (see Box 8.1). The Carrick Institute for Learning and Teaching in Higher Education was also established in 2006 to enhance learning and teaching in Australian Universities. The Institute provides grants for research and innovation in teaching and learning, and manages awards and fellowships programmes. In the United Kingdom, the Higher Education Academy was established in 2004 to provide services at different levels – institutional support, subject and staff development, national policy – to enhance the student learning experience in higher education (see Box 8.2). In Sweden, as a result of an increasing emphasis on teaching skills, all junior and senior lecturers holding permanent positions are required to have basic pedagogical training. Such training also became mandatory for doctoral students. In China, a number of development programmes for academics has also been developed (see Box 8.3).

Box 8.3. Comprehensive policies to improve the quality of academic bodies in China

In China, the Ministry of Education, in the context of the *Action Plan for Invigorating Education toward 21st Century*, launched in 1998 a comprehensive training and support system to improve the quality of the academic body through the implementation of a series of programmes.

The Changjiang Scholar Reward programme was jointly launched and funded by the Chinese government and the Hong Kong *Le Ka Shing* Foundation in 1998. The aim is to recruit outstanding middle-aged and young scholars who demonstrate strong academic merit and reveal potential to become research leaders in various disciplinary areas. Each professorship created under the programme is associated with a 5-year contract with a salary of RMB 100 000 each year. In 2000, the government launched a special fund, allowing each professor recruited under the programme to hire five researchers, so as to form a team to conduct high-level research. From 1998 to 2004, 727 professorships were created under this programme.

The Distinguished Higher Education Young Teacher Award and the *Programme for Training Cross-Century Excellent Scholars* focus on training and supporting a number of high-calibre academic leaders who possess outstanding academic potential. *The Distinguished Higher Education Young Teacher Award* aims to train a group of excellent academic leaders. From 1999 to 2003, RMB 200 million were awarded to 429 outstanding young teachers from 132 TEIs with an average age of 38. The *Programme for Training Cross-Century Excellent Scholars* focuses on potential for scientific research. The total investment from 1993 to 2003 was RMB 150 million, supporting 922 young scholars.

The *Distinguished Young Teacher Granting* programme and the *Training Programme for Higher Education Backbone Teacher* aim at attracting, training and retaining young academic staff so as to facilitate the overall improvement of teaching staff within institutions. The *Distinguished Young Teacher Granting* programme has provided a total funding of RMB 129 million, supporting 2 019 scholars from 1987 to 2002. The *Training Programme for Higher Education Backbone Teacher* funds the professional development of more than 10 000 young teachers per year.

There are also some initiatives to improve the quality of faculty in tertiary vocational institutions. The Ministry of Education required that 35% of full-time teachers shall hold master's degrees or above by the end of 2005; the State Council also requires every teacher in vocational TEIs to spend 2 months every two years in related industries or businesses.

8.5 Pointers for future policy development

The policy suggestions that follow are drawn from the experiences reported in the Country Background Reports, the analyses of external review teams, and the wider research literature. Not all of the policy implications apply equally to all reviewed countries. In a number of cases many or most of the suggestions are already in place, while for other countries they may have less relevance because of different social, economic and educational structures and traditions. The implications also need to be treated cautiously because in some instances there is not a strong enough research base across a sufficient number of countries to be confident about successful implementation. Rather, the discussion attempts to distil potentially useful ideas and lessons from the experiences of countries that have been searching for better ways to make academia an attractive career choice and to facilitate the adaptation of academics to change. However, some common themes are evident in the country reforms now underway, namely that institutions are to be given ample autonomy over the management of human resources, academic freedom can be reconciled with institutions' contributions to society, the academic career is to be managed in a flexible manner, and a number of initiatives can improve the attractiveness of the academic career.

While educational authorities at the national/regional level have an important influence on the academic career through regulatory frameworks, policy steering, funding, programmes targeted at academics, the management of human resources is mostly pursued at the institutional level, and within TEIs often at the discipline level. The policy suggestions below not only support ample autonomy for institutions over the management of human resources but are proposed in appreciation of that autonomy. Therefore, it is recognised that most of the approaches proposed below require implementation at the institutional level. The principal role for national/regional policy in this area lies more in creating the framework conditions, setting up the right incentives and encouraging institutions to follow best practices in the management of the academic profession.

Give institutions ample autonomy over the management of human resources

In today's systems of tertiary education, individual institutions pursue a diversity of missions, exhibit a variety of strategies to accomplish their objectives, face different circumstances and have needs which are particular to them. They are being asked to provide swift responses to society's demands in an increasingly competitive environment. More and more they are also being held accountable for the use of scarce public resources while being given more formal autonomy.

Human resource management is likely to be the most important area for decision-making in individual institutions. The evidence presented earlier suggests that in a number of countries governmental regulations still considerably delimit institutions' autonomy over the management of their human resources, creating inflexibilities and limiting them in finding responses to the challenges they face. Institutions are likely to be more effective in achieving their mission if they benefit from ample autonomy in the area of human resource management. This autonomy could include the following aspects: *(i)* faculty and staff being formal employees of TEIs; *(ii)* institutions having broad discretion over the setting of academic salaries; *(iii)* institutions with the freedom to create academic positions in line with their strategy; *(iv)* institutions to determine the range of career structures which reflect the distinct roles academics play within them, including the balance between teaching and research; *(v)* institutions having responsibility to design promotion, assessment and professional development strategies.

In this context of ample autonomy over the management of human resources, the role of national legislation should focus on principles rather than specific processes. This would entail, for instance, the requirement for institutions to observe (and demonstrate that they have observed) the principles of open competition for positions, selection on the basis of merit and transparency of process in recruitment without specifying exactly how this were to be achieved. Similarly, the principle that continued employment in a public institution is based on the meeting of performance criteria could be enshrined in legislation without specifying how it was to be implemented in any particular case.

The transparency of staff appointment, promotion and performance appraisal processes should be given particular attention. Within institutions, job specifications and selection criteria should be collectively developed and agreed, with the participation of staff at all levels (even for the most senior posts). Posts should be advertised, and the selection process should include public presentations and feedback even for senior jobs. In the case of senior posts (*i.e.* at full-professor level), selection panels should include external assessors, drawn (a) from within the institution but outside the discipline, (b) from the discipline outside the institution, and (c), in the case of key appointments, even from outside the country.

Manage the academic career in a flexible manner

There are a number of reasons why academic careers should be managed in a flexible manner. First, there needs to be greater flexibility on the roles and workloads of academic staff within single institutions. In some countries, within various degrees of flexibility, institutions require academics to cover teaching, research and service to the community. Few specialise in any of these roles. Institutions might want to develop further the range of specialised positions such as teaching-only positions or allow staff to develop their own strengths. An obstacle in a number of countries tends to be the principle of research-based teaching in all tertiary education. The interpretation often is that all academic staff should engage in leading edge research. In a number of cases, this is not feasible in practice, especially in the non-university sectors. A more realistic objective would be to require academics to keep up to date with the relevant research literature, but consultancy and project work with external companies might be just as important for teaching vocational and professional subjects.

Second, career structures should reflect the diversity of roles and missions of groups of institutions (*e.g.* universities versus vocational tertiary institutions). Human resource management is likely to be more effective if academic ranks, associated roles, responsibilities, qualifications and performance expectations for career advancement are aligned with institutions' particular missions. For instance, in a polytechnic sector, the desired profile for an academic staff might encompass intellectual sharpness and scholarship (master's or doctorate), professional practice, and "third mission" skills, which should be reflected in recruitment and promotion processes, entry rank and legal requirements (*e.g.* three years in professional practice).

Third, within the broader direction provided by institutional leadership, it is important to have individual academics assume responsibility for shaping their role and work profile. Staff are to take responsibility for their learning and to develop professionally by pursuing personal goals that are in accordance with the larger organisational and external environment. However, in a context of increasing institutional and academic entrepreneurship, it is important to ensure that the entrepreneurial activities of individual academics do not divert their attention and time from the core mission and activities of the institution.

Fourth, institutions should be allowed flexibility concerning the types of employment contract which can be offered to academic and research staff. These could include contracts which provide for renewal subject to satisfactory performance after an initial period or ongoing contracts with explicit performance expectations.

Finally, some countries attach strong importance to long career ladders, with a great number of hurdles following doctoral studies. It appears that any benefits of this system might now be outweighed by the very considerable costs, most obviously in delaying the maturity of able young scholars and researchers, but also, for example, in demanding a prolonged training in research at the expense of preparation for teaching. This could be a good time to open up a debate on the continuing merit of these procedures in the present context.

Reconcile academic freedom with institutions' contributions to society

Academic freedom has been, according to some groups, under threat as a result of a number of trends within tertiary education such as the growing share of private funding, the increased focus on accountability and performance, and new approaches to

institutional management. At the same time, institutions are under pressure to use public funds to the benefit of society as a whole and, as a result, are developing institutional strategies to improve their contribution to countries' economic and social goals. This calls, in most countries, for a re-conceptualisation of what comprises academic work. In this context, academic freedom needs to be framed within institution's obligation to society.

In practice this would translate into academics: *(i)* pursuing their objectives while accounting for institutional goals; *(ii)* being provided with support and conditions to meet what the institution and society expect from them; *(iii)* being autonomous in the design of the courses they teach; *(iv)* benefiting from freedom to select research topics and approaches to research, possibly within priorities defined collectively either at the institution or system level; *(v)* not being constrained in their interpretation of research results and of the knowledge conveyed to students; *(vi)* not being prevented from publicising the results of their research or the outputs of their service to the community; and *(vii)* being held accountable for the outcomes of their academic activities. This exposes the need for institutions to develop frameworks for linking institutional goals to individual academic work.

Enhance the attractiveness of the academic career

Despite data limitations, with a number of country exceptions, the general picture is that academics' salaries have declined since the early 1990s relative to those in broadly comparable occupations. Although other aspects of academics' employment conditions, such as leave benefits, relative job security and pensions, are often more generous than in other occupations, academics' total compensation package is probably less competitive than it once was. The size of the academic workforce, within a single institution and across an entire tertiary education system, means that to raise salaries across-the-board (at institutional or system level) by even a few percentage points is very costly, especially in light of current constraints on public funding for tertiary education. It may be more cost-effective, therefore, to target larger salary rises to the key groups of interest to particular institutions. This is to be part of the strategies of individual institutions in the context of their autonomy to establish and differentiate salaries. Individual institutions are to gather the resources to offer competitive salaries at least for the groups which are strategically important to them. Other strategies to improve the attractiveness of the profession include providing a dynamic knowledge-rich work environment, opportunities for career growth, prospects for a stable career, formal mechanisms to recognise the work of academics, and opportunities for mobility and collaboration with external organisations.

In countries where academics commonly hold several jobs, efforts need to be undertaken so academic staff enjoy terms and conditions of service broadly comparable to those in other countries. It should be a firm policy goal that staff be properly remunerated in their institution of primary employment so that secondary employment becomes exceptional. This will enable staff to devote proper amounts of time to their teaching and provide them with adequate time and space for the research and/or scholarship which are an essential component of education at tertiary level, as well as for self-development through training activities, student support and all the other activities which can be expected of a well-rounded system. One should not rule out all forms of multiple employment, however. It can be appropriate and productive for academic staff to hold dual appointments, either to encourage inter-institutional collaboration in teaching (necessarily with the knowledge and approval of both institutions) or with a general

teaching-and-research appointment in an academic institution plus an attachment to a research centre. In the case of vocational institutions, joint appointments or secondments from a TEI to industry, or vice versa, could also be appropriate. Any regulations need to be drawn up with care, and the essential principle should be that the primary employer is in full knowledge and control.

Despite the progress in women's participation in tertiary education, in most countries women are still under-represented among the senior academic ranks and higher education leadership. Sustained efforts should be devoted to enhancing the development of female representation in leadership positions over time. Initiatives that could prove useful include family-friendly policies (*e.g.* provision of child-care, assessment schemes which account for child raising periods), equal opportunity plans to avoid gender discrimination in appointments, promotions and remuneration, and institutional strategic plans to recruit more female academics.

Improve the entrance conditions of young academics

Policies to encourage more people to enter academia are unlikely to pay off if high-quality candidates find it hard to gain academic positions. The best candidates, who are likely to have good job prospects outside academia, may not be willing to wait in a lengthy queue or to endure a succession of short-term assignments. Well-structured induction schemes, recruitment processes that ensure the best candidates get the available jobs, and prospects for a stable and rewarding merit-based academic career, are critical.

A supporting environment upon entry into the academic career involving a reduced teaching load, the availability of mentoring by senior academics, special funds to create or resource a research group, and availability of training programmes to help the young academic become familiar with a number of key processes (*e.g.* applications to research grants; patenting processes; consulting opportunities; dissemination activities including publishing research results) could prove critical in reducing attrition rates of young academics. Ensuring that recruitment processes are transparent and based on merit will also help reduce the risk of discouraging talented individuals to enter the academic career. Further, it is important to provide young academics with prospects for a stable academic career following the recognition of their accomplishments by well-established assessment procedures. Finally, countries with long career ladders, should assess the impact of such approaches on the work and motivation of young academics. Most systems now assume that young academics are to build an independent research career right as they complete their doctoral studies at a stage when their skills and capacity may well be at their best.

There are also cases in which some young academics, no matter how well prepared and supported, struggle to perform well on the job or find that it does not meet their expectations. A formal probationary process can provide an opportunity for both new academics and their employers to assess whether academia is the right career for them. Young academics should be given every opportunity to work in a stable and well-supported environment, and the probation decision should be taken by a panel which is well trained and resourced for assessing new academics.

Strengthen management processes and leadership

Institutional leadership and management need to strengthen processes and systems which provide the framework for linking individual academic work to institutional strategic goals. Responding satisfactorily to the emerging needs of society and the

economy is likely to require institutions to exercise more leadership and management at senior levels across institution's units, *e.g.* by demonstrating the advantage of change, establishing a systematic forward-looking assessment of organisational direction, and defining the requirements and workloads needed to achieve the desired goals.

In relation to the individual academic, strengthened leadership and management will be more effective if associated with having one's views acknowledged and opportunities for self-initiative, being offered choice and relevant information in a non-controlling way, and benefiting from a meaningful rationale for undertaking tasks. The more academics accept and identify with institutional arrangements and practices, the more their actions will be self-motivated. Institutional leaders are the key influence in providing support to academics. They can help to foster a stimulating and supportive institutional culture, as well as help to buffer academics against mounting and sometimes contradictory external pressures. Skilled leaders can help foster a sense of ownership and purpose in the way that academics approach their job, provide professional autonomy to academics and help them achieve job satisfaction and continue to develop professionally.

Institutional leaders can also foster group identity by introducing shared leadership and encouraging collegiality. Opportunities for team work, a structure for internal communication and a culture of sharing and peer reviews would also contribute for developing academics' sense of belongingness.

Evaluate and reward the accomplishments of academics

It is necessary to put in place within TEIs mechanisms that provide feedback to academics and reward their accomplishments in the interests of the individual, the institution, and the system as a whole. A great deal of attention needs to go to performance management that defines expectations for staff and provides feedback and development opportunities.

To a great extent the use of individual assessment of academics is widespread in most countries for purposes of research funding, promotion procedures, or performance-based schemes. However, these assessments typically reward mostly research accomplishments to the detriment of other contributions by academics. Also, the evaluation of academics for improvement purposes (*i.e.* formative evaluation) is not common practice in reviewed countries.

There needs to be more emphasis on rewarding accomplishments of academics in areas other than research. Teaching, community service, technology transfer and dissemination activities should grow in importance among criteria for appointment, promotion and merit-based rewards. The teaching performance measures are sketchy – and currently appear very largely reliant on student evaluations – which calls for improved mechanisms to assess accomplishments as a teacher. Another possibility is to create alternate career paths for individual academics particularly skilled at a particular activity such as teaching.

There also needs to be a stronger emphasis on evaluation for improvement purposes (*i.e.* formative evaluation). This can be low-key and low-cost, and include self-evaluation, informal peer evaluation, classroom observation, and structured conversations and regular feedback by department heads and experienced peers. Such appraisal would have specific links to programmes of staff development, training and renewal. Heads of department and other senior colleagues need to be trained in evaluation processes (and to be regularly evaluated themselves), and institutions need to have the resources to meet identified

needs in academics' professional development. Ongoing, informal evaluation directed at academics' improvement must be distinguished from the evaluation needed at key stages in the academic career, such as when applying for promotion. Such evaluations, which are more summative in nature, need to have a stronger external component and more formal processes, as well as avenues for appeal for academics who feel they have not been treated fairly.

Countries also need to consolidate their mechanisms to reward academics for exemplary performance. Salary differentiation on the basis of individual performance is one option but such schemes need to ensure that celebrated accomplishments cover a wide range of activities beyond research. Rewards can be also diversified especially in those countries where there is limited flexibility in raising monetary compensation. For example, outstanding performance and contributions could be rewarded with time allowances, sabbatical periods, opportunities for activities in another organisation, support for research or further study, or opportunities for training activities.

There also needs to be simple, transparent and accepted procedures for dealing with ineffective academics. Although the number of such academics is likely to be small, the problem is often not addressed, which causes difficulties not only for institutions and the general academic workforce, but also for the poorly performing academics themselves. Stronger systems of support upon entry into the profession, more rigorous approaches to selection and probation before academics are granted tenure, and ongoing, regular formative evaluation will help to prevent poor academics from entering and remaining in the profession.

Integrate professional development throughout the career

More emphasis needs to be placed on the professional development of academics throughout their career, as a result of the broadening of their responsibilities in response to societal changes, higher expectations of tertiary education systems, and the fast transformation of the tasks they are required to accomplish. A lifelong learning perspective for academics implies focussing much more attention on supporting academics in the early stage of their career, and ongoing professional development.

A number of strategies might prove effective in accomplishing this, such as agreements that stipulate that academics are entitled to certain amounts of released time and/or financial support to undertake recognised professional development activities. Other possibilities include incentive-based approaches linking development activities to needs identified through an appraisal process, and/or participation in professional development as a requirement for salary increases or taking on new roles such as positions in management.

Effective professional development requires well-established quality/training departments within institutions to link the professional development of individual academics to institution's strategic planning processes and internal quality reviews. Institutions should assess how their training departments should evolve, and what their new training priorities should be. In this respect, the issue of improvements in the area of teaching and learning has received particular attention. A number of countries are now exploring different models of centres for teaching and learning, either within single institutions, as a collaboration between groups of institutions, or as a centrally-led initiative servicing individual institutions. The primary goals include the improvement of pedagogic skills and the shift from teacher to learner-centred provision of tertiary

education. Educational authorities should devise strategies to recognise and substantially assist the establishment of such centres within tertiary education systems.

Professional growth is also promoted by opportunities throughout the career to gain experience outside academic organisations through sabbatical leave, extended leave without pay, and job exchanges with industry. This is particularly pertinent for the more vocationally-oriented institutions.

Develop mechanisms to support the work of academics

Academics place a lot of importance on the quality of their relations with students and colleagues, on feeling valued and supported by institution's leaders, on good working conditions, and on opportunities to develop their skills. At the same time, they face new expectations and extra demands. This context raises the need to put in place mechanisms within institutions to support the work of academics and recognise the wide variety of tasks that academic work actually entails.

Examples of initiatives to protect academics from excessive demands include the creation of administrative units to assist them with administrative tasks (*e.g.* unit to assist academics with research applications; department to deal with accountability requirements); technology transfer offices; teaching and learning centres; and offices to advise students on career and other issues. Well-trained professional and administrative staff can help to reduce the burden on academics and free them to concentrate on their core tasks. Adequate facilities in institutions for staff preparation, research and planning would also help ensure an adequate working environment.

Enhance the capacity for collaboration and encourage mobility

In most countries, the limited mobility of academics between TEIs, TEIs and other academic organisations, and TEIs and non-academic organisations, restricts the spread of new ideas and the most efficient use of resources, and results in academics having fewer opportunities for diverse career experiences. Providing incentives for greater mobility and removing barriers to collaboration are important policy responses. In countries with decentralised management of human resources the mutual recognition of academic career structures across institutions would assist in that direction, as well as ensuring the portability of entitlements to leave and retirement benefits. The recognition of skills and experience gained outside academic institutions is also an important means of encouraging greater career mobility among academics, as is the provision of flexible re-entry pathways to the academic profession. Initiatives such as the creation of Centres of Excellence involving different research groups could also prove instrumental in strengthening the capacity for collaboration among TEIs, between TEIs and other academic organisations, and between TEIs and non-academic organisations as could be the case with the creation of joint degrees between institutions. Frameworks to facilitate the interaction and transfer of staff between TEIs and non-academic organisations and between academic and non-academic positions would also contribute to diversify career experiences within tertiary education.

A factor which almost certainly works against high quality and is objectively very hard to justify is the predilection for "in-breeding" (from student to staff member and throughout the staff career) which seems to be still deeply embedded in a number of countries. This is a complex and to some extent a cultural issue. It is not possible, given the principles of institutional autonomy, and it would certainly be undesirable, for central

government to try to interfere directly with staff appointments. But, there are some quite simple steps which could be taken to open up the appointment process at different stages of the career ladder, and to encourage mobility. The priority would be to increase the transparency of the staff appointment, promotion and performance appraisal processes along the lines proposed earlier. Appointment and promotion decisions should be based solely on academic accomplishments – in teaching, research, and community service. However, if in-breeding is considered a serious enough issue it would even be possible to consider making experience at another institution (and in some cases experience outside the country) one of the criteria to be given positive consideration.

The academic labour market is also becoming increasingly internationalised. Academics, like other well-educated workers, are becoming more internationally mobile as transportation costs fall, greater compatibility across tertiary systems develops, and there are country imbalances in academics supply and demand. This has the potential to provide many benefits for the individual academics concerned, as well as for the tertiary educations systems in the receiving and sending countries. However, the growing internationalisation of the academic labour market implies that countries will face a more complex policy environment with a wider range of potential sources of supply of academics, the need to address concerns about possible adverse effects on domestic as well as other countries' academic workforces and possible pressures for greater coherence in academic qualifications and quality assurance systems.

Provide more flexible employment conditions for senior academics

A number of countries face the challenge of an ageing academic workforce. As a result, institutions need to cope with the need to update the skills and knowledge of older academics and maintain their levels of motivation. They also need to develop strategies to face the consequent recruitment challenges which result especially if attractive options for early retirement exist.

Tertiary education systems need to be more proactive in ensuring that TEIs provide attractive working environments for older academics. There is no benefit if older academics continue working for extended periods because they feel they have to, but many older academics may want to continue making a contribution. Therefore, programmes aiming at preventing career burn-out and retaining important skills in TEIs would be beneficial. The elements could include professional development activities tailored to meet the needs of older academics, more flexible working arrangements with reduced teaching hours and/or reduced hours overall, working on a consultancy basis or new tasks such as curriculum development, advising senior management and mentoring young academics.

One possible model would be to offer older academics the option of a gradual reduction in their working hours for a lower salary, but retaining their long-term pension benefits. This would amount to substituting a gradual move away from full-time work to part-time work, rather than the early retirement option available in a number of countries. Older academics would earn less but also work less, and the "saved" hours of work could be used to recruit additional young academics. Such an approach could be largely budget-neutral. This would also ensure that the experience of older academics would not be lost prematurely from the tertiary education system. Policies for senior academics must be individually tailored to meet the needs of the people and institutions concerned.

References

AAU (Association of American Universities) (2001), "Non-tenure-track Faculty Report", AAU, Washington, D.C. *www.aau.edu/reports/NonTenure4.01.pdf*

Altbach, P.G. (ed.) (1996), *The International Academic Profession: Portraits of Fourteen Countries*, Princeton, N.J.: Carnegie Foundation for the Advancement of Teaching.

Altbach, P.G. (2001), "Academic freedom: International realities and challenges", *Higher Education,* Vol. 41, pp. 205-219.

Altbach, P.G. (2003), "Evaluating and Rewarding Professors: Mexican Style", *International Higher Education*, Spring.

Ashford, N.A. (1983), "A Framework for Examining the Effects of Industrial Funding on Academic Freedom and the Integrity of the University", *Science, Technology and Human Values*, Vol. 8, No. 2.

Askling, B. (1994), "Institutional responses in Sweden" in Westerheijden, D. *et al.* (eds.) *Changing Contexts of Quality Assessment. Recent trends in west European higher education*, Lemma, Utrecht.

Askling, B. (1997), "Quality Monitoring as an Institutional Enterprise", *Quality in Higher Education*, Vol. 3, No. 1, pp. 17-26.

Askling, B. (2001), "Higher education and academic staff in a period of policy and system change", *Higher Education,* Vol. 41, pp. 157-181.

Askling, B. and M. Henkel (2000), "Higher education institutions", in M. Kogan, M. Bauer, I. Bleiklie and M. Henkel (eds.), *Transforming Higher Education: A Comparative Study*, Jessica Kingsley, London.

Baldauf, B. (2001), "United Kingdom", in J. Huisman and J. Bartelse (eds.), *Academic Careers: A Comparative Perspective*, CHEPS.

Barnett, R. (1992), "Linking teaching and research", *Journal of Higher Education,* Vol. 63, No. 6, pp. 619–636.

Bauer, M., B. Askling, S. Gerard-Marton and F. Marton (1999), *Transforming Universities: Changing Patterns of Governance, Structure and Learning in Swedish Higher Education*, Jessica Kingsley, London.

Berdahl, R. (1990), "Academic Freedom, Autonomy and Accountability in British Universities", *Studies in Higher Education*, Vol. 15.

Blaxter, L., C. Hughes and M.E. Tight (1998), "Writing on academic careers", *Studies in Higher Education,* Vol. 23, No. 3, pp. 281-295.

Blom, C. (1999), *Rede bij de de Overdracht van het Rectoraat*, Nijmegen: Katholieke Universiteit Nijmegen.

Blomqvist, G., H. Jalling and K. Lundequist (1996), "The academic profession in Sweden", in P.G. Altbach (ed.), *The International Academic Profession: Portraits of Fourteen Countries*, Carnegie Foundation for the Advancement of Teaching, Princeton, N.J.

Booth, A.L., J. Frank and D. Blackaby (2001), "Outside Offers and the Gender Pay Gap: Empirical Evidence from the UK Academic Labour Market". *www.iza.org/essle/essle2002/Booth.pdf*

Boyer, E.L., P.G. Altbach and M.J. Whitelaw (1994), *The Academic Profession: An International Perspective*, Carnegie Foundation for the Advancement of Teaching, Princeton, New Jersey.

Bratsberg, B., J.F. Jr. Ragan and J.T. Warren (2003), "Negative Returns to Seniority: New Evidence in Academic Markets", Industrial and Labor Relations Review, Vol. 56, No. 2, pp. 306-323.

Breneman, D.W. (1997), "Alternatives to Tenure for the Next Generation of Academics", American Association for Higher Education (AAHE) Working Paper 14.

Carmichael, H.L. (1988), "Incentives in Academics: Why is There Tenure?", *The Journal of Political Economy,* Vol. 96, No. 3, pp. 453-472.

Chevaillier, T. (2001), "French academics: Between the professions and the civil service", *Higher Education,* Vol. 41, pp. 49-75.

Chipman, L. (2000), "Academic Freedom and the Well-Managed University", Bert Kelly Lecture Centre for Independent Studies, Sydney. *www.cis.org.au/Policy/autumn00/Aut00-5.pdf*

Coaldrake, P. and L. Stedman (1999), *Academic Work in the Twenty-first Century: Changing roles and policies*, Higher Education Division, Department of Education, Training and Youth Affairs, Australia.

Conway, M. (1998), "Academics and administrators: competitive collaborators?", *Journal of Institutional Research in Australasia,* Vol. 7, No. 2, pp. 26–35.

Court, S. (1998), *Opportunity blocks. A survey of appointment and promotion in UK higher education*, London: Association of University Teachers (AUT).

Dąbrowa-Szefler, M. (2001), Kadry dla nauki w Polsce. Stan i perspektywy, Centrum Badań Polityki Naukowej i Szkolnictwa Wyższego, Uniwersytet Warszawski.

Dnes, A.W. and J.S. Seaton (1998), "The reform of academic tenure in the United Kingdom", *International Review of Law and Economics,* Vol. 18, No. 4, pp. 491-509.

Ehrenberg, R.G. (2005), "The Changing Nature of the Faculty and Faculty Employment Policies", Paper based on the author's presentation at the TIAA-CREF Institute Conference *The New Balancing Act in the Business of Higher Education,* New York City. *www.tiaa-crefinstitute.org/research/articles/docs/030106_08_Ehrenberg.pdf*

Ehrenberg, R.G. and L. Zhang (2004), "Do Tenured and Tenure-Track Faculty Matter?", NBER Working Paper No. 10695, Cambridge, MA.

El-Khawas, E. (1996), "One Professoriate, or Many? Assessing Aspects of Differentiation Among Academics", Tertiary Education and Management, Vol. 2, No. 2, pp. 146-152.

Enders, J. (1999), "Crisis? What crisis? The academic professions in the 'knowledge' society", *Higher Education,* Vol. 38, pp. 71-81.

Enders, J. (2000), "Academic Staff in Europe: Changing Employment and Conditions," in M. Tight (ed.), *Academic Work and Life*, Elsevier, London.

Enders, J. (2001a), "Germany", in J. Huisman and J. Bartelse (eds.), *Academic Careers: A Comparative Perspective*, CHEPS.

Enders, J. (2001b), "A Chair System in Transition: Appointments, Promotions, and Gate-keeping in German Higher Education", *Higher Education*, Vol. 41, No. 1-2.

Enders J. and C. Musselin (2005), *Back to the Future? The Academic Profession in the 21st Century*, Background paper for the OECD expert meeting on Demography and the Future of Higher Education, Paris.

Enders, J. and U. Teichler (1997), "A victim of their own success? Employment and working conditions of academic staff in comparative perspective", *Higher Education,* Vol. 34, pp. 347-372.

Enders J. and E. de Weert (2004a), "Science, Training and Career", *Higher Education Policy*, 17, June, pp. 129-133.

Enders J. and E. de Weert (eds.) (2004b), *The International Attractiveness of the Academic Workplace in Europe*, *Gewerkschaft Erziehung und Wissenschaft, Materialien und Dokumente Hochschule und Forschung*, Frankfurt.

Euben, D.R., AAUP Counsel and B.A. Lee (2005), "Managing Faculty Productivity After Tenure, Legal Issues in Higher Education", American Association of University Professors (AAUP), Washington, D.C.

Gornitzka, Å., S. Kyvik and I.M. Larsen (1998), "The bureaucratisation of universities", *Minerva*, 36 (1), 21-47.

Gornitzka, Å. and I.M. Larsen (2001), *Administrativ endring i høyere utdanning i 1990-årene*, Oslo: Forskerforbundets skriftserie: 5/2001.

Grey, P. (1982), "Grace Funds Microbiology Research", MIT Tech Talk, 11 August 1982.

Harvey, L. (2002), "The End of Quality?", *Quality in Higher Education,* Vol. 8, pp. 5-22.

Hattie, J. and H.W. Marsh (1996), "The relationship between research and teaching: a meta-analysis", *Review of Educational Research*, Vol. 66, No. 4, pp. 507-542.

Henkel, M. (2002), "Emerging Concepts of Academic Leadership and their Implications for Intra-institutional Roles and Relationships in Higher Education", *European Journal of Education*, Vol. 37, No. 1, pp. 29-41.

Högskoleverket (2003), *Redovisning av uppdrag till Högskoleverket att utreda det framtida behovet av lärare vid universitet och högskolor*, 2003-11-14. Also in Högskoleverket 2004:16R.

Hohm, C.F. and H.B. Shore (1998), "The Academy under Siege: Informing the Public about the Merits of Academic Tenure", *Sociological Perspectives,* Vol. 41, No. 4, *The Academy under Siege*, pp. 827-831.

Horsley, M. and G. Woodburne (2005), *Australian Academic Salaries Time Series Project: 1977-2002*, The Australian Centre for Organisational, Vocational and Adult Learning, accessed at: *www.dest.gov.au/NR/rdonlyres/83865993-481B-412F-97B1-FA9B8F18B6D6/4912/salaries_time.pdf*

Houston, D., L. Meyer and S. Paewai (2006), "Academic Staff Workloads and Job Satisfaction: Expectations and Values in Academe", *Journal of Higher Education Policy and Management*, Vol. 28, No. 1, March, pp. 17-30.

Hugo, G. (2005), "Demographic Trends in Australia's Academic Workforce", *Journal of Higher Education Policy and Management*, Vol. 27, No. 3, November, pp. 327-343.

Huisman, J. and J. Bartelse (eds.) (2001), *Academic Careers: A Comparative Perspective*, Enschede: Center for Higher Education Policy Studies (CHEPS), University of Twente.*www.utwente.nl/cheps/publications/complete_list/english/English_reports.doc*

Kaipainen, P., O. Kivinen and S. Ahola (2001), "Finland", in J. Huisman and J. Bartelse (eds.), *Academic Careers: A Comparative Perspective*, CHEPS.

Kayrooz, C. and P. Preston (2002), "Academic Freedom: Impressions of Australian Social Scientists", *Minerva,* Vol. 40, pp. 341-358.

Kerr, R. (1998), "Academic Freedom and University Accountability*"*, University of Auckland Winter Lecture Series, 'The University in the 21st Century' *www.nzbr.org.nz/documents/speeches/speeches-98/academic_freedom_and_university_accountability.pdf*

Kim, L. (2001), "The Case of Sweden", in J. Huisman and J. Bartelse (eds.), *Academic Careers: A Comparative Perspective*, CHEPS.

Koopman-Boyden, P.G. and L. MacDonald (2003), "Ageing, Work Performance and Managing Ageing Academics", *Journal of Higher Education Policy and Management,* Vol. 25, pp. 29-40.

Kwiek, M. (2003), "Academe in transition: Transformations in the Polish academic profession", *Higher Education,* Vol. 45, pp. 455-476.

Kyvik, S., T.B. Olsen and E. Hovdhaugen (2003), *Opprykk til professor. Kompetanse eller konkurranse?* NIFU rapport 4/2003, Oslo.

Lacy, F.J. and B.A. Sheehan (1997), "Job satisfaction among academic staff: An international perspective", *Higher Education,* Vol. 34, pp. 305-322.

Li, S. and H. Ou-Yang (2003), *Incentives, Performance, and Academic Tenure*, Duke University, Durham NC, United States. *www.duke.edu/~huiou/Li_Ou-Yang.pdf*

Marginson, S. and M. van der Wende (2007), "Higher Education and Globalisation"*, OECD Education Working Papers Series*, No. 8, OECD, Paris. Available from *www.oecd.org/edu/workingpapers*

Martin, J.L. (1993), *Academic deans: An analysis of effective academic leadership at research universities*. Paper presented at the Annual Meeting of the American Educational Research Association, Atlanta, GA.

Mason, M.A. and M. Goulden (2004), "Do Babies Matter (Part II)", *Academe*, 90 (November/December), pp. 11-15.

Matějů, P. and A. Vitásková (2005), *Vybrané výsledky výzkumu akademických pracovníků veřejných vysokých škol.* In *České vysoké školství na křižovatce*. Ed. Simonová, N. Praha: Sociologický ústav AV ČR, pp. 163-187.

Mayer, K.-U. (2000), "Wissenschaft als Beruf oder Karriere?", presented at the conference on "Wissenschaft zwischen Geld und Geist", Max-Planck-Institut für Wissenschaftsgeschichte, Berlin.

McDowell, J., L. Singell and J. Ziliak (1999), "Cracks in the glass ceiling: gender and promotion in the economics profession", *American Economic Review Papers and Proceedings*, Vol. 89, No. 2, pp. 397-402.

McDowell, J., L. Singell and J. Ziliak (2001), "Gender and Promotion in the Economics Profession", *Industrial and Labor Relations Review*, Vol. 54, No. 2, pp. 224-244.

McGee, R.W. and W.E. Block (1991), "Academic tenure: An economic critique", *Harvard Journal of Law and Public Policy,* Vol. 14, pp. 545.

McKenzie, R.B. (1996), "In Defence of Academic Tenure", *Journal of Institutional and Theoretical Economics*, Vol. 152, No. 2, pp. 325-341.

McPherson, M.S. and M.O. Schapiro (1999), "Tenure Issues in Higher Education", *The Journal of Economic Perspectives,* Vol. 13, No. 1, pp. 85-98.

Metcalf, H., H. Rolfe, P. Stevens and M. Weale (2005), "Recruitment and Retention of Academic Staff in Higher Education", National Institute of Economic and Social Research, Research Report No. 658, DfES, London.

Ministry of Education, Culture and Science, the Netherlands (2007), *Key Figures 2002-2006: Education, Culture and Science in the Netherlands*, The Hague.

Moore, W.J., R.J. Newman and G.K. Turnbull (1998), "Do Academic Salaries Decline with Seniority?", *Journal of Labor Economics*, Vol. 16, No. 2. pp. 352-366.

Mora, J. (2001), "The academic profession in Spain: Between the civil service and the market", *Higher Education,* Vol. 41, pp. 131-155.

Musselin, C. (2004), "Towards a European Academic Labour Market? Some Lessons Drawn from Empirical Studies on Academic Mobility", *Higher Education,* Vol. 48, pp. 55-78.

Newton, J. (2002), "Views from below: Academics Coping with Quality", *Quality in Higher Education*, Vol. 8, No. 1, pp. 39-61.

OECD (2001), *Education at a Glance: OECD Indicators 2001*, OECD, Paris.

OECD (2007), *Education at a Glance: OECD Indicators 2007*, OECD, Paris.

Oliver, L. (2005), *Rewards: The Issue of Pay*, CSLPE Working Paper 2005-4, Leeds: University of Leeds.

Pickersgill, R., K. van Barneveld and S. Bearfield (1998), "General and academic work, are they different?", Evaluations and Investigations Programme 98/10, Department of Employment, Education, Training and Youth Affairs, Australia.

Ramsden, P. (1998), *Learning to Lead in Higher Education*, London and New York, Routledge.

Ramsden, P. and I. Moses (1992), "Associations between research and teaching in Australian higher education", *Higher Education*, 23, pp. 273–295.

Shattock, M. (2001a), "The academic profession in Britain: A study in the failure to adapt to change", *Higher Education*, Vol. 41, pp. 27-47.

Shattock, M. (2001b), "The Machinery for Determining Academic Pay: Illusion and Reality in a 'Nationalised Industry'", *Higher Education Quarterly*, Vol. 52, No. 1, pp. 62-77.

S'Jegers, R., J. Braeckman, L. Smit and T. Speelman (2002), *Perspectieven uitgestroomde wetenschappers op de arbeidsmarkt*, VRWB (Vlaamse Raad voor Wetenschapsbeleid – Flemish Science Policy Council).

SNAHE (Swedish National Agency for Higher Education) (2004), "Can Academic Freedom Survive?" an interview study of Swedish researchers' situation in the universities time of transition.

SOU (*Statens Offentliga Utredningar* – Swedish Government Official Reports) (1996), *Lärare för Högskola i Utveckling*. Stockholm: Utbildningsdepartementet.

Taylor, J. (2001), "The Impact of Performance Indicators on the Work of University Academics: Evidence from Australian Universities", Higher Education Quarterly, Vol. 55, No. 1, pp. 42-61.

Toumanoff, P. (2005), "The effects of gender on salary-at-hire in the academic labor market", *Economics of Education Review*, Vol. 24, pp. 179-188.

UNESCO (1997), *UNESCO Recommendation concerning the Status of Higher Education Teaching Personnel*, Paris.

UNESCO (1998), *Autonomy, Social Responsibility and Academic Freedom*, World Conference on Higher Education, Volume IV, Thematic Debate, Paris, 5-9 October 1998.

Verhoeven, J.C. and K. de Wit (2001), "Flanders", in J. Huisman and J. Bartelse (eds.), *Academic Careers: A Comparative Perspective*, CHEPS.

Vetenskapsrådet (Swedish Research Council) (2003), *Pensionsavgångar och rekryteringspotential för lärare/forskare vid högskolan*, 2003-09-19. PM Analys/UH.

VRWB (Vlaamse Raad voor Wetenschapsbeleid – Flemish Science Policy Council) (2002), *Doctoreren in Vlaanderen*, aanbeveling 20.

Weert, E. de (2001), "Pressures and prospects facing the academic profession in the Netherlands", *Higher Education,* Vol. 41, pp. 77-101.

Welch, A. (1997), "The peripatetic professor: the internationalisation of the academic profession", *Higher Education,* Vol. 34, pp. 323-345.

Welch, A. (1998), "The End of Certainty? The Academic Profession and the Challenge of Change", *Comparative Education Review,* Vol. 42, No. 1, Special Issue on the Professoriate, pp. 1-14.

Westling, H., G. Angsmark and G. Blomqvist (1997), "Universitet och högskolor" in *Statens Offentliga Utredningar. Byråkratin i Backspegeln. Femtio år av Förändring på Sex Förvaltningsområden*. Stockholm: Allmänna förlaget.

Whitaker, G.R. (1994), "Intellectual Independence in an Era of Accountability" *www.umich.edu/~urecord/9495/Oct03_94/13.htm*

Willke, M. (1998), "Is er toekomst voor collectieve arbeidsvoorwaarden?" in B.V. Riel (ed.) *Het Kapitalisme Sinds de Jaren '70*. Tilburg: Tilburg University Press, pp. 55-74.

Yamanoi, A. (2005), *Fate of Inbreeding, Reconsideration of the Market for Japanese University Faculty – Past/Present/Future*, Research Institute for Higher Education, Hiroshima University.

9. Strengthening Ties with the Labour Market

9.1 Introduction

Tertiary education has become a central means by which young adults equip themselves for working life – or working adults refresh their skills. In some countries it is now the *leading* means by which they do so, accounting for a larger share of new entrants to the labour market than any other education or training pathway. In OECD countries, nearly one third of adults between the ages of 25 and 34 hold a tertiary qualification. In the Republic of Korea, about one-half do (OECD, 2007a).

The size and shape of modern tertiary education is rooted in its relationship to labour markets. Seen from the vantage point of governments, widening access to tertiary education can assist in the development of a highly-skilled workforce instrumental to increase the knowledge intensity of traditional industries, expand the capacity of innovative economic sectors and by this means increase the potential for growth (see Chapters 2 and 7).

Tertiary education assumes a newfound economic prominence in the estimation of students and governments. Yet, it is precisely its expanded size and prominence that has given rise to new questions about the suitability of linkages between tertiary education and labour markets. Given the tremendous expansion of tertiary education, is there an over-supply of graduates relative to labour market demands? Are students studying the right types of subjects, or is there instead a mismatch between the courses that they choose and the needs of the economy? Are the skills and capabilities acquired in tertiary education appropriate to the demands of working life? In short, how can governments ensure that their country's policy framework appropriately links the developmental capacities of tertiary education to the demands of labour markets in a knowledge economy?

This Chapter addresses these questions. Section 2 provides an overview of the labour market outcomes of tertiary graduates. Section 3 investigates whether the skills and abilities obtained by tertiary graduates respond to the demands of the labour market. Section 4 examines the institutions and policies used in reviewed countries to link labour markets to tertiary education. Finally, Section 5 concludes with policy options for countries to consider.

9.2 Labour market outcomes of tertiary graduates

The continued growth of tertiary education is partly rooted in the desire of students to reap the private economic benefits of study. They recognise that tertiary graduates experience, on average, lower rates of unemployment and higher wages than those who study to the secondary level. There is also evidence that students with higher levels of education are more likely to participate in the labour market and have greater access to

further training. Hence, a majority of 15-year olds in OECD countries (57%) expect to complete a tertiary education (OECD, 2007a).

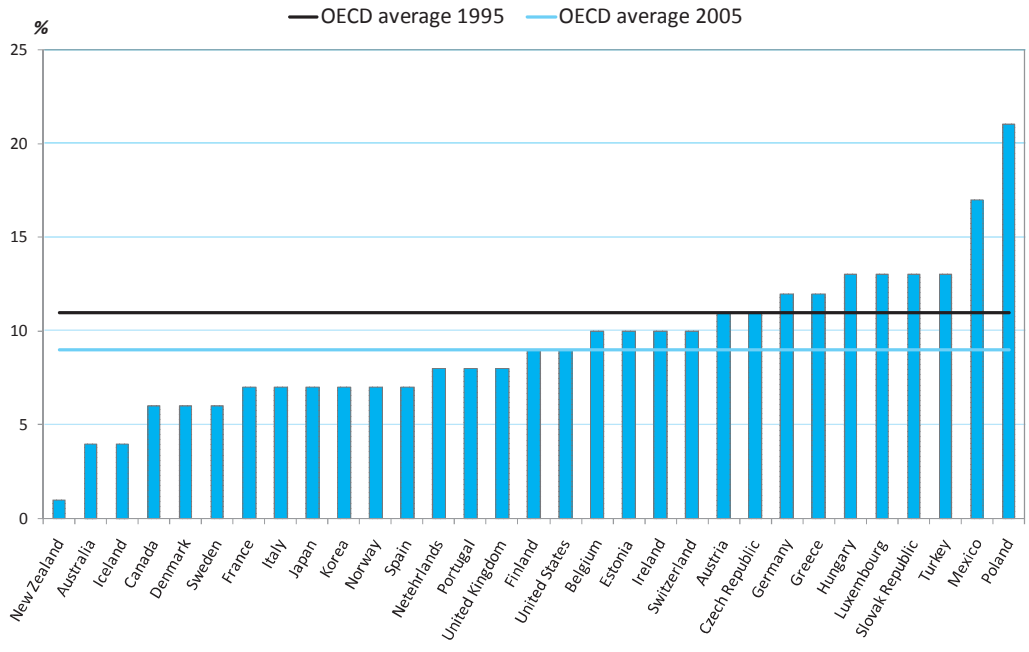
This expansion of tertiary enrolment has been driven not only by demand on the part of prospective students, but also by the willingness of governments to accommodate their aspirations through expanded supply – either directly through publicly organised and financed tertiary education, or by authorising and regulating private institutions, and assisting with the private financing of study, *e.g.* through the guarantee of student loans.

Higher employment rates and lower risk of unemployment

Employment rates of individuals with higher levels of education are higher. In OECD countries, the employment rate among those having attained tertiary education is on average 10 points higher than that of those having attained upper secondary and post secondary non-tertiary education. Japan, Korea and Turkey are among the countries with lower employment rates for tertiary educated (below 80% in 2005), whereas Iceland and Switzerland are among the countries with the highest rates (above 90%).

The employment gap between the tertiary educated and individuals with secondary education only has decreased on average in OECD countries during the last decade (from 11 to 9 percentage points, see Figure 9.1). Significant disparities across OECD countries persist in 2005, however, with differentials below 5 percentage points in Australia, Iceland and New Zealand and above 15 percentage points in Mexico and Poland (Figure 9.1).

Figure 9.1. Employment rates differentials between the tertiary and the upper secondary educated, 2005



Countries are ranked in ascending order of the employment rates differentials between the tertiary and the upper secondary educated.

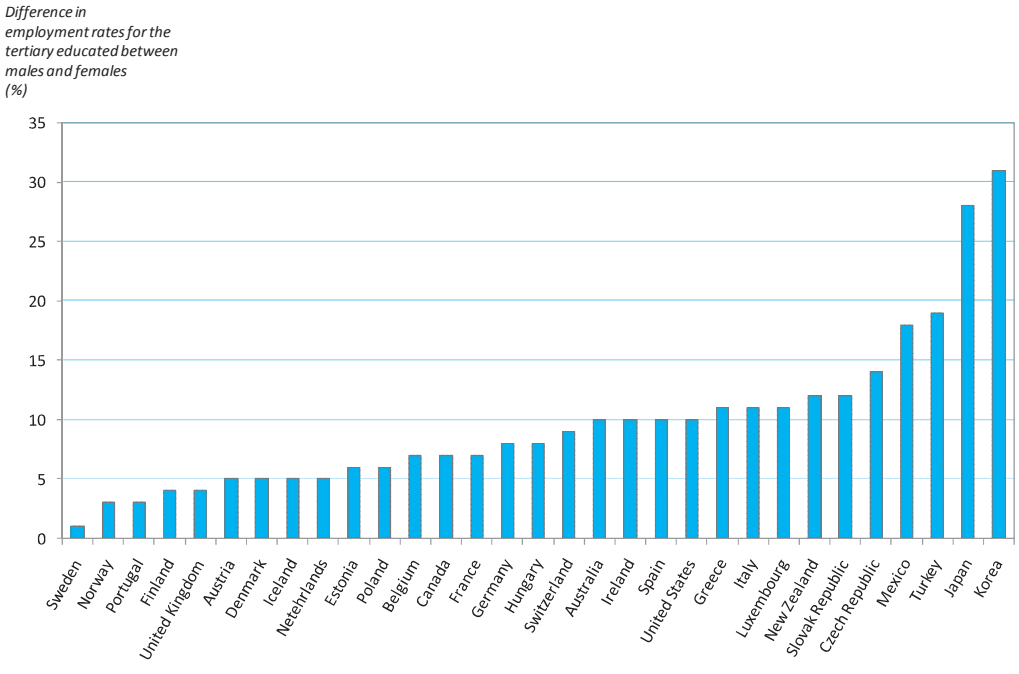
Source: OECD, 2007a.

This relative better outcome for tertiary educated workers is due to several reasons: a) high educated workers can, in principle, perform different types of jobs, having also the possibility to compete for low-skilled jobs with the less educated, mainly in periods of depressed labour demand; b) higher levels of educational attainment may be associated with better labour market information and more effective-job search techniques, thereby reducing the likelihood or the duration of unemployment; and c) potential earnings from market activities are greater in the case of high educated people which increases the incentive of participating in the labour market compared to staying on income replacement benefits or staying at home (Bassanini, 2004).

The differences in the employment rates across countries depend greatly on women participation in the labour market. The gender gap in employment rates for those having attained tertiary education stands on average at 10 percentage points since the end of the 1990s, even if there are important variations across countries. In 2005, the employment rate of tertiary educated females was similar to that of males (not more than 5 percentage points of difference) in Austria, Denmark, Finland, Iceland, the Netherlands, Norway, Portugal, Sweden and the United Kingdom. However, in Japan, Korea, Mexico and Turkey the gap doubled the OECD average, showing still an under-utilisation of the human capital available, even if a progressive reduction has been observed in these countries during the last decade (Figure 9.2).

Moreover, the differences in employment rates between the tertiary educated and individuals with secondary education only is higher for women in all OECD countries. In 2005 the average differential in the OECD area was of 6 and 13 percentage points for men and women respectively. In general the gender gap in labour market participation is lesser among the tertiary educated than among those with lower levels of education.

Figure 9.2. Gender gap in employment rates for the tertiary educated, 2005



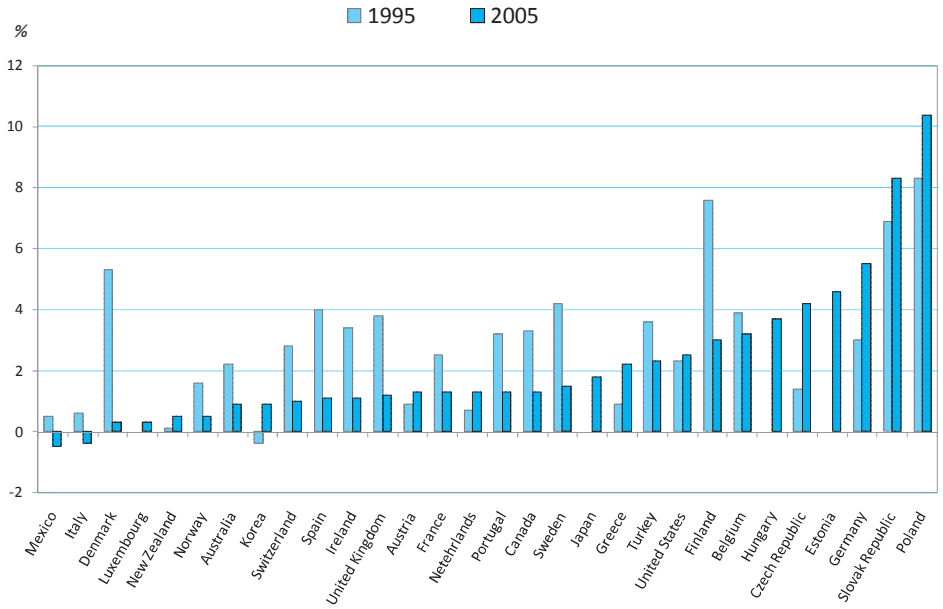
Countries are ranked in ascending order of the gender gap in employment rates.

Source: OECD, 2007a.

Unemployment rates tend to decrease on average with educational attainment. The unemployment rate of those with tertiary education was in 2005, on average, of 4% in OECD member countries, although with an important variation across countries, ranging from 2% in the Czech Republic, Ireland, New Zealand and Norway, to over 6% in France, Greece, Poland, Spain and Turkey. Moreover, the unemployment rate of those with tertiary education was two points lower than for those with upper secondary education and seven points lower compared to those having less than upper secondary education.[36] In the Czech Republic, Estonia, Germany, Poland and the Slovak Republic the tertiary educated experience the lowest risk of unemployment compared to their less educated counterparts. By contrast, in Italy and Mexico the unemployment rate of the tertiary educated exceeds that of individuals with upper secondary education only (Figure 9.3).

In addition, although the unemployment gap between the tertiary educated and those with upper secondary education only has not changed on average in OECD countries during the last decade, in more than half of the OECD member countries, the relative position of the tertiary educated has slightly deteriorated. It has however clearly improved in Austria, the Czech Republic, Germany, Greece, Korea, the Netherlands, Poland and the Slovak Republic, remaining almost unchanged in New Zealand and the United States (Figure 9.3).

Figure 9.3. Unemployment rates differentials between the tertiary and the upper secondary educated, 1995 and 2005



Countries are ranked in increasing order of the 2005 unemployment rates differential.

Notes: For 1995, no data were available by educational attainment in Estonia, Hungary, Japan and Luxembourg.

Source: OECD, 2007a.

36. This confirms what is shown by Blöndal *et al.* (2002) and Oliveira Martins *et al.* (2007), that the gap in unemployment rates is large for those investing in upper-secondary education (relative to lower levels of education) and it is smaller between tertiary educated workers and those with upper secondary education only.

Women experience in general higher unemployment rates than men, although this gap tends to decrease with educational attainment. On average, the gender gap in unemployment rates among the tertiary educated was below one percentage point in 2005. However, in Greece, Italy and Turkey, tertiary educated women still experience unemployment rates almost double of those of their male counterparts, followed, to a lesser extent, by Japan, Luxembourg, Poland, Spain, the Slovak Republic and Switzerland (OECD, 2007a).

An important question is whether or not labour markets are generating enough jobs requiring high-level skills to absorb the expanded supply of tertiary graduates or whether, on the contrary, tertiary graduates end up in jobs not requiring tertiary education qualifications, provoking a crowding-out effect on less educated workers. It has also been argued that the increase in the number of tertiary educated students entering the labour market would have deteriorated their labour market outcomes.

There is no clear evidence sustaining either the crowding-out effect or the deterioration of the labour market outcomes of the tertiary educated.[37] Evidence from OECD member countries suggests that in countries having experienced a rapid growth of their tertiary education system (Australia, Belgium, Canada, France, Ireland, Korea, Poland, Spain and Sweden), the relative unemployment rate of those with secondary qualifications has not increased substantially, contrary to what the crowding-out or displacement hypothesis would have suggested (OECD, 2007a).

Earnings and wage premia[38]

In OECD countries, earnings differentials between those who have tertiary education – especially those completing a tertiary-type A programme – and those who have upper secondary education are generally more pronounced than the differentials between those with upper secondary education and those with lower levels of education (OECD, 2007a).

By gender, the earnings differentials between those with tertiary education and those with secondary education is higher for women than for men in most OECD countries (exceptions are the Czech Republic, Finland, Hungary, Italy, Luxembourg, Poland and the United States). Gender disparity in earnings remains significant in all countries and for all levels of educational attainment. However, it is lowest among individuals who attained tertiary education. At this level of educational attainment, earnings of females vary between less than 60% (in Austria and Italy) to around 80% (in Belgium, Luxembourg and Turkey) of those of males (Figure 9.4).[39]

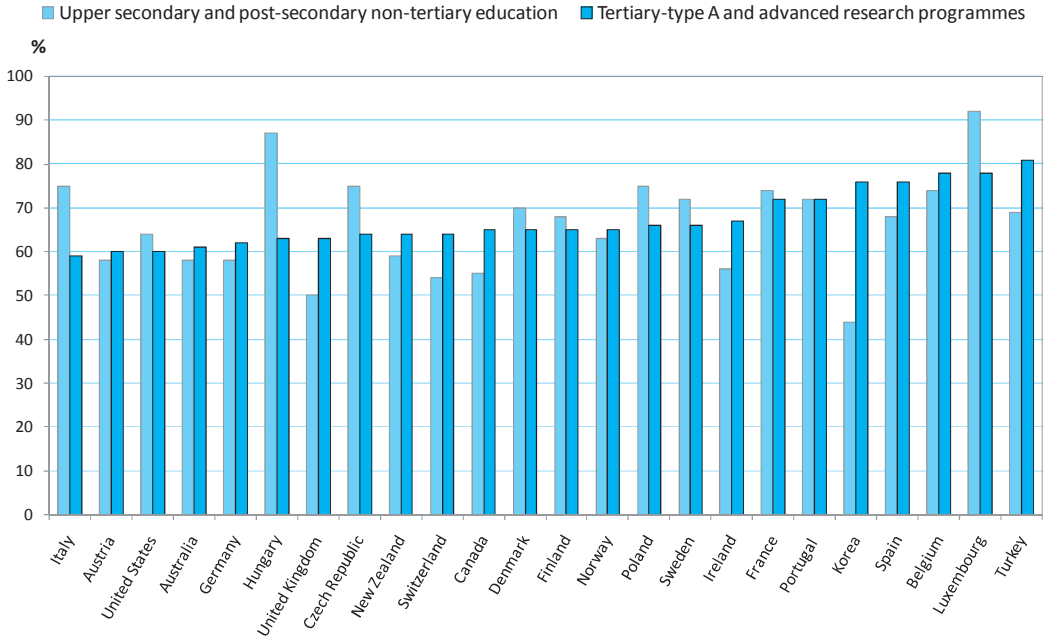
37. See Hansson (2007) for a detailed discussion.

38. Chapter 2 provides a discussion of wage premia and rates of return to tertiary education.

39. As noted in OECD (2007a), data on earnings differentials between men and women have to be taken with caution, as in most countries earnings data do not differentiate between full-time and part-time work. Although its incidence varies greatly across OECD countries, part-time work tends to have greater incidence among females.

Figure 9.4. Differences in earnings between females and males, 2005 (or latest available year)

Average female earnings as a percentage of male earnings for the 30-44 years old group, by level of educational attainment



Countries are ranked in ascending order of earnings differences between females and males with tertiary education.

Notes: The year of reference is 2002 for Luxembourg, 2003 for Korea and 2004 for Belgium, Canada, Denmark, Finland, Ireland, Italy, Norway, Poland, Portugal, Spain, Sweden and Turkey.

Source: OECD, 2007a.

The expansion of tertiary education in the last decade has prompted the widespread concern that there may be an over-supply of tertiary graduates that, all else being equal, would lead to a reduction in the wage advantage of the tertiary educated. However the latter may remain unaffected or even increase if the demand for tertiary graduates by employers grows in similar or greater proportion. In OECD countries there is some evidence that the gross wage premium of tertiary graduates has not changed significantly, having even slightly increased in many countries, rather than decreased. As shown in Figure 9.5, in 15 out of the 21 OECD countries for which comparable data were available for the period 1998-2005, earnings differentials have increased (with a clear improvement in the relative position of the tertiary educated in Germany, Hungary, Ireland and Italy). By contrast, Spain has experienced the greatest deterioration among the six countries in which earnings differentials decreased.

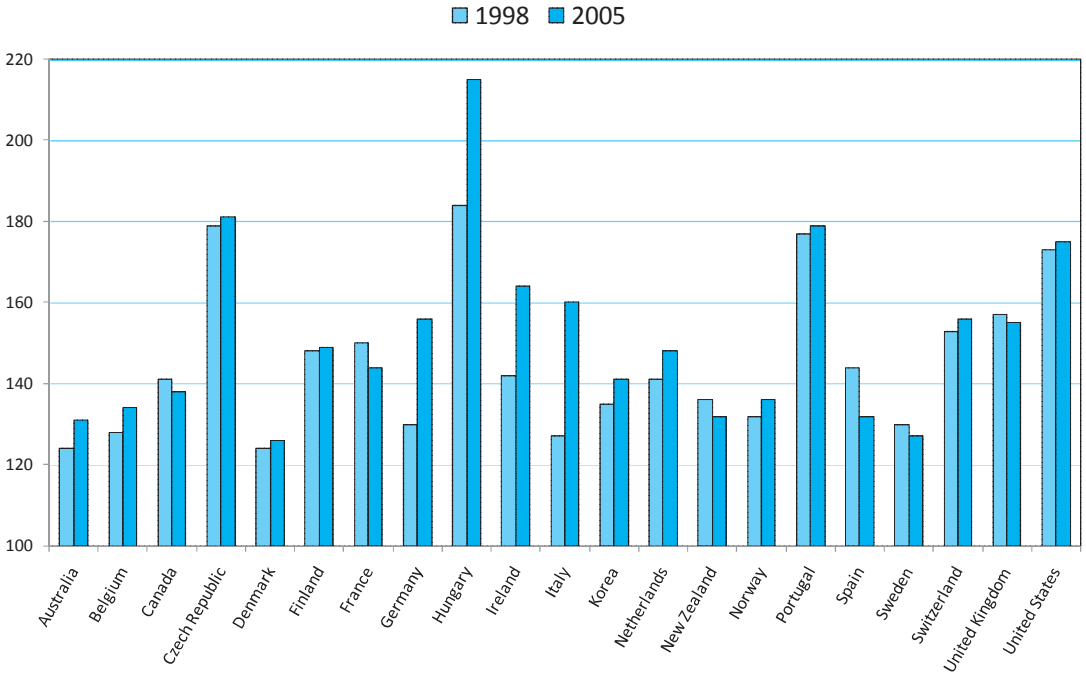
Nevertheless, even in countries where the wage premium has fallen, returns to tertiary education remain positive. The available evidence on wage premia does not point to an over-supply of tertiary graduates. It appears then that in most of the cases there has been a simultaneous increase in the demand for tertiary graduates sufficient to absorb the rise in supply.

The causes for an increase in demand for tertiary graduates can be varied, but the predominant view is that skill-biased technology change, exemplified by the introduction of new information technologies into the workplace, has been a major contributory

factor.[40] This view is based on the hypothesis that employers' demand for skilled workers has been shaped by the kinds of technologies that are permeating into modern workplaces. In this environment, employers are willing to pay more to workers who have the skills to operate the new technologies. There is good evidence supporting the importance of skill-biased technical change internationally as opposed to competing explanations such as increased globalisation (Berman *et al.* 1998; Machin and van Reenen, 2006).

Figure 9.5. Change in relative earnings of the tertiary educated, 1998 and 2005

For 25-to-64-year-olds, upper secondary and post-secondary non-tertiary education = 100



Source: OECD, 2007a.

The role of the type of institution attended

It is often noted that graduates' outcomes are associated with the type of institution attended. For example, in the Netherlands, graduates from research-intensive universities have a salary which is, on average, 30% higher than that of graduates from the universities of applied science. Anecdotal evidence from Korea and Poland suggests that graduates from particular tertiary education institutions (TEIs) have fewer difficulties in finding a job. In New Zealand, the average annual income of university students is 1.4 times higher than that of graduates from institutes of technology.

As pointed out by Machin and McNally (2007), it is difficult to separate the effect of institutional type from the fact that students with very different characteristics may choose to attend different types of institutions. For example, if higher ability students are more likely to attend higher quality institutions, it is difficult to know whether to attribute

40. See Machin and McNally (2007).

any institution-related premium to higher ability of the student or to the institution she attends. If institutions differ according to the type of education provided (*e.g.* academic versus vocational), differences in the TEI premium may reflect differences in how the labour market rewards different types of education rather than reflect anything about the quality of the educational establishment.

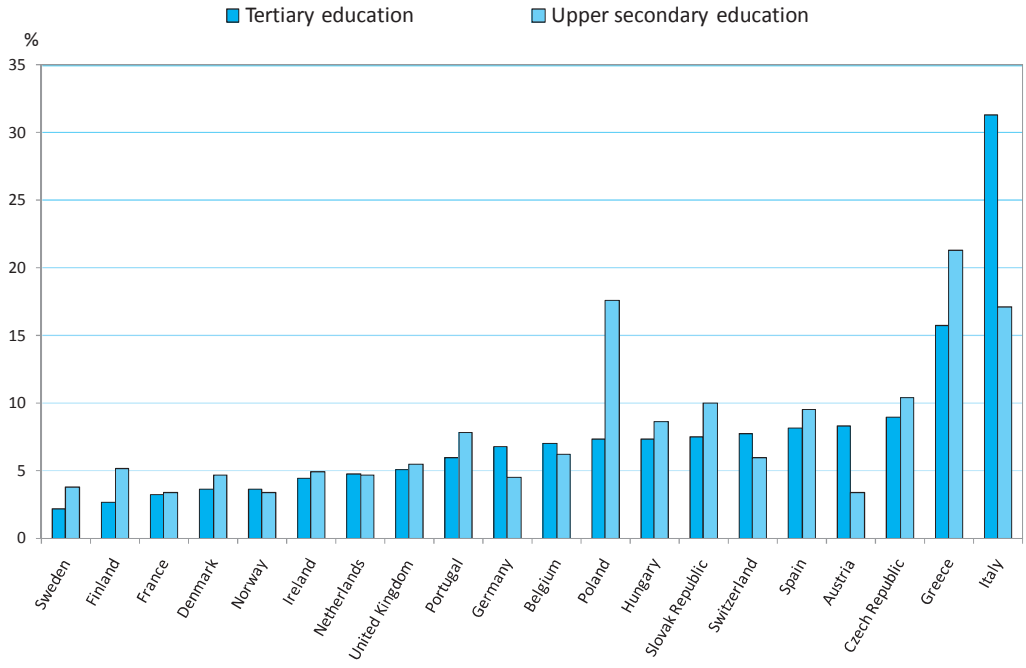
Status of employment, job satisfaction and training

Among those who work, the probability of being self-employed increases with age and is higher for men. The share of the self-employed among the tertiary educated was, on average, around 15% in 2005 considering the 20 countries for which comparable data from the European Labour Force Survey were available. When looking at those aged 15-29, this average share halves to around 8%, with important differences observed across countries.

In fact, for the 15-29 age group, the incidence of self-employment is lower for those having a tertiary education compared to those with upper secondary education in most of the countries showing that the tertiary educated do not opt for this status of employment as they graduate. For this age group, the proportion of tertiary educated on self-employment varies from less than 5% in Denmark, Finland, France, Ireland, the Netherlands, Norway and Sweden, to over 15% in Greece and Italy (Figure 9.6).

Figure 9.6. Incidence of self-employment by educational attainment, 2005

Share of self-employment among the 15-to-29 years old



Countries are ranked in ascending order of the share of self-employment for the tertiary educated.

Source: Eurostat, European Labour Force Survey.

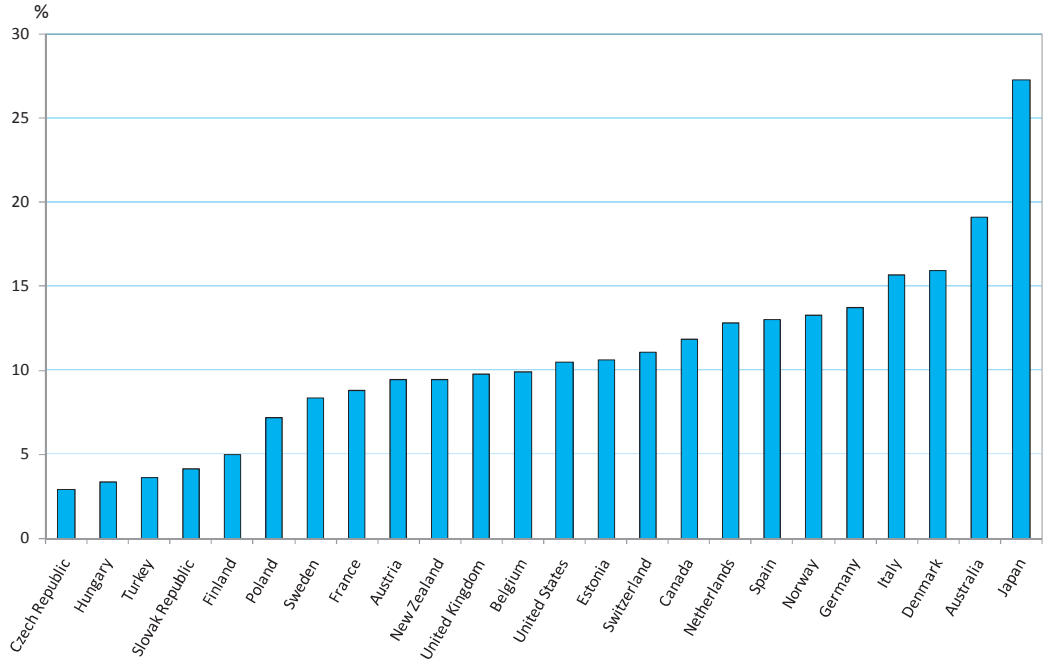
Tertiary educated individuals also tend to work more on a full-time basis than the average individual in the labour market. In 2005, only one in five of those aged 15-29 with a tertiary qualification was working part-time, whereas this proportion was of one in four when no distinction by educational attainment is made. For that age group, the share of tertiary educated women working part-time in OECD countries was on average around 60%, lower than for the whole population and for all levels of educational attainment (72% according to OECD, 2007b).

Working part-time might also be the result of studying to a tertiary degree. In the majority of the countries, tertiary students work during their studies in a proportion that increases with the level of tertiary education. Moreover, the majority of working students choose to take up employment during their studies for financial reasons, more than for professional ones (ESU, 2008, for the European case). There is some evidence that time spent on relevant work experience has a positive effect on competence development and labour market outcomes. On the contrary, time spent in a non-relevant work experience seems to have no effect in labour market outcomes, although it may increase the chance of finding a job (Allen and van der Velden, forthcoming).

When looking at those in employment and not in education, the incidence of part-time employment among the tertiary educated young people falls considerably. The OECD average stands at 11.6%, with a significant variation across countries as shown in Figure 9.7.

Figure 9.7. Incidence of part-time employment among the tertiary educated, 2005

Part-time employment as a proportion of total employment for the tertiary educated aged 15-to-29 years who are not in education



Countries are ranked in ascending order of the incidence of part-time employment.

Source: OECD, 2007a.

Tertiary graduates have, on average, a higher job satisfaction than those with a lower educational attainment. At the European Union level, the Fourth European Working Conditions Survey reveals that higher levels of educational attainment are associated with higher levels of job satisfaction. For example, 51% of workers with a post-graduate degree report being "very satisfied" compared to an average of 25% for the sample as a whole.

Moreover, in what concerns the cognitive and intellectual dimensions of work and the possibilities for professional development (including access to training), as expected, the reported levels of cognitive demands increase with educational attainment whereas the proportion of workers doing monotonous work decreases considerably.[41] The Fourth European Working Conditions Survey also indicates that workers carrying out complex tasks and learning new things at work are much more likely to feel that they need further training which has an impact on actual training levels.[42]

9.3 Skills and abilities of graduates

Different skills are demanded in different sectors and occupations. Unfortunately, there are not many studies tracing skills requirements for specific occupations over time. According to Eberts (2007) there are no sufficient data permitting to determine how much of the increase in skills requirements is attributable to changes within occupations and how much is due to changes in the composition of occupations. This hampers the design of educational and training programmes geared at accommodating the changes. Some studies, however, emphasise that there has been an occupational change towards occupations with higher skills requirements. This supports the shift towards a greater general demand for skilled workers. In fact, the expansionary phase of the beginning of the 2000s was accompanied by greater labour demand both for unskilled and skilled labour, although there seems to be evidence of a bias in favour of "knowledge-intensive" employment (Arnal *et al.*, 2001).

Skills demand and labour shortages

The shift towards a more knowledge intensive employment has been accompanied by some labour shortages. Since the end of the 1990s, shortages in different sectors and occupations have been identified as the main factor hampering economic growth in many countries, being especially acute at both ends of the labour market (among the unskilled and the highly skilled, ranging from ICT workers to agriculture and retail workers).

41. The Fourth European Working Conditions Survey selected eight indicators covering the different aspects of cognitive demands from work: two of them relate to the use of quality standards in the work process (meeting precise quality standards and assessing the quality of one's own work), three refer to the complexity of work and the need to learn new things (solving unforeseen problems, carrying out complex tasks and learning new things), and other three reflect the opposite: whether work has low cognitive demands and is characterized by monotonous and repetitive tasks.

42. It is known that access to training is unequally distributed over the adult workforce in OECD countries. The participation in continuing training varies significantly with age, gender and the level of educational attainment with the lower educated exhibiting lower training participation rates. Older workers and individuals having less than upper secondary education receive less than 50% of the volume of training received by an individual aged between 26 and 65. The same occurs for workers in low-skilled occupations, in temporary jobs, in small firms or in self-employment (OECD, 2006a).

Labour shortages were identified in a number of countries in the Review. In New Zealand, for example, the Department of Labour indicates shortages in major professional and trade occupations (*i.e.* IT professionals, pharmacists, social workers, occupational therapists, nurses), due mainly to retirement and occupational wastage, combined with a growing demand that cannot be met by the increase in supply of these professionals. In Australia, important shortages were reported in the nursing and education sectors too. In the Netherlands, there is concern about insufficient supply of graduates in the fields of technology, teaching and healthcare professionals (especially nurses). In the United Kingdom, the Third National Employer Skills Survey showed that in 2005, employers indicated experiencing skill shortages in a quarter of their vacancies, although the proportion of employers affected by skill gaps in the workforce has decreased compared to 2001 (Learning Skill Council, 2006).

Many of the instances of labour shortages are associated with ageing populations and the retirement of many professionals (*e.g.* in the education and healthcare systems), while others are associated with the areas of science and engineering (see Chapter 7). For example, in the Netherlands, the tertiary system is perceived as producing an insufficient number of tertiary graduates in science and engineering. As shown in Section 9.4.1, compared to other OECD countries, the Netherlands has a small share of science and engineering graduates, and a declining share, as well. In the 1970s about 25% of university graduates were in the science and engineering fields, while by 2005 this proportion had fallen to 18%, compared with a share above 30% in countries such as Finland, Germany, Korea and Switzerland.

Nevertheless, analysis of the Bureau for Economic Policy Analysis (CPB) investigating the interaction between the Dutch demand for and supply of science and engineering graduates through a wide range of labour market indicators (vacancies, unemployment rates, wages, labour market participation and weekly working hours) did not find evidence of a tight labour market for these graduates. Contrary to what could be expected, the wages of science and engineering workers have declined since 1996 in the Netherlands, compared to other high educated workers (*e.g.* economics graduates). However, although labour market indicators do not provide evidence of a shortage of these graduates, the number of science and technology vacancies "difficult to fill" continued to grow during the period 2003-2006. According to CPB (2005), the potential shortage situation has not been accompanied by an increase in salaries of these professionals mainly because higher educated science and engineering personnel are less sensitive to pay levels than other personnel, and because their job market is more international than for other professionals. Similar conclusions concerning the role of the internationalisation of research and development activities and the internationalisation of the labour market for science and engineering graduates have been drawn for the United States (Freeman, 2005).

ICT skills, soft skills and entrepreneurial skills

Some skills seem to be in greater demand than before. It seems that the growing internationalisation and globalisation trend due to technological change, the increasing emphasis on education and training as well as the increasing volatility of labour market processes have given rise to new requirements of skills and competencies.

Some argue that technology and ICT have made performing some jobs less demanding. By contrast, others argue that the skills requirements are much greater than in the past (Eberts, 2007). Some analysts suggest that with the expansion of ICT and the

Internet, the demand for individuals with ICT-specific skills has risen. There is a growing consensus that, for example, ICT literacy has become almost as important as general literacy and numeracy for most jobs.[43] "Soft skills", understood as communication and inter-personal skills, have also been in growing demand in the labour market in recent years. Valuable as they are, however, "soft skills" remain complementary to the traditional skills associated with substantive areas of knowledge.

According to a recent survey among teaching professionals in tertiary education in the 27 member States of the European Union, as well as in Croatia, Iceland, Norway and Turkey, almost three out of four teaching professionals agree that study and training programmes should encompass more generic competences, such as communication, teamwork and entrepreneurship in order to better adapt to labour market needs (European Commission, 2007a).

Some authors have pointed to the different values accorded by labour markets to generalist versus specialist skills suggesting that a too specific education can be an important limitation mainly in periods of rapid structural change. In that sense, Wasmer *et al.* (2007), Krueger and Kumar (2003, 2004) suggest that a more general education is of greater value to an economy, based on the argument that returns to academic qualifications are generally found to be higher than returns to vocational qualifications.[44]

However, the debate on generalist versus specialist skills should not be separated from the different roles and missions that different types of institutions should have. Whilst it can be argued that "employability" and "relevant and up-to-date skills" should feature prominently in vocationally oriented education at all levels, there is an equally strong case to be made for universities focussing on a somewhat different set of values and graduate attributes.

It seems generally admitted that in a context of globalisation and rapid labour market changes workers face an increasing need to ensure adaptability and employability over their entire work career and that these characteristics can be better offered by a more generalist education. Moreover, the success of technological and organisational innovation depends to a large extent on the ability of individuals to absorb change and adapt to it, which often requires further on-the-job training.[45]

43.. A recent European Union survey on ICT usage in households and by individuals shows that, in 2006, almost half of EU-25 young men aged 16-24 were considered as having high computer skills, against a third for the 25-54 age range. However, for women computer skills remain below those of men. Women also tend to be less present than men in ICT jobs across the EU-25 (Seybert, 2007).

44. As reported by Machin and McNally (2007), such findings raise questions about the structure of education in many European countries, where students are required to choose between a general (academic) route and a vocational route at an early age, with limited transferability between the two sectors and perhaps insufficient "general education" within the vocational route. In fact, on the basis of cross-country evidence in Europe, Bassanini *et al.* (2006) argue that countries with less stratified schooling systems have endowed workers with more versatile skills, who need less training to adapt to technical progress than their counterparts in countries with more stratified schooling systems.

45. There is some evidence that the rate of adoption of new work practices is positively associated with both the level of educational attainment and firm training. This can be interpreted as a need for training workers in order to implement new work practices (Arnal *et al.*, 2001).

As shown in a recent survey conducted in sixteen countries (the REFLEX survey),[46] tertiary education graduates are increasingly expected to be competent in different domains ranging from professional expertise, functional flexibility, innovation and knowledge management, mobilisation of human resources[47] and international orientation. According to the survey, the main determinant of labour market success of tertiary education graduates seems to be their professional expertise in a specific field, followed by their capacity of mobilisation of human resources.[48] The role of flexibility as a core competence for the labour market seems to be less clear. However, even if competences related to functional flexibility are not rewarded in the labour market, they seem to play a role in protecting graduates when they are confronted to changes at work.

The survey also indicated that, for one out of four working graduates, knowledge and skills were perceived as not fully used in their work, showing that employers might not make full use of the human capital available to them. This is confirmed in fields of study known as producing graduates that find it difficult to find work matching their knowledge and skills (*e.g.* the humanities) and has a higher incidence in Southern European countries and in the United Kingdom, compared to the rest of the countries.

The CHEERS[49] 1999 study, predecessor of the REFLEX survey that included also tertiary graduates from Japan, reveals differences across countries in the way tertiary graduates perceive the match between their education and working life. For example, a much smaller share of Japanese university graduates (24%) reported that they made "extensive use of the knowledge and skills acquired during university study" than was the case for European countries (54%). These different perceptions by Japanese students can be explained in part by the fact that Japanese universities have been traditionally Humboldtian in orientation; professional associations have been weakly influential in shaping tertiary courses; and prestigious large employers have traditionally recruited graduates not on the basis of academic performance or specialized skills, but rather on the basis of a graduate's expected aptitude for a lifetime of learning and growth within the firm, the proxy for which has been institutional selectivity and reputation.

While European and Japanese university graduates participating in the CHEERS survey were equally likely to report that problem-solving was a key competency for working life, 58% of European graduates reported that this was a competency acquired by the time of graduation (as opposed to 39% of Japanese graduates). By way of contrast, graduates of Norwegian and Swedish tertiary education programmes reported

46. The REFLEX survey, which examines the "The Flexible Professional in the Knowledge Society" and the associated new demands on higher education in Europe, was conducted in 2005 in Austria, Belgium, the Czech Republic, Estonia, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom with a sample of 35 000 graduates five years after leaving tertiary education. See *www.fdewb.unimaas.nl/roa/reflex* for more detail.

47. The mobilisation of human resources is understood as inter-communication, team-work and any other skill permitting to put the own knowledge to good use for the employer, as well as playing an active role in mobilising the skills of others.

48. Almost half of the surveyed graduates considered that the stronger aspects of the programmes they attended were the expertise acquired in their field of knowledge, followed by the analytical thinking and the ability to acquire new knowledge. By contrast, the weaker aspects of the programmes attended related with the acquisition of foreign languages, as well as with the ability to assert authority, negotiate and make presentations.

49. CHEERS stands for "Careers after Higher Education: a European Research Study".

distinctively strong connections between education and work: 5 and 12%, respectively, indicated that they had made "little use of knowledge acquired in their tertiary studies" and 64% of Norwegian and 75% of Swedish graduates reported that "problem-solving competencies had been acquired at the time of graduation."

Concerning other skills, such as entrepreneurial skills, the REFLEX survey reveals that only 20% of graduates surveyed indicated that their tertiary education programme provided a good basis for developing entrepreneurial skills. In the European Union the role of tertiary education in promoting more entrepreneurial attitudes and behaviours has been recognised. There is growing consensus that TEIs should further integrate entrepreneurship into programmes and courses with special attention devoted to matching entrepreneurship training with scientific and technological studies in order to encourage spin-off and innovative start-ups.[50]

In Australia, the Business Council of Australia has raised concerns that graduates are not taught problem solving skills and that the abilities they develop are more suited to further study than to integrate the labour market. Other concerns include the lack of entrepreneurial skills as well as the lack of skills such as creativity, initiative and oral business communication (Business Council of Australia, 2006). An initiative to respond to these concerns is the Business, Industry and Tertiary Education Collaboration Council launched in 2004, which explores in close collaboration with employers, alternatives to strengthen graduate employability skills.

Over-education and skills mismatch

Frequently public officials, business leaders and tertiary graduates themselves express that some tertiary graduates find it difficult to find a job suited to their training, and must take up positions for which they appear to be "over-qualified" or "incorrectly matched". There is a concern that a growing number of young people might be performing jobs requiring lower skills than those acquired in tertiary education.

In fact, some concerns were raised about over-education and skills mismatch in some of the countries participating in the Review. For example, in Korea, there is the perception that a proportion of university graduates take jobs designed to college graduates whereas college graduates similarly fill jobs that previously were given to graduates from secondary vocational schools. This displacement process, together with the intense societal pressure to attend tertiary education, might in turn have led to apparent shortages of trade-level workers (*e.g.* electricians, plumbers, mechanics, and secretaries required for construction, assembly lines, and modern corporations). This situation might be explained both by the growing demand for tertiary education and the excessive supply of places in TEIs, expansion that might not have been followed by a proportional demand for jobs requiring tertiary qualifications.

In Mexico, it was reported that between 1990 and 2000, 45.6% of tertiary graduates did not find employment in an area matching the competencies and skills acquired in tertiary education (ANUIES, 2003). Of those, about half were employed in less specialised areas in which most employed individuals did not hold a graduate degree, suggesting an over-education situation in which the supply of jobs requiring tertiary level

50. The European Commission launched a project to assess in quantitative and qualitative terms the teaching of entrepreneurship courses and programmes in European TEIs (final report forthcoming in 2008). See *http://ec.europa.eu/enterprise/entrepreneurship/support_measures/highed/index.htm*

skills and competencies did not match the number of graduates with such skills. Moreover, according to the Mexican Labour Market Observatory, in 2005 about 30% of graduates were not employed in their area of tertiary training.

In China, there are reports that many tertiary graduates are disappointed upon entering the labour market as they often do not access a job matching the tertiary education received. Graduate unemployment co-exists with excess demand for graduates from the vocational rather than the academic pathway. This mismatch between the supply of graduates and job opportunities might be explained by the very rapid economic changes recently experienced; the institutional inflexibility in changing course content and curricula as well as some limitations on labour mobility, even for new graduates. Moreover, the very rapid growth of graduates may have resulted in graduates having unrealistic high job expectations based on patterns of earlier student cohorts, and therefore reluctance to accept the first job offered.

In Estonia there are also concerns that a significant proportion of graduates does not find employment in areas matching the competencies and skills acquired in tertiary education. For instance, only 54% of 1999-2000 and 57% of 2002-2003 graduates from teacher education and health care programmes were employed in teaching and health services in 2005. This might indicate that, in some instances, the supply of jobs requiring tertiary level skills and competencies does not match the number of graduates with such skills (an alternative explanation is that salary levels in the public sector have not been responsive enough to reflect real demand). In the Czech Republic the skills mismatch has been reported mainly for graduates from agriculturally-oriented programmes and for the humanities, areas for which respectively 77 and 53% of graduates found jobs in areas unrelated to their field of study.

However, there is not much empirical evidence to illustrate the possible extent of over-education or skills mismatch among the tertiary educated in these countries. The literature on over-education is quite controversial due to conceptual difficulties in defining and measuring such phenomena. Three main measures of over-education have been used: *a)* one approach is based on the views of "work-study experts", who determine the skill needs of an individual's occupation; *b)* another approach is to use surveys of job holders to ascertain their view of the qualifications needed to do a job; and *c)* a third approach is to calculate the average education levels in an individual's occupation. [51]

For example, using data from the European Union Labour Force Survey, Quintini and Martin (2006) found important variations across countries in the extent of over-education among the young.[52] In Poland, the Slovak Republic and the United Kingdom 30% of the 15-28 years old are found to be over-educated against less than 10% in Iceland and Portugal. In countries with well developed apprenticeship systems (*e.g.* Austria, Denmark, Germany and Switzerland) the level of over-education among the 15-28 years old seems to be relatively low, although these countries are closer to the average than to the "best" performers. Moreover, between 1995 and 2005, over-education increased in 15 of the 22 countries for which data were available, in a significant way in Austria, France,

51. Verhaest and Omey (2004) show, both formally and empirically, that the choice of the measure for over-education is crucial for the outcome of the analysis.

52. In Quintini and Martin (2006), an education level (out of three) is attributed to each 1-digit occupational code based on the skill content of each broad occupational grouping. A person is then classified as over-educated when his/her educational qualification is higher than that attached to their occupation.

Luxembourg and the United Kingdom.[53] The study also shows that over-education is more common among 15-28 years old workers who are on temporary or part-time jobs and more prevalent among women than men.

Using data from the European Social Survey and the European Labour Force Survey for 19 countries, Koucký and Lepič (2008) suggest that between 1995 and 2006, the supply of tertiary education expanded at a greater pace than the demand for tertiary qualifications. On average, in 2006, they find that the size of the tertiary educated population exceeded in 6% the volume of jobs requiring tertiary qualifications, although there is considerable cross-country variation. Spain, and to a lesser extent Finland and Ireland are among the countries where such gap is greater. By contrast, in the Czech Republic, Italy and to a lower degree, Austria and Portugal, the supply of tertiary graduates is insufficient to fill in the available jobs which require tertiary qualifications.

The results of Wasmer *et al.* (2007), looking at over-qualification and skill mismatch using data from the European Community Household Panel for France, Germany, Italy, Spain and the United Kingdom found that the incidence of being "non-over-qualified and well matched" increases with age and labour market experience, and is less common for individuals with a tertiary degree in all countries.[54] Controlling for sector, occupation, and year (as well as some personal characteristics) they found that the probability of being over-qualified declines with labour market experience in all countries, which goes in line with a transitory interpretation of the incidence of over-qualification.[55] There are important cross-country differences with the probability of being over-educated being the lowest in Italy and the highest in the United Kingdom.[56] The differences across countries may arise from a large number of factors. They could be caused by the design and efficiency of the different educational systems in providing the skills demanded by the market or might be related to the interplay of institutions, educational choices and the functioning of the labour market in matching the supply of and demand for skills.

53. McIntosh (2005) also finds evidence that in the United Kingdom the extent of over-education has increased over time (about 7 percentage points since the mid-1980s).

54. Wasmer *et al. (*2007) use the following example: if an individual with a Doctorate in mathematics is working as a university professor, he would be classified as "non-over-qualified and well matched". However, if he works as a research assistant he would be classified as "over-qualified but correctly matched" (as he would have education and training sufficient for the job but his qualification suggests he could work at a higher level). If he works as the CEO of a multinational firm, he would be classified as "non-overqualified and mismatched" because his formal qualifications do not provide the education required for the job, yet he is not "over-qualified". If he works as an electrician, he would be classified as "over-qualified and mismatched". In this case, his education does not provide the knowledge required in this job and his qualification suggests he should be eligible to apply for a "higher status" job.

55. Some authors point to the interpretation of over-education as a temporary phenomenon (Dorn and Sousa-Pazo, 2005; Cardoso, 2004), as a consequence, for example, of a lack of appropriate information by graduates and employers as well as constraints on worker mobility; others suggest that over-education among young graduates entering the labour market compensate for the lack of labour market experience (Sloane *et al.*; 1999). In that case, it would be expected to disappear with time as graduates find more appropriate jobs or they are promoted to a level within a given job suiting better their qualifications.

56. For the authors, mismatches do not necessarily imply an inefficient allocation of resources, as workers identified as over-educated might be properly matched if their productivity is lower due to unobserved characteristics.

In conclusion, even if to a large extent, over-education and skills mismatch can be seen as a natural process of transition from education to work, further research is needed to explain the cross-country variation of the phenomenon, as it might signal a persistent misuse of human capital requiring government intervention. On the other hand, observing overqualified individuals in the workforce does not necessarily mean that there is an over-supply of tertiary graduates. If this were the case, relative wages and employment probabilities would fall to the level of their closest substitutes, and as already discussed, this has not happened in most of the countries under Review.

9.4 Aligning tertiary education supply with labour market demand

Improving the matching between labour market needs and tertiary education supply is likely to be instrumental for a well functioning economy. In fact, in some countries tertiary education policy appears to place real value and effort into aligning education outputs with labour market demands. But, optimising education provision to meet labour market needs is not an easy task. Often it involves an anticipation of labour market shortages and bottlenecks as well as an accurate identification of skills needs.

The level of detail of policy intervention is an issue. Labour markets are volatile – and that certainly is the case in growing open economies – and future labour market demands are fairly difficult to predict, in particular when the focus is on the knowledge economy where today's cutting edge skills and capacities can be outdated quite fast. In general, average economic trends and the direction of structural changes can be foreseen in the medium term, but the amplitude of the economic cycle and the speed of structural changes are much more difficult to predict. However, some impactful developments can be anticipated. For example, it is known that the ageing of populations will modify the structure of the labour market in most OECD countries. It is expected that it will, for example, boost the demand for labour in the health and social care sectors and lead to shortages in other sectors due to shrinking labour forces. Some policies are now developed to counteract these trends.[57]

In addressing the ties between tertiary education and the labour market, it is important to distinguish between two functions of TEIs: the development of skills and competences; and the responsibility of institutions to ensure the employability of their graduates in jobs which match the acquired competences.

9.4.1 Student demand

In some tertiary systems it is students who are chiefly responsible for aligning tertiary provision towards labour market demands. In largely demand-driven systems, prospective students (ostensibly cognisant of the benefits of tertiary study) choose whether to study at the tertiary level, and what course of study suits their abilities and wage and employment aspirations, while public authorities and tertiary institutions play a largely facilitating role: public authorities ensure that study places are available to respond to student demand, while institutions shift the number and array of courses on offer in response to changing student demand. Hence, student choices about *whether* to study and *what* to study are the primary determinants of how much and what sort of tertiary study opportunities are provided.

57. In most OECD countries, reforms have been put in place over recent years or are in train to encourage older workers to remain in the labour market for longer (see OECD, 2006b).

In other countries the alignment of tertiary education to labour markets is a central concern of officials in ministries, intermediary bodies, or regional governments, who endeavour to steer the country's system of tertiary education towards closer engagement with the needs of the labour market. Public officials may do this either by shaping the environment of student and institutional choice, or by directly rationing how many study places are provided, and of what kind.

These are not mutually exclusive elements; rather, countries typically combine elements of both although in different degrees. Thus, for example, labour markets and tertiary education are aligned in a system such as Australia's through a basic reliance upon student demand (*i.e.* through students forecasting labour market demand, and selecting study courses in light of this). Student demand, in turn, is shaped by a national policy framework that establishes tuition prices for different study courses and that targets some additional places for fields in which there are labour market shortages, and provides labour market information to prospective and enrolled students. Additionally, public authorities exercise regulatory direction within the system (*e.g.* tertiary institutions cannot close programmes judged to be critical to national needs without government approval).

Study fields chosen by students

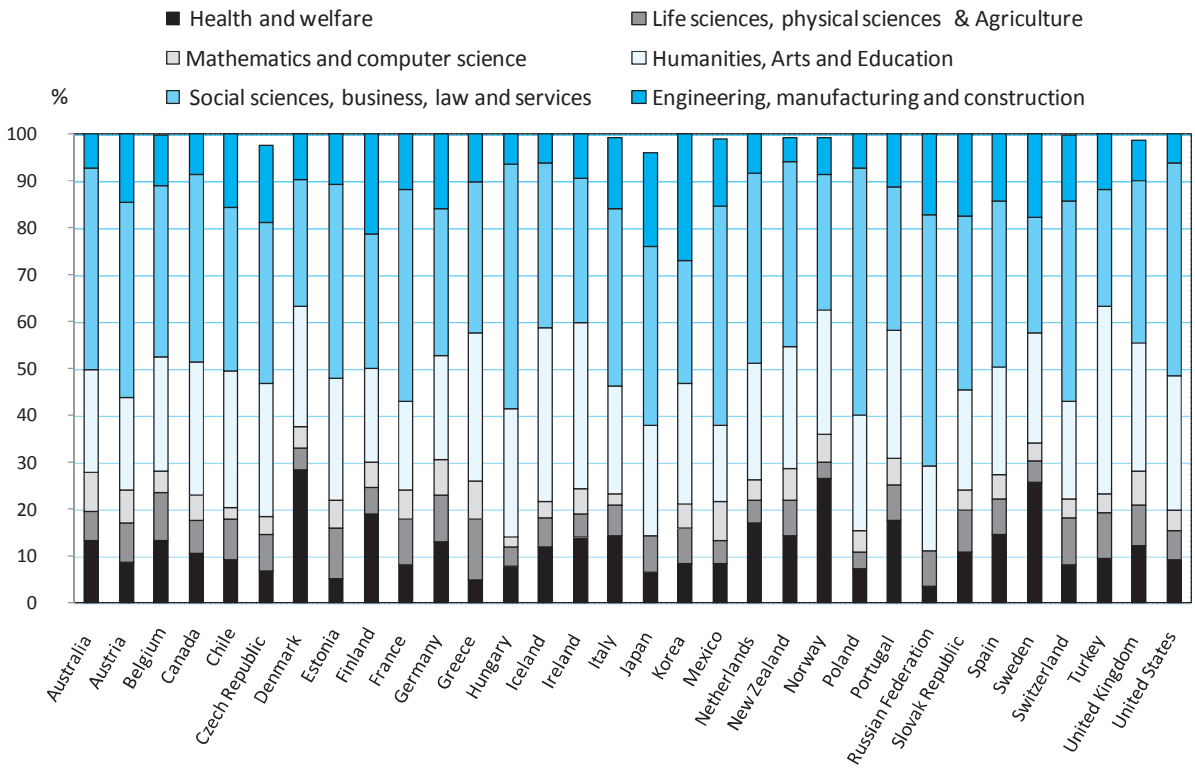
In many of the countries participating in the Review, public officials and business leaders often expressed concern that students are not making the right study choices – that the fields in which students enrol correspond poorly to the needs of the labour market. In some OECD countries and partner economies, concerns are expressed that the number of students enrolled in the arts, social sciences, law, and business fields substantially exceeds labour market demand, while the number enrolled in health-related studies, natural sciences, and engineering is insufficient to meet demand.

In Mexico, in 2005, about 30% of employed graduates studied accounting and finance; administration; or law. A few subject areas concentrated too many graduates, indicating an over-supply of these graduates in the labour market. In Poland, there is some concern that the recent expansion in tertiary enrolments was concentrated in the social sciences (in areas such as business and economics) and too few students enrolled in engineering and natural sciences programmes. This expansion of the supply of graduates in the social sciences seems not to have been followed by a corresponding increase in the demand for these graduates as shown by the fact that, in 2001, economists were the largest group among unemployed graduates registered with the National Labour Office (followed by marketing and trade specialists, teachers, political scientists and lawyers).

On average in OECD countries, 37% of graduates from tertiary-type A and advanced research programmes undertook studies in the social sciences, business, law and services; 25% in the humanities, arts and education, and 13% in health and welfare studies (Figure 9.8). There are however significant variations across countries. For example, the percentage of tertiary-type A and advanced research qualifications awarded in the social sciences, business, law and services range from less than 30% in Denmark, Finland, Korea, Norway, Sweden and Turkey, to over 50% in Hungary, Poland and the Russian Federation. The largest concentration of tertiary-type A and advanced research qualifications awarded in the field of humanities, arts and education is found in Ireland and Turkey; in the fields of engineering, manufacturing and construction in Korea; and in the fields of health and welfare in Denmark, Norway and Sweden.

Figure 9.8. Tertiary graduates by field of education, 2005

Tertiary-type 5A and research programmes graduates by field of education



Notes: For Belgium, the German-speaking Community is not included. For Canada and Finland the year of reference is 2004.

Source: OECD, 2007a.

An average of 25% of graduates receive a tertiary-type A or advanced research qualification in a "science-related" field (engineering, manufacturing and construction; life sciences, physical sciences and agriculture; and mathematics and computing). This figure is below 16% in Hungary and Poland and exceeds 30% in Finland, Germany, Greece, Korea, and the Slovak Republic.[58] As shown in OECD (2007a), the picture is similar for tertiary-type B education, characterised by programmes which are more occupationally-oriented and usually lead to direct entry into the labour market: the field of social sciences, business, law and services has the largest concentration of graduates (38%), followed by the humanities, arts and education, and science-related fields (both with 23%).

Women and men tend to study different subjects at tertiary level, with consequences for their respective labour market outcomes. In particular, many more women complete programmes in the humanities, arts and education, as well as in health and welfare. By contrast, more men complete tertiary education programmes in mathematics, science and engineering (see Chapter 6, Figure 6.6).

58. See Chapter 7 for a detailed discussion on science-related fields and research and innovation.

At the European Union level, there has been a growing concern of the need to increase the number of graduates in mathematics, science and technology (MST), especially among women, in order to take advantage of the potential of a knowledge-based economy and to increase competitiveness in the international markets through an improvement of research and innovation.[59] It is admitted that the failure to increase the number of these graduates and the difficulty to attract and retain these professionals from other countries, compared to the United States, may cause a cumulative lag in innovative potential in science and technology that might dampen European Union productivity and growth.

According to the most recent progress report on the improvements made in education and training to assist the EU's Lisbon Strategy for Employment and Growth, the objective of increasing the number of MST graduates by 2010 seems to have been achieved (European Commission, 2007b). In 2005, there were 864 200 graduates in MST in the EU-27, representing about one sixth of the nearly 5 million MST graduates worldwide for that year. One year earlier, there were 825 000 MST graduates in the EU-27, compared to 227 000 in Japan, 346 000 in the Russian Federation and 407 000 in the United States. In China the number of MST graduates is rising faster, having more than doubled since 2000 to reach 1 020 000 in 2004.

Machin and Puhani (2006), among the few studies having estimated the returns to tertiary education by field of study in a number of countries (France, Germany, the United Kingdom and the United States) at two particular points in time (1993 and 2000) find that an arts degree had the lowest relative return within all countries in both time periods, for both men and women. By contrast, the return to science, engineering, and technology degrees was higher, especially for men.[60] Such findings are broadly consistent with what is perceived in individual countries: that science, engineering and technology degrees provide greater relative returns.

It is often claimed that students are poorly informed about the expected returns to education by study field. In some countries secondary school students have little understanding of tertiary education costs and benefits. Other aspects such as their preferences, their socio-economic situation as well as the changing opportunities in the labour market, and the admission policies and practices of TEIs also affect their study choice.

It is largely assumed that if student demand is to align tertiary provision to the needs of labour markets, students must be well-informed about labour market outcomes in order to be responsive to them in their study choices. Moreover, TEIs must be able and willing to respond to students' choices, and public authorities must provide a policy framework that accommodates both students' choices and institutional responsiveness.

Improving information

There is some evidence in the United States and Canada confirming that, to a large extent, students are informed about future wages and labour market opportunities and are disposed to act on these expectations to align their choices of tertiary education to labour

59. The European Union Council conclusions of May 2003 set the objective of raising the number of mathematics, science and technology graduates in at least 15% between 2000 to 2010 together with the reduction of the gender imbalance.

60. See also Section 2.2.1 in Chapter 2.

market conditions. In these countries, extensive research has been undertaken using micro-level data, and it shows, among other things, that university students have a clear (if sometimes optimistic) understanding of wages associated with alternative careers (Betts, 1996); that students take into account the likelihood they will succeed in a field of study when forecasting future earnings possibilities (Montmarquette *et al.,* 1997); that students' probability of choosing one course of study over another is not myopically dependent upon starting wages, but rather predicted by their expectations of future earning streams (Berger, 1988); and that expected earnings play a prominent role in the field of study chosen by postsecondary students. Students respond in different ways to wage signals. Boudarbat (2004) found that the field of study chosen by Canadian university students shifted in response to changing relative wage and employment prospects – but males, those with prior work experience, and those in business and commerce-related fields were more sensitive in their enrolment decisions to wage changes than were others.

It must be noted, however, that the information lever applies unevenly to different socio-economic groups. For example, Usher (2006) shows that in the United States, those from lower socio-economic groups have shorter-term decision-making horizons and hence, do not give appropriate weight to medium term returns (see Chapters 4 and 6). Not all potential students seem to respond equally to changes in net prices.[61] Often when choosing a study field, decision-making horizons work differently for different ethnic groups and depend heavily on past education experiences (see Chapters 4 and 6).

Additionally, even when students are well-informed about labour market signals in the selection of their courses, there will be delays between demand and supply that lead to cycles of over and under-supply of graduates. As Spetz and Given (2003) observe in their study of the United States nursing labour market, there has been a close link between degrees awarded in nursing and wages, but with a predictable lag. Nursing licensure requires a three year period of study in a university, college, or hospital-based diploma programme; hence, the number of graduates increases in response to wage increases, but with about a two to four-year lag. Throughout the past half century there have been periods of nursing shortages quickly followed by periods of equilibrium or surplus. Similar patterns have been observed in subjects such as engineering (Ryoo and Rosen, 2004), teaching, and other professions, the graduates of which typically take between three and seven years of tertiary education to train.

Research-based evidence with respect to student information elsewhere in the OECD is limited, though some single-country studies have been undertaken,[62] and one large-scale analysis has examined the wage and employment expectations and outcomes for 6 000 tertiary-level students in 10 European nations (Brunello *et al.*, 2001). According to the latter study, in assessing wage and employment prospects after graduation, graduates in the humanities and in law had expected to have significantly worse absolute and relative job prospects than graduates in economics and business; students' expectations of their prospects increased significantly when they had parents holding a university degree

61. One constant across research findings is that grants/reductions in net price are much more effective among low-income students than among middle or high income students. Some studies have shown that higher-income students were virtually price insensitive when it came to education, but that changes in net costs had a relatively important effect on the more disadvantaged (see Chapter 4).

62. Single country studies include the Netherlands (Webbink and Hartog, 2004) and Switzerland (Wolter and Zbinden, 2002).

who had studied in the same field; and that expected job prospects among students who plan to finish later than required were lower than those of on-time students. While expected wage gains are higher than actual tertiary wage gains, the wage and employment expectations of tertiary students in Europe otherwise follow closely in key respects the realities of graduate labour outcomes (suggesting that a key basis for demand-driven adaptation to labour markets is present).

According to the reviews undertaken in the project, information provided to students on labour market outcomes, as well as information on teaching and institutional quality is uneven and in most of the cases additional information is needed. For example, in Japan students seem to have information on selectivity and reputation of institutions (like in the United States), whereas reliable information, particularly among prospective students, about teaching, learning and labour market outcomes associated with different tertiary institutions is less developed.

In some countries, such as New Zealand, there is rich information about the outcomes of graduates in the labour market as shown by the fact that most institutions conduct surveys of graduates providing useful information about career paths, views of graduates on their preparation and sometimes employers' assessment of graduates' competencies for work. Students also have access to ample information on educational offerings, course costs, quality of courses, eligibility for student loans and allowances, kinds of jobs available, and the forms of preparation for these jobs.

Yet in other countries, there has been a growing emphasis on giving information about the quality of the courses through different initiatives. The United Kingdom launched in 2005 a National Student Survey (NSS), which aims to gather feedback on the quality of students' courses. The NSS aims both to help inform the choices of future applicants, and to strengthen accountability (see Box 3.2 in Chapter 3). In Germany, the Centre for Higher Education Development (CHE) has introduced student-based externally available assessments of their learning experience at the programme level, providing prospective students with information that they may use in choosing among institutions.

In the United States, foundations and researchers have worked with tertiary institutions to develop the National Survey of Student Engagement (NSSE), and 557 colleges and universities participated in the 2006 survey of under-graduates in which they were queried about the level of academic challenge, "time on task", and other dimensions of their learning experience. However, this information was made available to institutions for the improvement of the learning atmosphere, and, less frequently, to prospective students, their parents, and their academic advisors.

But in many countries information on labour market outcomes or on the quality of instruction in institutions is less developed. In those countries, typically, TEIs do not have a good sense of the labour market destinations of their graduates and little attention is devoted to the analysis of graduates' labour market outcomes at the system level.

The importance of career guidance

It is increasingly acknowledged that career guidance is a useful tool to improve labour market supply, address skills shortages and raise the level and the quality of human capital. Career guidance services, both at the secondary and tertiary levels, are likely to be instrumental in improving the efficiency of the linkage between the education system and the labour market, while also enhancing equality of opportunities. The ways in which career guidance is provided might help to articulate students' demand for learning,

contribute to tertiary education access and completion, as well as improve the match between supply and demand in the labour market (OECD, 2004).

Career guidance provision reflects the economic, social, cultural, educational and labour market contexts in which it operates. However, some similarities emerge regarding the way career guidance services are delivered, the role and the involvement of a range of stakeholders (*e.g.* schools, TEIs, employment services) and how these services are resourced (*i.e.* staff and funding).[63] Concerning the latter, typical issues include weak staffing levels and limited training as well as few opportunities for students to experience the world of work (or to come into contact with tertiary institutions).

Watts and Sultana (2004) find that career guidance services tend to play a more important role in educational systems with more flexible pathways than in educational systems with early-streaming and tracking mechanisms.[64] Greater flexibility given to students to design their own study programme according to their needs and occupational goals makes the link between education and the labour market more complex, and in that sense, renders career guidance more necessary and relevant.

In tertiary education such services are generally limited both in scale and in focus. Career services can be fragmented and not always transparent, rendering difficult the access for students and not offering the type of information they need for their study decisions. This might happen as a result of the lack of coordination between the ministries of Education and Labour, different sectors of education, or different levels of government.

In the Nordic European countries career guidance is mainly embedded in early intervention programmes incorporating mutual obligation and personal action planning. In New Zealand, the pilot project "Designing Careers", launched in 2004, seeks to provide guidance to students before secondary education completion, with a special focus on students who are at risk of not making successful transitions from school. School students develop career management skills through the use of individual learning and career plans that help them decide which subjects or courses to follow at school, and what further education or work is to be undertaken after leaving school. At the tertiary level, larger TEIs offer specialised career-guidance to students – from the exploration of career ideas and the career implications of subject choices, to information about specific jobs, specialised post-graduate courses, employer profiles and job-searching techniques.

Career guidance is also considered as a way to prevent student failure and to improve the quality of the education received. For instance, Sultana (2004) finds some evidence of a positive link between career guidance provision in tertiary education and student retention in Finland and Ireland. This has motivated initiatives launched in France in 2008, with the proposal of a career information and guidance service in each university called the active guidance ("*orientation active*"), expected to become available to any new student in the system.[65] The aim is to provide specialised counselling to future

63. See OECD (2004); OECD and the European Commission (2004) and Sultana (2004) for a detailed analysis of career guidance policies in OECD and European Union countries respectively.

64. Watts and Sultana (2004) review national career guidance policies in 37 countries based on the work undertaken by the OECD, the European Commission and the World Bank.

65. Initiative which results from the French Law of August 2007 on the "Freedom and Responsibility of Universities" (*Loi relative à la liberté et aux responsabilités des universités*) to be in place in all universities by September 2008. See *www.enseignementsup-recherche.gouv.fr*

students so as to improve their tertiary-level study experience and, in particular, reduce drop-out rates in the initial years of tertiary education.

Another role of guidance services in tertiary education is to support the career development of students prior to their entry into the labour market. However, according to OECD and the European Commission (2004), little attention seems to be paid to career development and choice, including helping students to develop career management and entrepreneurial skills and encouraging them to take up self-employment options. In some cases, closer co-operation between Education and Employment Ministries is needed to ensure that educational and occupational information are well integrated, and that a labour market perspective is offered in career guidance services provided at the school level. Another issue is that career services are often not targeted at the type of student (*e.g.* students at the risk of failure or changing their courses, mature students returning to school, distance learning students, international students).

Even if there is consensus to support career information and guidance in secondary and tertiary education, empirical evidence on its impact remains weak. In fact, there is little regular and systematic evaluation of the quality of career guidance provision in most countries.[66] Standards for provision do not exist or are present in some sectors but not in others; quality frameworks tend to be voluntary and often operate as guidelines; and there is a need to recognise that users have a key role to play in the evaluation process. Moreover, available data are more often of a quantitative rather than of a qualitative nature (*e.g.* number of users or success rate in job placements against indicators such as client satisfaction or an assessment of whether career decision making skills improved), pointing to the need of more empirical research in this area.

Towards greater institutional responsiveness

TEIs, through their responsiveness to labour market needs and students' preferences, are key in linking students' demand for programmes to labour market demand for graduates. Such responsiveness, some observers argue, is more characteristic of private institutions that rely chiefly upon private financing. As a result, some countries have strengthened the labour market orientation of their tertiary system by authorising the entry of new private education and training providers. This has been a strategy mainly followed in East Asia (*e.g.* Korea and Japan), Latin America (*e.g.* Chile and Mexico), and the United States, among others.

Some countries, such as the United States and the United Kingdom, have chosen to allow the establishment of for-profit providers of career-oriented education, while elsewhere these new providers operate as private not-for-profit corporations. In Japan, the government has chosen to allow a new set of private institutions, Professional Training Colleges (*senmon gakko*) to enter the system in response to student demand for work-related competencies. Viewed in comparison to public and private universities, privately established Professional Training Colleges have greater autonomy *vis-à-vis* public authorities and stronger management, enabling them to act with comparatively greater responsiveness to market forces. Professional Training Colleges are subject to regulation by prefectural authorities and they receive operating subsidies from them. Additionally,

66. According to the literature review on career-related interventions in tertiary education undertaken by Bimrose *et al.* (2005), there is substantial research on different curricular and extra-curricular interventions influencing students' learning, their progression and their career-decision making, but evidence on the efficacy of these interventions remains limited.

Professional Training Colleges are perceived by students to offer market-oriented skills, as distinct from university education that is theoretical and academic, and to provide reliable employment results (some, in fact, guarantee employment to all who complete courses). While offers of employment fell for university graduates in the 1990s, those for graduates from Professional Training Colleges remained robust. Thus, not only are these institutions attractive to secondary students, but also to students who drop out of university or junior college studies, university and junior college graduates, and tens of thousands of "double-schoolers" who are simultaneously enrolled in a university and at a Professional Training College (Goodman *et al.*, forthcoming).

Institutional responsiveness appears also to be characteristic of public institutions in systems where public authorities establish a policy framework – including admission policies and institutional funding methodologies – that are strongly oriented towards meeting student enrolment demand. In Belgium (Flemish Community) and the Netherlands, for example, institutions may not restrict enrolment; instead, students have the right to study on the course and at the institution of their choice, subject to quotas or *numerus clausus* in a small number of fields. Additionally, student numbers form a prominent basis for institutional financing. Hence, in these systems supply responds to effective demand among applicants.

Another way to accommodate student demand in response to perceived opportunities in the labour market is to align the courses offered by TEIs to the guarantee of a career opportunity. An illustration of this is the proliferation of "purpose-built" vocationally oriented degrees targeted at specific needs in the labour market in Australia, mainly in the professions and para-professions. This trend has also been evident in the expansion of degrees which combine distinct fields of study (*e.g.* Law/Arts, Engineering/Law, and Science/Engineering).

There are systems, however, where a lack of adjustment to student demand is noticeable. In the Spanish university sector, labour market demand doesn't seem to be a major factor in decisions on the number of entry places for most university courses. Large imbalances exist between study places and student demand across a number of subject areas (*e.g.* in health sciences, demand is three times greater than the number of study places, while in experimental sciences – where unemployment rates are high – thirty percent of entry places remain vacant).

Providing more flexible study conditions to a more diverse set of learners

As a way to accommodate student demand and respond to the needs of a more diverse set of learners, educational choices in tertiary education are expanding and the conditions in which programmes are offered are diversifying (see Chapters 3 and 6). An aspect is the flexibility to undertake tertiary studies. Even if greater opportunities for flexible studies are being created, provisions remain limited in many countries. For instance, in the Netherlands, little provision on a part-time or dual basis (15 and 1% of enrolled students, respectively) is offered by universities of applied science, contrary to what employers' associations have been demanding so work and learning can be better combined by a more diverse population of learners.[67]

67. Employers have also demanded that this sector of the Dutch tertiary education system focuses more on short-cycle degrees (two-years) so more individuals with intermediate qualifications, presently lacking, enter the labour force. As a result, short-cycle programmes were launched on a pilot basis since September 2006.

Also, making transfers across fields of study, faculties, and institutions more flexible would make it easier for students who realise they are in the wrong field of study to change study area, both reducing undesired mismatches and potentially allowing greater responsiveness to changing labour markets patterns. Although progress has been made in many countries, rigidities persist. For example, in Korea, although the education system is quite inflexible and students normally have to reapply to be admitted in a different study field, the *Hakbu* system, by integrating two or more departments into a major field has widened choices to students. Rather than applying for specific subjects, students apply to enter university departments and after experiencing a broad range of subjects, they select their majors in their second year according to their preferences. In other countries, such as Croatia, the current structure of universities with independent faculties is relatively inflexible, and inhibits change across faculties. In this sense, the change to integrated universities is perceived as an essential element in enabling greater adaptability to facilitate change between, as well as within, faculties (see Chapter 3, Section 3.5.3).

Moreover, the growing importance of lifelong learning also requires a response from TEIs to accommodate lifelong learners. Whereas in some countries lifelong learning offerings of tertiary institutions are well developed and the system responds suitably to the needs of adult learners this is not the case in others. In New Zealand many institutions supply training for company employees and the supply of continuing education is spread across the tertiary sector. The opportunities for adults to undertake tertiary education after an experience in the labour market are also facilitated by provisions to allow attendance on the basis of a person's assessed competencies and the access to the student support system. Over the last five years, half of the enrolment growth has been attributable to the increased enrolments of people over 40 years of age. By contrast, in other countries, lifelong learning offerings have not traditionally been the focus of tertiary institutions and are under-developed (see Chapter 3, Section 3.5.1).

9.4.2 Steering by public authorities

Shaping the environment of student and institutional choice

Rather than administratively establishing the number and composition of study places, public officials can instead aim to align tertiary institutions to labour markets by shaping student and institutional choices. This may be done by:

- *Steering through information*: encouraging students to select high-demand fields of study by providing them with information about labour market outcomes of graduates.
- *Targeted funding for institutional provision*: increasing or decreasing the public funding of certain targeted disciplines, so as to encourage their provision by institutions.
- *Preferential pricing and financing*: inducing students to select certain fields of study by selectively lowering tuition prices (relative to other fields), or by providing preferential terms of financing to graduates in certain study fields, such as loan forgiveness or loan subsidies.

Steering through information

Examples of steering student demand through information can be found in Chile, Mexico and Portugal. In Chile, the Ministry of Education lacks authority, either through regulation or spending caps, to establish student numbers. Instead, authority to set student numbers rests exclusively with institutions. Lacking direct control over student numbers or enrolments by field, the Ministry has responded by developing an innovative information strategy with which to inform student demand, the Graduate Employment Observatory. Similar initiatives have been launched in Mexico and Portugal (see Box 9.1).

Box 9.1. Information on labour market outcomes in Chile, Mexico and Portugal

Chile: The Graduate Employment Observatory

In Chile, the Ministry of Education developed in 2003 the Graduate Employment Observatory (*Observatorio del Empleo de Graduados de Educación Superior*) and a Web site (*www.Futurolaboral.cl*) to provide prospective and current students with information about labour market outcomes of recent graduates, by field of study.

In 2006 the Web site had over 300 thousand visits, three times more than in 2003. The information provided is collected annually from tax data (with strict rules to guarantee confidentiality) and is based on around 94% of the graduates. By providing transparency with respect to wage and employment outcomes for different courses and careers, this Web site appears to have influenced the application and study preferences of prospective students. Since its introduction there has been a decline of enrolments in areas which used to have high enrolments and were associated with professions with falling wages, such as journalism, psychology, commercial engineering and architecture. In fact, these have been the degree courses for which the incomes of the cohorts graduating in 2000 and in 2001 have fallen compared to the 1998 cohort.

Mexico: The Labour Market Observatory

In Mexico, the Ministry of Labour launched in 2005 the Labour Market Observatory (*Observatorio Laboral*), an internet platform (*www.observatoriolaboral.gob.mx*) providing information on labour market trends for a wide range of occupations and professions. The main sources of information are the National Employment Service and the National Education System registers, especially those related to higher education enrolments and graduation and the quarterly data obtained from the National Employment and Occupation Survey.

The Observatory contains a variety of indicators at both national and state level for the last ten years. For a given occupation/profession, indicators include graduates by gender, proportion of graduates in employment, proportion in employment in area of graduate competence, average salary at different stages of career, level of position, status of employment (*i.e.* part-time or not, whether in self-employment), or employment growth rates.

Between March and December 2005, the labour market observatory Web site received 601 000 visits. A survey among 2 269 observatory users concluded that 23% of them were lower secondary students, 45% upper secondary students, and 32% tertiary under-graduate students. The Labour Market Observatory represents a key tool in matching the supply of educational programmes by institutions to the demand for programmes by students. It informs students about the labour market, the kinds of jobs available, and the forms of preparation for these jobs. It also informs institutions about potential labour market needs.

Portugal: Statistics on recent graduates and graduate job seekers

Since the Autumn 2007, the statistical services of the Ministry of Science, Technology and Higher Education publish bi-annually (September and February) reports on the demand for employment of higher education graduates registered at the national employment centres (*i.e.* unemployed graduates looking for the first or a new job). This information is available both by higher education programme and institution (*www.estatisticas.gpeari.mctes.pt*). In addition, under the new Portuguese Legal Regime for Higher Education (October 2007), institutions are required to collect and publish annual information on the employment/career experiences of their graduates up to five years after graduation.

Targeted funding for institutional provision

Another way to align tertiary institutions to labour markets by shaping student and institutional choices is through targeted funding for institutional provision. In Australia, for example, since 2001 there has been a slight decline in the participation of national students in tertiary education with student's enrolment having moderately increased due to international student enrolment. That is why since 2003 the Australian Government has tried to address this low participation by introducing new supported student places in specific areas. The Australian Government addresses skill shortages by influencing the supply of graduates through the allocation of new higher education places. In recent allocations, the focus has been on aligning the new places to the identified skills needs of the workforce, including teaching, nursing, medicine and engineering. The Australian Government has also committed to provide funding for additional new university places in nursing and early childhood education to help address skills shortages in these fields.

Preferential pricing and financing

Public authorities may also aim to steer students towards fields of study in which employer demand is greatest, through preferential pricing and financing systems (*i.e.* tuition prices or student grants). In Australia, student contributions (tuition fees) in national priority fields (*e.g.* nursing and education) were capped or reduced to promote student enrolments and participation in tertiary education. In the Netherlands, the government has tried to stimulate young people to enter teacher education programmes through the provision of extra financing for students in that field, who otherwise are not eligible for students grants and loans. Moreover, additional funds have been provided to TEIs for the development of teacher education programmes.

Some countries use their student support systems to provide special incentives in specific fields of study (see Chapter 4 for more detail). New Zealand, for example, gives special consideration to grant applicants whose field of study is early childhood education, in recognition of the need to raise the number of graduates in this area. In the United Kingdom (Wales), preferential loan terms or repayment conditions are made available to graduates in areas of labour market shortage (*e.g.* teacher shortage in some subjects in primary and secondary education). In the United States, preferential repayment conditions on student loans are frequently offered by federal agencies or state governments to induce enrolment in public service professions with shortages (*e.g.* nursing and teaching).[68]

Rationing and regulation

Although the rationing of study places through *numerus clausus* is often based on the purpose of controlling or better managing public expenditure, public officials may also attempt through rationing, to link tertiary provision to labour markets by controlling the number and type of study places made available. If study places are publicly funded, officials may limit the total number of study places by setting enrolment caps, or less directly, by setting funding caps. The allocation of study places among different courses or fields may be achieved through the review and approval of new courses (or, the closure of courses), or the authorisation of new institutions.

68. See, for example, *www.hrsa.gov/help/healthprofessions.htm*

In Finland, for example, a forecast of labour market needs, adjusted to reflect policy targets of the government, provides the basis for a national Development Plan for Education and Research, a document that provides a framework for education supply. The Development Plan provides the framework within which negotiations between the Ministry of Education and individual TEIs take place.[69] Because all tertiary study places are provided by State-funded public institutions in Finland, all under-graduate study places in tertiary institutions are, in effect, administratively allocated according to this forecast of labour market needs in consultation with all the stakeholders involved. In fact, although there is an important ministerial steering this is done with the feedback and the information provided by the polytechnics/universities, employer and employees organisations and a number of advisory bodies set up by the government.

In Spain enrolments in the vocational sector of tertiary education are not allocated by central authorities. Rather, each of the autonomous regions establishes the number of entry places for each vocational course with a view to meeting the requirements of the labour market in that region.

In rare instances, public authorities may also exercise detailed control over enrolments and programme offerings in private tertiary institutions. In Portugal, for example, private institutions are required to request permission from the Ministry of Science, Technology and Higher Education before launching any new degree or changing their study programmes. The Ministry also sets enrolment parameters by determining the *numerus clausus* for every study programme offered by private universities.

More common is a pattern where rationing by public officials takes place within a set of public institutions or, where dual financing exists, in the publicly funded seats at public institutions. Alongside this, private institutions operate, as well as privately-funded seats at public institutions. Such is the case in the Russian Federation and Poland, for example. In the Russian Federation, public officials can increase the number of publicly-funded study places open to students in fields the government deems to be strategically important such as engineering and transportation-related fields, while reducing publicly-funded study places in areas such as economics, law and political science. Those unable to gain publicly-funded study places in these fields may seek privately-financed study places in public institutions or in private TEIs, the enrolment of which is concentrated almost exclusively in either business studies or social sciences. However, such policies may have unintended outcomes. Some school leavers target publicly-funded places in a given institution even if not in their preferred field of study with the expectation of transferring to it at a later stage.

Experience indicates that a supply-driven rationing of study places by public authorities appears to meet with three types of difficulties. First, public authorities may lack the administrative information and management controls over study places that are necessary to engage in effective rationing. Alternatively (or, additionally), they may lack accurate and detailed data about graduate labour market conditions that is needed to engage in an allocation of resources that is well-adapted to labour market conditions.

69. The targets for each TEI are agreed between the Ministry of Education and the polytechnic/university in a performance agreement, on the basis of which the TEI determines the intake for each study field. The performance agreement is concluded for a three-year period and certain parts of it are reviewed every year. The current agreement period is 2007-2009. The next Development Plan will set targets for 2012 and will stress regional targets.

Second, the administrative allocation of study places according to a forecast of labour market demand – as distinct from student demand – may result in a mismatch of student preferences and the supply of study places that lead to serious distortions in behaviour and inefficiencies. For some decades Finland has experienced a university "matriculation backlog": only about one-third of applicants to university are admitted to their most preferred field of study immediately after completing secondary studies. Many prospective students who are not admitted to their preferred course queue for repeated annual efforts to gain entry to highly selective fields, or they choose to enter less competitive study fields, and transfer to their preferred course after enrolment. Elsewhere the application of *numerus clausus* to study fields – particularly in graduate and professional fields, such as medicine, has given rise to cross-border movements of students who seek to gain entry into their preferred field of study in neighbouring states, or in offshore private providers developed specifically to capture surplus demand.

Finally, authorities may choose to "lead" student demand, on the assumption that they are better able to anticipate future labour market needs than students, or they may opt to discount student demand, on the grounds that their judgments about critical areas of national need ought to substitute the enrolment preferences of students. As Ryoo and Rosen (2004) note, public authorities may often have no better information about labour market conditions, current or future, than labour market participants themselves.[70] In addition, attempts to steer enrolments towards fields of "national need" that contradict wage signals appear often to end in failure – *i.e.* in an oversupply of graduates that leads them to seek employment opportunities in other countries, or careers in fields other than those for which they were trained.

Creating study opportunities with greater orientation towards working life

Many countries have created vocationally-oriented institutions to fill what they perceived to be an insufficient orientation towards working life in tertiary education. The aim is that these institutions develop closer ties with labour markets, with an improved response to their needs. Where they have been established, they typically operate in a legal or regulatory setting that enforces a strict division of labour between them and universities (a "binary line") within which vocationally-oriented institutions are assigned a mission, governance structure, funding system, and degree-awarding authority different to that of universities. In general, these institutions are characterised by:

- providing professional and higher vocational education through study programmes of short to moderate duration (rather than long university courses);
- offering courses that have a more practice-oriented and less theoretical orientation, often with a work placement;
- undertaking applied (as distinct from basic) research;
- incorporating employer or regional input into governance; and
- operating with some element of local financing.

70. Reinhardt (2002) notes that public health professionals' efforts to forecast and plan workforce needs are marked by "a century of failure." For example, great uncertainty surrounding the progress of medical and organisational technology can result in "huge forecasting errors."

This is the case of the education offered by, for instance, polytechnic institutions. Tertiary systems with legally-recognised polytechnic sectors include Finland, Germany, the Netherlands, Portugal and Switzerland, among others.[71] In these countries, students enrolled in such institutions vary from almost one in two in Finland to one in four in Germany. The case of the Netherlands and its *hogescholen,* universities of applied science, is illustrated in Box 9.2. In other countries, this division is less clear cut, and tertiary studies more vocationally-oriented are less popular among students and even in some cases still suffer from a lack of parity of esteem relative to university or more academic programmes (See Chapter 3).

Box 9.2. Universities of applied science in the Netherlands[1]

One highly developed model of a binary system is that of the Netherlands, in which one-third of tertiary students are enrolled in publicly funded research-intensive universities and two-thirds are enrolled in publicly funded universities of applied science, (*hogescholen*). Dutch universities of applied science have multifaceted connections to working life – in their pedagogy and instructional staff; through employer participation in their supervisory boards; and in advisory relationships between employers and *hogescholen* that extend from the development of programmes to their quality assurance.

Local employers often sit in the governing bodies of these universities of applied science, and national sectoral organisations may be consulted in the development of study domain competencies. Quality assessment panels are required to have employers from the related field of work as panel participants. Instructors are professionals drawn from working life. Ideally, their instructors remain professionally engaged throughout their teaching careers, providing a bridge between working life and classroom instruction.

All courses have one or more traineeship, thus students experience part of their learning in a work-based setting. Graduate labour market outcomes are closely monitored by the *Arbeidsmarkt Monitor* (labour market monitor), a publication that has since 1993 reported on the employment and wages of graduates from these institutions.

[1] As of early 2008, the *hogescholen* are authorised to use the English designation of "universities of applied science" instead of the previously official "universities of professional education".

9.4.3 The role of other actors in tertiary education

While the broad framework of tertiary education's connection to labour markets is shaped chiefly by student demand and the steering by public officials, the content of education and training (*i.e.* curriculum, pedagogy, staff numbers and qualifications, and facilities) and, indirectly, the skills and capacities of graduates, result principally from decisions taken by different actors ranging from academic faculties, professional associations, disciplinary organisations or learned societies, and industry associations representing common lines of work or sectors.

The mix of these institutions varies across OECD countries, and this variation results in pronounced differences in pedagogy (*e.g.* integration with workplace-based learning), in curriculum (*e.g.* the level of skills specificity), and matching between graduate skills and the demands of working life. The role of these institutions is briefly reviewed below, in order to discuss their implications for the alignment of graduate skills and abilities to labour markets.

71. Even within binary systems, university institutions may offer courses of study that are highly vocational in nature, and maintain close connections to employers and professional associations. This is especially true of specialist universities, such as agricultural or technical universities.

However, comparisons across countries must be made with care, since tertiary systems can be highly differentiated across countries according to their history, their cultural tradition and the different role played by social partners, as well as within a country (indeed, large differences in pedagogy, curriculum and engagement in working life may exist with a large and comprehensive variety between one faculty or programme and another).

In some countries, curriculum, pedagogy, staff profiles, and facilities – and, indirectly, the skills and capabilities of graduates – are shaped almost exclusively by faculties and disciplinary organisations, while labour market participants, such as industry associations and work-based professional associations exercise a comparatively modest role. This is the case in countries where tertiary systems are led by universities of a strongly Humboldtian orientation, and in which industry associations and work-based professional associations are weakly established. Under such circumstances, there is typically a low level of circulation between university-based researchers and research-intensive private firms; a preference for comparatively long, specialised, and theoretical courses of study over those that are vocational or professional in outlook; and a disinclination to engage in work-based learning.

By contrast, in other countries (or for specific institutions and study programmes within a country), the balance among these stakeholders is reflected in a much stronger labour market orientation in curriculum and pedagogy.

Professional associations

Professional bodies play a leading role in defining and controlling access to regulated or licensed professions, such as engineering, architecture, medicine, law, pharmacy, and accountancy. Professionals may be trained as apprentices, in a work-based setting, and examined and licensed by the profession itself; or, training and examination may be embedded in tertiary institutions, either at the under-graduate or post-graduate level of study.

If professional training is embedded in institutions, professional associations may exercise extensive influence over the content of curriculum, pedagogy, staff numbers and qualifications, and facilities through their role in the accreditation of professional programmes and the recognition of a graduate's right to practice their profession. Additionally, professional bodies may play a prominent public role monitoring whether tertiary education systems are responding to the needs of their profession, both with respect to the supply of graduates, and the training and skills they possess, and advocacy for policy changes.

There has been a long-term shift from instruction based upon mentorship and professional practice and externally-administered examinations (set by professional associations) to professional education based in tertiary institutions, and accredited or approved by professional bodies.[72] The relationship between professional communities

72. In the 19th century universities in the United Kingdom were unwilling to offer courses in library studies, thus the British Library independently offered courses and qualifying examinations. In the 1940s British further education colleges and polytechnics began to offer library courses, and in 1964 the British Library Association ceded its role in providing instruction and examinations to tertiary-based library schools, and became an accrediting body. The (United States) American Library Association (ALA) was formed one year later than the British Library Association, but never acted as a qualifying association setting its own examinations. Rather, in the United States large public libraries and universities swiftly established librarian training and examinations, and the ALA acted as an accrediting body (Rochester, 1994).

and tertiary education remains highly dynamic. Mature professions continue to shift to university-based instruction, as is the case with legal training in Japan, and newly-established lines of work based upon new services and technologies (such as tourism management, computer game design, or supply chain management) seek to achieve professional recognition, often in newer universities or vocationally-oriented institutions which are closer to working life.

The extent of professional association influence over tertiary-based education and training appears to vary widely across countries. Broadly speaking, where economies have labour markets which are chiefly firm-based (or "internal"), as in East Asia, the influence of professional associations appears to be comparatively modest, while the opposite is true in economies where labour markets are principally occupational (Ohkusa *et al.*, 1997; Lazear and Oyer, 2004). Economies that have (or, are) undergone (undergoing) a transition from planned economies to market economies, such as Croatia, the Czech Republic, Hungary, Poland, or the Russian Federation, appear to be shifting progressively from internal to occupationally-based labour markets (Gabor, 1998).

Faculties and disciplinary associations

In many tertiary education systems about half or more of all graduates complete courses that do not lead for entry into a regulated or licensed profession, either because they have studied a course that is career-oriented but not linked to any single profession (*e.g.* business studies, media studies), or they have enrolled in fields of study that are academic rather than professional in nature, such as physics, philosophy, sociology, literature, mathematics, history, or linguistics. For these graduates, the requirements of study and the competencies they develop are shaped chiefly by faculties themselves, or by disciplinary associations, and are often shaped with little regard to working life.

Industry groups and employer associations: towards partnerships with TEIs

Industry groups representing common lines or branches of work play a widely varying role in shaping the content of education and training in OECD countries. In some countries there are highly developed sectoral organisations that are financed on a compulsory basis and highly integrated into the country's education and training system. Elsewhere, particularly in transition economies, those that have undergone a recent transition from planning to markets, public officials struggle to identify, engage, and collaborate with effective sectoral organisations.

In the countries reviewed the collaboration between industry groups, employers associations and TEIs is uneven and can take very different forms. It can range from involvement in policy design, in design of curricula and its implementation, in direct participation in the educational provision (*e.g.* through agreements or partnerships to promote internships/traineeships for students, recruitment of teaching staff) or the direct involvement of TEIs in innovation for the production process. For example, some countries have developed formal structures to promote communication and collaboration between TEIs and industry groups and employers associations on a permanent basis (*e.g.* Australia with the Business, Industry and Higher Education Collaboration Council and the Business and Higher Education Round Table) (see Chapter 3).

By contrast, other countries have no strong tradition of involvement of employers in TEIs. For example, in the Russian Federation, Ministry officials are seeking to develop much closer links between the tertiary education system and the labour market, aiming to

engage the latter in the formulation of study requirements for graduates. In that sense, leading companies have created so-called "basic or host chairs" in Russian TEIs, which seek to promote the targeted professional training of students. However, one obstacle on the path to creating modern mechanisms of interaction between education and the labour market, in the Russian Federation as well as many other countries, is the lack of development of groups of employers with the same work profile, and their lack of tradition in engaging in partnerships with TEIs.

In Mexico and in Poland, businesses, professions, and labour unions are neither very involved in the formulation of national tertiary education policies and inputs from industry and employers seem to be limited. In both cases, there seems to be no forum at national level at which representatives of business and industry might contribute to the development of tertiary education policy, because there is little tradition of the active involvement of industry in the daily activities of institutions. Nevertheless in Mexico, the formal participation of employers and representatives of industry as external members of institutions' governing bodies is a phenomenon in essence limited to technological universities and some technological institutes and polytechnic universities. In fact, institutions which are part of the technology subsystems (*i.e.* technological institutes, technological universities, polytechnic universities) provide among the best examples of partnerships with industry, requiring students to undertake internships in companies, having programmes practice-oriented, and having programme content informed by advisory groups where employers are included.

In general, the involvement of industry and employers' associations both in the design of tertiary curricula and in tertiary education provision is more often found in vocational programmes than in more academic study fields. For example, in the Netherlands, sectoral organisations provide a comprehensive and expert foundation for industry-tertiary collaboration, and are extensively engaged in the development of new qualifications, mainly in Dutch universities of applied science (*hogesholen*).[73]

In New Zealand, individual TEIs are required to work closely with their region's businesses, professional associations, industry training organisations, and local authorities to identify skill needs and respond to the future shape of the regional and national workforce. The Tertiary Education Commission administers specialised funds designed to foster greater engagement between TEIs and businesses, with the aim of meeting skill needs. For example, it has funded projects designed to increase the relevance of provision including secondments from industry ("experts in residence"), student work placements, and business involvement in course development through the polytechnics' Business Links Fund, or has developed the *Partnerships for Excellence* initiative to increase private-sector investment in tertiary education and foster better linkages between TEIs, industry and business (see Box 7.2 in Chapter 7).

In Sweden, the advanced vocational education system provides a good example of the involvement of employers and businesses in tertiary education provision (see Box 9.3).

73. There are 130 sectoral organisations that spend about 3 billion euros per year on education and training in the Netherlands. These funds are financed through a tax on their gross payroll, and used to develop new courses for employees, to pay for employee training, to conduct research on labour markets, and to implement new work practices in their lines of business. These expenditures support education and training ranging from secondary education for young people to lifelong learning for mature workers; however, they do not support full time study in tertiary institutions, since this is the responsibility of public spending.

Box 9.3. Advanced Vocational Education (AVE) in Sweden

In Sweden, Advanced Vocational Education (AVE, *Kvalificerad yrkesutbildning*) is a form of vocational post-secondary education designed and carried out in close co-operation between enterprises and course providers, which can be TEIs, upper-secondary schools, municipal adult education institutes or companies. It has not resulted into a separate institutional sector.

The major objective of AVE is to train staff with qualifications in areas needed for the labour market. Programmes are to provide advanced theoretical and practical knowledge and skills required to work independently and in cooperation with others in today's modern workplaces. Courses are to be characterised by theoretical depth as well as links with the workplace. One third of the programme is to be spent at a workplace. The courses are open both to those who have recently finished upper secondary school and to people who are already employed and wish to develop their skills within a specific area. The education period varies between 1 and 3 years. A course consisting of 40 weeks or more will result in an AVE degree.

An AVE programme can be initiated by employers with, for example, a sectoral organisation or an enterprise applying to the Swedish Agency for AVE to start a programme. It can also be initiated in cooperation between an educational organisation, such as a TEI, and a municipality or an educational enterprise with the required competence. Irrespective of who initiated the programme, a prerequisite is that there is a real need on the labour market, and that employers take an active part. What constitutes need is assessed by the Swedish Agency for AVE, on the basis of statistical data, contacts with employer organisations, and other forms of input. Also, providers must be able to prove that there is a real labour market demand for their courses. Another distinguishing feature of AVE is its flexibility. Programmes are created, changed, or discounted, depending on the development of the relevant commercial area. The existence of the programme is therefore reviewed on a regular basis, and employer interest and the quality of the programmes determine whether programmes continue.

It also promotes equality of opportunities. According to the Swedish Agency for AVE, the broad range of programmes offered, the possibilities to receive study grants and loans from the State student aid system, as well as the defined focus and relatively short duration of studies give adults the possibility for further studies. Also, the AVE Agency gives priority to courses that counteract gender stereotypes in educational choice.

For more information: *www.ky.se*

Source: The Swedish Agency for Advanced Vocational Education.

In France, the new Law on Universities also intends to reinforce the links between TEIs, the regions and local stakeholders.[74] It provides for the participation of two representatives of the local stakeholders in the governing body of each university (*conseil d'administration*). It also offers tax incentives to foster the investment by entrepreneurs and firms in tertiary education, through the development of new foundations within universities (*fondations universitaires* or *fondations partenariales*).

Promoting students' internships/traineeships through partnerships between businesses and TEIs is likely to strengthen ties between the two sectors but is mostly an effective way to facilitate the transition into the labour market.[75] Also, facilitating teachers to move from TEIs to industry (and vice versa) grants a means through which knowledge on mutual needs is acquired. These arrangements are however more often found in private institutions or in vocationally-oriented institutions.

Some countries have tried to emulate the well-known German system of apprenticeships and work-based learning, but have faced difficulties such as little motivation from firms, a lack of tradition of tripartite planning necessary to create high-

74. French Law of August 2007 on the "Freedom and Responsibility of Universities" (*Loi relative à la liberté et aux responsabilités des universités*).

75. According to the results of the REFLEX survey, internships do not affect significantly tertiary graduates competences, but instead they facilitate a smooth transition into the labour market (Allen and van der Velden, forthcoming).

quality internships, and educational cultures hostile to corporate participation. For example in Korea, traditional university values are not always compatible with entrepreneurial activities; academics have few incentives to be involved in partnerships; and large corporations with their own research facilities do not always feel the need to co-operate with TEIs.

Another way to strengthen the links between TEIs and the business sector is through synergies between research and innovation and the production process itself (see Chapter 7). For example, in Korea, "joint degree programmes" between universities and corporations have recently been developed, involving academics and students to spend time at industry research institutes.

9.4.4 National qualifications frameworks and quality assurance systems

Developing a national qualifications and credentials system is another recognised way to connect labour market needs and tertiary education supply. The existence of a national qualifications framework facilitates the articulation between the demands of employers, the expectations of students, and the offerings of tertiary institutions. Such a framework has the potential to bring together the skill needs of employers, the design of tertiary programmes to prepare students with these skills, and the information about the competencies needed for given occupations.

Recent transformations in the labour market, the expansion and diversification of post-compulsory education as well as a move towards more demand-driven education are among the main reasons that have contributed to the growing interest in national qualification frameworks (Young, 2007 and OECD, 2007c). National qualification frameworks have also emerged to make more transparent an increasingly complex provision of qualifications (Coles, 2006). Yet, they intend to go beyond a simple classification and become the basis for strategic planning of education and training, meeting labour market needs and structuring opportunities for individuals to enter and progress in their careers. Their implementation is not an easy task, however, as they require the establishment of dedicated agencies to manage, monitor and evaluate the functioning of the system and respond to evolving qualifications.

Many countries have national qualifications framework in place, although their use and effectiveness varies across countries. Even if there is not much empirical evidence of the impact of qualifications systems in tertiary education, the performance of a qualifications system may be assessed along some dimensions such as its accessibility, efficiency, flexibility, responsiveness and transparency (OECD, 2007c).

In practice, qualifications frameworks may not succeed in co-ordinating the expectations of all participants if there is no consensus on priorities among the different stakeholders involved. In that sense, the involvement of employers and their support of qualification systems are critical. Good examples of national qualifications frameworks where tripartite planning councils – including employer representatives, trade unions and governments – jointly plan licensing exams are found in Austria, Denmark and Germany.

In the United Kingdom there have been a number of attempts (NVQs, GNVQs, Foundation degrees) to update the prior system, but having failed to include employers actively in their design, the qualifications frameworks have not been used effectively (Grubb and Lazerson, 2004). In fact, employers through Sector Skills Councils (SSCs) draw up National Occupational Standards and should be well placed to describe the competencies needed in a particular occupation, but the complexity of the system and the

large number of bodies involved in qualification design has made it difficult for employers to influence the process in practice.[76] However, reforms have been recently launched to simplify the qualification system in order to make qualifications more easily understood and valued by employers. In that sense, a new Commission for Employers and Skills, reporting to government, will start operating in early 2008 to strengthen the collective voice of employers and better articulate their views on skills. Also, the continued development of Foundation degrees – which integrate academic study with work-based learning offering practical, accessible options for employers and workforce alike – is a major approach to meeting employers' needs and has been supported by the government as a key vehicle to tertiary education expansion.[77]

In a national qualifications framework, degrees are further distinguished in terms of the knowledge and skills required. For example, in the Australian Qualifications Framework an associate degree is expected to include the fundamental underpinnings of one or more disciplines, including understanding and interpretation of key concepts and theories, as well as the development of skills in comprehending and evaluating information from a range of sources; this requirement operates to prevent the associate degree from being only practice-oriented. In turn, a bachelor's degree should lead to the acquisition of a systematic and coherent body of knowledge, and to the skills needed to undertake research.

Quality assurance systems also play a role in strengthening the ties between the labour market and TEIs as they seek to ensure that TEIs are fulfilling their mission with quality outcomes. They increasingly involve labour market actors not only in defining quality criteria but also in assessment panels (see Chapter 5).

9.5 Pointers for future policy development

The policy suggestions that follow are drawn from the experiences reported in the Country Background Reports, the analyses of external review teams, and the wider research literature. Not all of the policy implications apply equally to all reviewed countries. In a number of cases many or most of the policy suggestions are already in place, while for other countries they may have less relevance because of different social, economic and educational structures and traditions. The implications also need to be treated cautiously because in some instances there is not a strong enough research base across a sufficient number of countries to be confident about successful implementation. The relationship between tertiary education and the labour market is a highly complex one, and it remains one of the most debated areas of tertiary education policy. Nonetheless, the discussion attempts to distil potentially useful ideas and lessons from the experiences of countries that have been searching for better ways to strengthen the ties

76. The Leitch Report highlighted the complexity of the qualification system and the need for reform (Leitch, 2006). Over 22 000 qualifications were reported in the United Kingdom, and too many of these, particularly at lower levels, were found to be little valued both by employers and by individuals, contributing to constraining investment in skills.

77. Foundation degrees were launched in 2002 as a new qualification equivalent to Level 5 within the National Qualifications Framework and they represent the type of flexible demand-led tertiary education provision called for in the Leitch Report. According to the Higher Education Funding Council for England, in 2006-2007, over 60 000 students were estimated to be registered in these programmes, having succeeded in attracting people who wouldn't normally have considered taking up tertiary education.

between tertiary education and labour markets. Some common themes are evident in the country reforms now underway, namely that better co-ordination between labour market and education policies is needed, career guidance and information about labour market outcomes of graduates are instrumental in aligning students' preferences and labour market needs, institutions ought to build capacity to respond to labour demand, educational provision with labour market orientation needs to be enhanced, and labour market actors are to be given a stronger voice in tertiary education systems.

Coordinate labour market and education policies

Education Ministries are typically established to finance and regulate TEIs, and their work activity continues to focus on the activities of institutions that provide tertiary education. Responsibility for labour market institutions, employment, and worker training rests elsewhere, in Ministries of Labour, as do expertise and data analysis.

The analysis of tertiary education and labour markets for the countries reviewed consistently points to a low level of integration between these two complementary policy domains, and links this to the inadequate attention devoted to labour market concerns, such as the provision of lifelong learning opportunities and flexible study options, and to the inadequacy of data and analysis with respect to graduate labour market outcomes.

Two decades ago OECD member countries began to develop institutional arrangements aimed at integrating science, technology and innovation policy at the cabinet level, and it appears that these arrangements have been successful in this purpose, and widely emulated. It is proposed that governments consider similar arrangements with respect to the integration of education, training, and employment, through the institution of a cabinet-level committee for human capital (or, "human capabilities").

Improve data and analysis about graduate labour market outcomes

In most of the countries in the Review there is an insufficiency of data and analysis with respect to graduate labour market outcomes, a shortcoming that impairs students' responsiveness to labour market signals, the capacity of public officials to adapt resource allocation to labour market needs, and the ability of tertiary institutions to systematically learn about and respond to labour markets. It is suggested, therefore, that consideration be given to greater investment in data collection with respect to labour market outcomes.

If students are to respond to labour market signals when making enrolment choices, students need information about wages and employment among recent graduates that is: *(i)* easily accessible and frequently updated; *(ii)* disaggregated to the level of study field; and *(iii)* able to reveal the variability in wages and employment across TEIs where degrees are completed. For a given field of study, indicators could include graduate numbers by gender, the proportion of graduates in employment, the proportion in employment within the area covered by the programme, average salary at different stages of career, grade or promotion level distributions, status of employment (*e.g.* full-time, part-time or unemployed, whether in self-employment) and employment growth rates. This could be complemented by the requirement that institutions conduct graduate surveys. However, care is needed not to excessively add to the administrative burden placed on TEIs.

Better data and analysis are equally necessary in systems that rely heavily upon central or regional authorities to allocate study places, since they must be able to accurately assess current labour market conditions (*e.g.* labour force participation rates, unemployment rates, working hours, and vacancy rates) to evaluate how to allocate additional resources across fields of study.

Public data systems should also permit the tracking of long-term graduate labour market outcomes, so that institutions and public officials can understand not only wages and unemployment spells immediately after graduation, but also the longer-term experiences of graduates, including career mobility, occupational change, job mismatch and over-education.

The performance of institutions with respect to labour market outcomes is also valuable for quality assurance systems to go beyond academic criteria. This would go along with including people who bring questions of working life and employability to bear in the deliberations of quality assurance agencies (such as key members of professional associations, chief technology officers of research-intensive firms, and those who play significant roles in the recruitment and hiring of tertiary education graduates).

Strengthen career services at secondary and tertiary educational levels

Career information needs to be not only produced but also well disseminated. In this respect it is important to ensure that career guidance in secondary schools and career placement services in tertiary institutions make good use of data on educational alternatives and labour market outcomes. Systems of tertiary education can greatly benefit from the strengthening of career services at the secondary and tertiary educational levels. Students need to be informed about the labour market, the kinds of jobs available, and the types of educational preparation needed for those jobs. This helps students make well-informed decisions about their fields of tertiary study.

It is essential to ensure that career guidance in both secondary schools and TEIs is effective in using the information available, that it is adequately staffed and undertaken by individuals with the appropriate training. The establishment of a national or regional-level Career Services office can be instrumental in: *(i)* ensuring the co-ordination between education and labour authorities and different levels of government for career guidance purposes; *(ii)* establishing links between career guidance at secondary and tertiary levels; and *(iii)* providing professional development assistance to career advisors and supporting career education programmes. Finally, it is suggested that the impact of career guidance be monitored and evaluated periodically.

Reinforce the capacity of institutions to respond to labour demand

The availability of information and career guidance services are good steps to ensure that tertiary education is responsive to labour market needs, but are not sufficient. If the two are to be satisfactorily linked, the funding methodologies established by public authorities must create incentives for institutions to respond to student demand, and tertiary institutions must have the capacity to reallocate resources internally in response to students' preferences. The first of these conditions appears to be widely achieved: approaches to public funding consistently use student numbers as a criterion in the allocation of teaching funds to tertiary institutions. The second, the capacity of institutions to reallocate resources, is less fully developed.

In some tertiary systems institutional leaders lack the capacity to shift instructional capacity to fields of high labour demand, and bottlenecks develop. This may be especially likely to occur, for example, in institutions where its individual faculties are legally or effectively independent of the wider institution in their operation. While public officials may be free to establish funding methodologies that promote institutional responsiveness to demand, the capacity of institutions to respond to demand is something that is less immediately amenable to the direction of public officials. Nonetheless, public officials can devise management information systems that generate evidence of institutional performance in meeting enrolment demand (*e.g.* student queues for course entry), and encourage the development of institutional governance and management arrangements that allow for efficiency in the allocation of resources.

Enhance provision with a labour market orientation

As regards steering and planning, an approach that stresses the diversity of educational offerings in the system, relies on student demand and avoids the danger of micro management appears best suited to deal with the challenges of the labour market. Such a strategy would build on the existence of ample choice in the system to meet a variety of student and labour market needs.

Along these lines, in some tertiary systems, it would seem important to expand opportunities for flexible, work-oriented study. Tertiary institutions have long experience and often great competence at transmitting discipline-based knowledge and training young people in the development of scientific capabilities. However, they might be less familiar with – or adapted to – the use of work-based learning to develop professional skills. Public officials should support the diversification of study opportunities, so that both bachelor's degree programmes oriented toward working life and short-cycle practice-oriented programmes are sufficiently available; and they should strengthen the capacities of institutions charged with their provision (especially the vocational sector) so that the quality of qualifications is widely recognised by students and employers alike.

Enhancing the labour market orientation of tertiary level programmes with close and continuing engagement of employers and professional associations can be achieved in a number of ways: *(i)* by establishing public institutions with a strong labour market orientation (*e.g.* polytechnics); *(ii)* by expanding vocationally-oriented programmes in public institutions which are part of unitary systems; or *(iii)* by authorising the entry of vocationally-oriented private education and training providers into the tertiary system. Many countries have created more vocationally-oriented institutions to fill what they perceived to be an insufficient orientation towards working life in university-based education. But, to a great extent, the success of this approach greatly depends on policies to prevent "academic drift" in vocational institutions. In unitary systems, it might be best to develop the labour market orientation of institutions by promoting competition between institutions, steering the system with funding schemes which reward the labour market orientation of programmes, and encouraging partnerships between institutions and employers.

However, the development of vocationally-oriented programmes need to consider not only the job-specific skills needed for success upon entry into a given profession but also the more general competences which are necessary, for example, to improve practice, develop professionally and adapt if a change of activity takes place (*e.g.* learning to learn).

Include labour market perspectives and actors in policy development and institutional governance

Another generic way in which the national policy framework can contribute to the alignment of tertiary education practice and labour markets is through steering and governance systems. Educational authorities could involve labour market actors (*e.g.* businesses, professions, labour unions) in the formulation of tertiary education policies through their inclusion in bodies that provide advice and analysis to policy makers. If this dialogue is to be effective, it needs to be ensured that labour market actors develop an active interest in participating in the dialogue, and that the views of the latter are valued and properly taken into account in the formulation of policies. Educational authorities should also include in deliberative and advisory bodies those within government who bear responsibility for employment and skills policies, since they bring different perspectives and competencies to the choices that need to be made in tertiary education policy.

Additionally, public authorities should seek to widen the participation of labour market actors (*e.g.* representatives of firms, not-for-profit organisations, professions, or public sector entities such as directors of schools or hospitals) in the bodies responsible for the strategic governance of TEIs, and not merely in bodies confined to an advisory role. The direct involvement of labour market actors in TEIs has the potential to improve the responsiveness of institutions to labour market needs. A complementary initiative is to encourage tertiary institutions to engage employers, both public and private, in the design of programmes and even the assessment of students through, for instance, their involvement in councils or committees for curriculum development within institutions. This would be particularly important in vocational sectors.

Encourage tertiary education institutions to play a greater role in lifelong learning

In most countries tertiary education needs to enhance its role in the renewal and improvement of the skills of those already in the labour force. TEIs should widen opportunities for lifelong learning by increasing the flexibility of provision (*e.g.* part-time and distance provision) and designing education and training alternatives tailored at the needs of employers and given industries. This could be complemented by policy initiatives which grant financial support to address the difficulties facing low-income workers and a framework which allows TEIs to raise revenues from these activities.

The participation of TEIs in lifelong learning can be seen in the broader context of strengthening the partnerships with the business sector. Practices to be sustained and systematic across the tertiary education system include internships for students and teachers in industry, offices in TEIs to liaise with the business sector, and the participation of employers in the daily activities of institutions (including governance and curriculum development).

Explore the potential of a National Qualifications Framework

A formal qualifications framework has the potential to be the reference instrument to co-ordinate the demands of employers, the expectations of students, and the offerings of institutions. The promises of a well-functioning qualifications framework are many: employers can specify competencies for employment; educational institutions can design programmes to develop these competencies in students; and students know what competencies they need in order to become employable. A well-functioning qualifications

framework also makes transfers among fields of study, and among institutions, more flexible. This allows students who realise they are in the wrong field of study to change, both reducing these kinds of mismatches and potentially allowing greater responsiveness to changing labour market patterns. It also has the potential to assist the assessment and recognition of prior learning. However, it needs to be recognised that designing effective national qualifications frameworks involves great complexities with the risk that it may not provide clear signals to students, institutions and employers.

References

Allen, J. and R. van der Velden (forthcoming), *The Flexible Professional in the Knowledge Society: General Results of the REFLEX Project*, Research Centre for Education and the Labour Market, Maastricht University.

ANUIES (*Asociación Nacional de Universidades e Instituciones de Educación Superior* – National Association of Universities and Institutions of Higher Education) (2003), *Mercado Laboral de Profesionales*, México, D.F.

Arnal, E., R. Torres and W. Ok (2001), "Knowledge, Work Organisation and Economic Growth", *OECD Labour Market and Social Policy Occasional Papers*, No. 50, OECD, Paris.

Bassanini, A. (2004), "Improving Skills for More and Better Jobs: Does Training Make a Difference?", *OECD Labour Market Working Papers*, OECD, Paris.

Bassanini, A., A. Booth, G. Brunello, M. De Paola, and E. Leuven (2006), "Workplace Training in Europe" in G. Brunello, P. Garibaldi, and E. Wasmer (eds.), *Education and Training in Europe*, Oxford University Press.

Berger, M. (1988), "Predicted Future Earnings and Choice of College Major", *Industrial and Labor Relations Review*, Vol. 41, No. 3, April.

Berman, E., J. Bound and S. Machin (1998), "Implications of Skill-Biased Technological Change: International Evidence", *Quarterly Journal of Economics*, No. 113.

Betts, J. (1996), "What Do Students Know About Wages? Evidence from a Survey of Undergraduates," *The Journal of Human Resources*, Vol. 31, No. 1.

Bimrose, J., S. Barnes, and J. Brown (2005), "A Systematic Literature Review of Research into Career-related Interventions for Higher Education", Warwick Institute for Employment Research, University of Warwick, November 2005.

Blöndal, S., S. Field and N. Girouard (2002), "Investment in Human Capital through Upper-Secondary and Tertiary Education", *OECD Economic Studies*, No. 34.

Boudarbat, B. (2004), "Earning and Community College Field of Study Choice in Canada", IZA Discussion Paper No. 1156, Bonn.

Brunello, G., C. Lucifora, and R. Winter-Ebmer (2001), "The Wage Expectations of European College Students", Economics Working Paper No. 0108, Department of Economics, Johannes Kepler University, Linz, Austria.

Business Council of Australia (2006), *New Concepts in Innovation: the keys to a growing Australia*.

Cardoso, A.R. (2004), "Jobs for Young University Graduates: Is It Worth Having a Degree?", IZA Discussion Paper No. 1311.

Coles, M. (2006), "A Review of International and National Developments in the Use of Qualifications Frameworks", European Training Foundation, April 2006.

CPB (Netherlands Bureau for Economic Policy Analysis) (2005), "Scarcity of Science and Engineering students in the Netherlands", July 2005.

Dorn, D. and A. Sousa-Pazo, (2005), "Overqualification: Permanent or Transitory?", University of St. Gallen, *mimeo*.

Eberts, R. (2007), "Trends in Worker Requirements and the Need for better Information to make more Informed Decisions in a Global Economy", paper presented at the OECD's 2nd World Forum on Statistics, Knowledge and Policy, on "Measuring and Fostering the Progress of Societies", Istanbul, June 2007.

European Commission (2007a), "Perceptions of tertiary education reforms: Survey among teaching professionals in tertiary education institutions in the 27 Member States, and Croatia, Iceland, Norway and Turkey", *Flash Eurobarometer*, March 2007.

European Commission (2007b), "Progress towards the Lisbon objectives in education and training: Indicators and benchmarks", Commission Staff Working Document.

European Students' Union (ESU) (2008), *Lisbon with students' eyes*.

Freeman, J.R. (2005), "Does Globalization of the Scientific/Engineering Workforce Threaten US Economic Leadership?", National Bureau of Economic Research Working Paper No. 11457, Cambridge, MA.

Gabor, I. (1998), "Internal *vs*. Occupational Labour Market – A Neglected Dimension of Hungary's Post-Socialist Transformation", Labour Research Department, Institute of Economics, Hungarian Academy of Sciences, Working Papers No. 1, Budapest.

Goodman, R., S. Hatakenaka, and T. Kim (forthcoming), *The Changing Status of Vocational Tertiary education in Contemporary Japan and South Korea.*

Grubb, W.N., and M. Lazerson (2004), *The Education Gospel: The Economic Value of Schooling*. Cambridge MA: Harvard University Press.

Hansson, B. (2007), "Effects of Tertiary Expansion: Crowding-out effects and labour market matches for the higher educated", OECD Education Working Paper Series, No. 10, OECD, Paris.

Koucký J., and M. Lepič (2008), "Ten Years After: Skill Needs Development 1995-2016". Education Policy Centre, Charles University, Prague 2008 (in Czech only).

Krueger, D. and K. Kumar (2003), "US-Europe Differences in Technology Driven Growth: Quantifying the Role of Education", Journal of Monetary Economics, No. 51.

Krueger, D. and K. Kumar (2004), "Skill-Specific rather than General Education: A Reason for US-Europe Growth Differences", Journal of Economic Growth, No. 9.

Lazear E. and P. Oyer (2004), "Internal and External Labour Markets: A Personnel Economics Approach", *Labour Economics*, Vol. 11, No. 5.

Learning Skill Council (2006), *Third National Employer Skills Survey*.

Leitch, S. (2006), "Prosperity for All in the Global Economy-World-class Skills", Leitch Review of Skills, HM Treasury report, London.

Machin, S. and S. McNally (2007), "Tertiary Education Systems and Labour Markets", paper commissioned for the "OECD Thematic Review of Tertiary education", Directorate for Education, OECD, Paris. *www.oecd.org/edu/tertiary/review*

Machin, S. and P. Puhani, (2006), "The Contribution of Degree Subject to the Gender Wage Gap for Graduates", *mimeo*, University College London.

Machin, S. and J. van Reenen (2006), "Technology and Changes in Skill Structure: Evidence from Seven OECD countries", *Quarterly Journal of Economics*, No. 113.

McIntosh, S. (2005), "Evidence on the Balance of Supply and Demand for Qualified Workers" in S. Machin and A. Vignoles (eds.), *What's the Good of Education? The Economics of Education in the UK*, Princeton University Press.

Montmarquette, C., K. Cannings and S. Mahseredjian (1997), "How Do Young People Choose College Majors?", *CIRANO Scientific Series*, No 97s-38, Montreal.

OECD (2004), *Career Guidance and Public Policy: Bridging the Gap*, OECD, Paris.

OECD (2006a), *Employment Outlook*, OECD, Paris.

OECD (2006b), *Live Longer, Work Longer*, OECD, Paris.

OECD (2007a), *Education at a Glance: OECD Indicators 2007*, OECD, Paris.

OECD (2007b), *Employment Outlook*, OECD, Paris.

OECD (2007c), *Qualifications Systems: Bridges to Lifelong Learning*, OECD, Paris.

OECD and the European Commission (2004), *Career Guidance: A Handbook for Policy Makers*, OECD/European Communities.

Ohkusa, Y., G. Brunello and K. Ariga (1997), "Occupational and Internal Labor Markets in Japan", *Industrial Relations*, Vol. 36, No. 4.

Oliveira Martins, J., R. Boarini, H. Strauss, C. de la Maisonneuve and C. Saadi (2007), "The Policy Determinants of Investment in Higher Education", OECD Economics Department Working Papers, No. 576, Paris.

Quintini, G. and S. Martin (2006), "Starting Well or Losing Their Way? The Position of Youth in the Labour Market in OECD Countries", OECD Social, Employment and Migration Working Papers, No. 39, OECD, Paris.

Reinhardt, U.E. (2002), "Dreaming the American Dream: Once More Around on Physician Workforce Policy", *Health Affairs*, Vol. 21, No. 5.

Rochester, M.K. (1994), "Equivalence of qualifications in Anglo/American countries", International Federation of Library Associations 60th General Conference, 21-27 August.

Ryoo, J. and S. Rosen (2004), "The Engineering Labor Market", *Journal of Political Economy*, Vol. 112, No. 1.

Seybert, H. (2007), "Gender differences in the use of computers and the Internet", in *Statistics in Focus* No. 119/2007, Eurostat.

Sloane, P., H. Battu and P. Seaman (1999), "Overeducation, Undereducation and the British Labour Market", Applied Economics, No. 31.

Spetz, J. and R. Given (2003), "The Future of Nursing Shortages: Will Wages Close the Gap?", *Health Affairs*, Vol. 22, No. 6.

Sultana, R.G. (2004), "Guidance Policies in the Knowledge Society: Trends, Challenges and Responses across Europe: A Cedefop synthesis report". *Cedefop Panorama Series* No. 85, Office for Official Publications of the European Commission, Luxembourg, 2004.

Usher, A. (2006), "Grants for Students: What They Do, Why They Work", *Canadian Education Report Series*, Educational Policy Institute; Toronto, Ontario.

Verhaest, D. and E. Omey (2004), "What Determines Measured Overeducation?", Universiteit Gent, Faculteit Economie En Bedrijfskunde, Working Paper 2004/216.

Wasmer, E., P. Fredriksson, A. Lamo, J. Messina and G. Peri (2007), *The Macroeconomics of Education,* in G. Brunello, P. Garibaldi and E. Wasmer (eds.), *Education and Training in Europe*, Oxford University Press, June 2007.

Watts, A.G. and R.G. Sultana (2004), "Career Guidance Policies in 37 Countries: Contrasts and Common Themes", *International Journal for Educational and Vocational Guidance*, Vol. 4, No. 2-3, January 2004.

Webbink, D. and J. Hartog (2004), "Can Students Predict Starting Salaries? Yes!" *Economics of Education Review*, Vol. 23, No. 2, April.

Wolter, S. and A. Zbinden (2002), "Labour Market Expectations of Swiss University Students", *International Journal of Manpower*, Vol. 23, Issue 5.

Young, M. (2007), "Qualifications frameworks: some conceptual issues", *European Journal of Education,* Vol. 42, December 2007.

10. Internationalisation: Shaping Strategies in the National Context

10.1 Introduction

Internationalisation features among the key transformations of tertiary education provision in developed industrial countries since the late 1980s – alongside the massification of participation. Despite signs of international student and academic mobility in medieval European universities, which was facilitated by the common use of Latin (Scott, 2000), international activities have in more recent times long been bound to research. Teaching and learning remained essentially national, both in terms of student populations as well as in terms of provision. The national oversight of tertiary education found its expression in a long tradition of State-funded tertiary education institutions (TEIs) in many OECD countries.

This Chapter reviews internationalisation in tertiary education. It starts by providing an overview of concepts in and forms of internationalisation. It then reviews trends and developments in internationalisation of tertiary education. The chapter further discusses the main issues at stake and the related policy challenges. It includes descriptions of policy initiatives in participating countries, and develops policy options for countries to consider in their national context.

10.2 Definition and forms of internationalisation

The process of internationalisation of tertiary education has accelerated over the past two decades, both in response to and in conjunction with the broader process of globalisation, leading to some confusion in terminology and concepts. This first section therefore starts with a clarification of definitions and reviews the reasons why interest in internationalisation has soared in recent years, and why internationalisation matters for tertiary education policy. An examination of the different forms that internationalisation takes then follows.

10.2.1 What is internationalisation and why does it matter?

Definitions: internationalisation vs. *globalisation*

The two concepts of internationalisation and globalisation are often used interchangeably to reflect education-related cross-border activities. Yet, Knight (2001) argues that it is necessary to distinguish the meaning of these terms in discussions of the tertiary education sector.

The process of globalisation can be defined as "the widening, deepening and speeding up of worldwide interconnectedness" (Held *et al.*, 1999) and the emergence over the last three decades of "complex electronically networked relations between institutions and

between people, creating an open information environment and synchronous communications in real time" (Marginson, 2004). As a result of economic, technological and knowledge advances, countries and people are increasingly integrated irrespective of national boundaries, although Knight and de Wit (1997) indicates that globalisation affects each country in a different way due to a nation's individual history, traditions, culture and priorities.

By contrast, the process of internationalisation relates to "the process of integrating an international, intercultural or global dimension into the purpose, functions or delivery of tertiary education" (Knight, 2003). According to Knight (2001), "the key element in internationalisation is the notion of the relationship between or among nations and cultural identities, thereby implying that nation-state and culture are preserved". While the homogenisation of culture is often cited as a critical concern or effect of globalisation (Scott, 1998), internationalisation – by respecting and helping to preserve nation-states – is therefore seen as a very different concept.

These two concepts are however linked to the extent that the process of internationalisation of tertiary education cannot be interpreted independently of the parallel process of globalisation in the economic and social sphere. As put by Knight (2001), "one can think of globalisation as the catalyst, but of internationalisation as the response, albeit a proactive response."

Growing interest in internationalisation

The issue of internationalisation of tertiary education – and by extension the range of policies designed to monitor and steer internationalisation trends – have received growing interest in recent years. Several trends have prompted this interest.

First of all, the process of globalisation in the economic sphere has translated in the education sphere into growing demands for an international dimension of education and training. Indeed, as world economies become increasingly inter-connected, international skills have grown in importance to operate on a global scale. Globally-oriented firms seek internationally-competent workers versed in foreign languages and mastering basic inter-cultural skills to successfully interact with international partners. Governments as well as individuals are looking to tertiary education to play a role in broadening the horizons of students.

In addition, the rapid acceleration in global economic integration over the past fifteen years has translated into a growing internationalisation of the labour market for the highly skilled. This has in turn led to a globalisation of some professions and made global or internationally recognised qualifications increasingly important, especially in the areas that are needed by trans-national corporations and the business community at large (Bennell and Pierce, 2003; Peace Lenn and Campos, 1997).

The internationalisation of the labour market for the highly skilled is also connected to the increasing demand for tertiary educated workers for the new economy. OECD employers will increasingly need to look abroad for talent as new graduates will become insufficient to replace staff going into retirement. Internationalisation can be seen as part of a longer term skill development strategy through the attraction of international students with a view to subsequent immigration for some of them.

Demographic trends have also triggered interest in internationalisation by TEIs. In many OECD countries, the transition from elite to mass participation in tertiary education since the 1980s has resulted in unprecedented expansion in tertiary education provision – often by increasing recourse to private providers. Yet, some of these countries now face decreases in domestic enrolments. Internationalisation is increasingly seen as a way to compensate for this decrease and ensure the viability of some TEIs. By contrast, many smaller and/or less developed nations – especially in China and South-East Asia – face the opposite situation of growing demand for tertiary education. Confronted with a rapid expansion in their youth populations and bottlenecks in tertiary education provision, they tend to see internationalisation as a cost-effective alternative to national provision, and as a way to increase capacity.

The match between the insufficient capacity of emerging nations and the oversupply of some OECD tertiary education systems has been facilitated by the trend towards deregulation of tertiary education in many OECD countries, which permitted the emergence of new forms of educational offerings, including distance learning and cross-border operations of TEIs.

Lastly, the emergence and rapid expansion of tertiary education export industries in some OECD countries has heightened awareness on the trade value of internationalisation from a macroeconomic perspective. The difficult international negotiations on education services' trade liberalisation reflect this acknowledgement that the long term trend towards greater internationalisation of education (Figure 10.1) is having a growing impact on countries' balances of payments (OECD, 2004).

Why does it matter?

Over the past two decades, tertiary education and intercultural skills have grown in importance. In this context, there is a growing demand from students and employers alike for tertiary qualifications that have a strong international component – both from the perspective of the curriculum content and exposure to different cultures that helps develop intercultural skills and competencies.

At the national level, internationalisation also matters, insofar as it allows countries to maintain or improve their economic performance and relative standing, and to achieve a number of social goals. Internationalisation contributes to the efficiency of tertiary education systems in research – and by extension, to the national innovation capacity – as a result of externalities in knowledge production. Academic exchanges allow for a faster circulation and dissemination of research results produced elsewhere and provide a significant impetus to research and innovation that would not occur in isolation. Another advantage derives from the increased opportunities for cost-sharing that arise when bringing together expertise from several research settings. Internationalisation can also serve the third mission of TEIs, through its contribution to multiculturalism and the development of cross-cultural awareness. This impact is strongest for those directly involved in student exchange – mobile students and academics – but the broader student population may enhance its cross-cultural awareness through the presence of international students on campuses or the increasing international content of tertiary programmes.

Beyond the tertiary education sector, internationalisation also contributes to building strong links between countries whose nationals are involved in student exchange. Internationalisation may thus bring significant economic, trade and diplomatic benefits as

former international students are likely to keep privileged relationships with their countries of study throughout their lives and careers.

10.2.2 The different forms of internationalisation

Although student and academic mobility are clearly one of the most observable expressions of internationalisation, they do not constitute its unique expression. The process of internationalisation manifests itself in a variety of ways, and there is often no agreement on what internationalisation means in practice. Illustrating this confusion, lengthy discussions took place in one of the countries taking part in the Review to assess whether internationalisation relates to teaching courses in a foreign language, having a large population of international students and faculty, or delivering programmes whose quality is on par with international standards. Knight (2004) acknowledges that internationalisation is interpreted and used in different ways in different countries and by different stakeholders, and advocates the use of the terms "international, intercultural and global" in the definition of internationalisation to reflect its breadth:

> *International is used in the sense of relationships between and among nations, cultures or countries. (…) Internationalisation is also about relating to the diversity of cultures that exists within countries, communities, and institutions, and so intercultural is used to address aspects of internationalisation at home. Finally, global (…) provides the sense of worldwide scope.*

As a matter of fact, internationalisation covers the full spectrum of educational programmes and activities that contribute to internationalised learning, ranging from the internationalisation of programmes' content and delivery to the mobility of students and scholars, notwithstanding intermediate forms of trans-national education such as the cross-border mobility of TEIs and/or their programmes. Another major form of internationalisation relates to the growing convergence of tertiary education systems.

Convergence of tertiary education systems and international recognition arrangements

The most prominent form of internationalisation from the perspective of public policy relates to reforms undertaken in many countries over the past decade to enhance the transparency and inter-operability of their tertiary education systems, either through the convergence and streamlining of their national degree structures or the convergence of instruments to translate and recognise credits and qualifications earned elsewhere.

This convergence phenomenon has been most evident in the European setting where the Bologna Declaration of 29 European Ministers of Education in June 1999 stated as a key objective for Europe to establish a *European Higher Education Area* (EHEA) by 2010, and in particular to enhance the comparability and compatibility of higher education structures and degrees in Europe in order to increase the employability of European citizens and the competitiveness and attractiveness of European tertiary education (Bologna Secretariat, 1999). The Bologna Declaration proposed to adopt a system of easily readable and comparable degrees based on a common two-cycle degree structure. A third degree was added to this structure at the Berlin Ministerial meeting in 2003 to include doctorate degrees, resulting in a three-degree structure often referred to as Bachelor-Master-Doctorate (BMD) structure.

The Bologna Process is far-reaching, insofar as a number of countries outside the EU have endorsed the Bologna Declaration and joined its convergence process since 1999. Participants in the Bologna Process now reach 46 countries spread geographically between Iceland, Portugal, Turkey and the Russian Federation. This convergence of degree structures beyond EU borders highlights the compatibility and convergence trends that are currently taking place at the international level. Indeed, not only does the Bologna Process extend beyond the EU borders, but several authors have also noted the resemblances between the Bologna degree structure and the American model (Douglass, 2006; Tapper and Palfreyman, 2005). Bologna developments are also closely monitored in Australia, Africa and Latin America. Similarly, the post-war United States influence in Korea coupled with the increase in joint programmes and degrees with foreign TEIs are expected to enhance the international compatibility of the Korean degree structure.

With respect to recognition instruments, the establishment of credit transfer schemes allowing students to validate study credits obtained elsewhere – including in other countries – constitutes a systematic way of describing educational programmes by attaching credits to their components, on the basis of different parameters such as student workload or learning outcomes.

A major development in this area has been the Bologna Declaration that engaged signatory countries to establish systems of credit compatible with the European Credit Transfer and Accumulation System (ECTS) "as a proper means of promoting the most widespread student mobility" (Bologna Secretariat, 1999). Indeed, the Bologna Process aims at establishing pan-European transparency tools, in which the ECTS is to play a crucial role. The European Credit Transfer and Accumulation System is a student-centred system based on the student workload required to achieve the objectives of a programme in terms of the learning outcomes and competences to be acquired.[78]

Meanwhile, the Diploma Supplement was developed as a follow-up tool for the implementation of the Lisbon Recognition Convention (Council of Europe, 2005). It is a document attached to each tertiary education diploma which provides a description of the nature, level, context, content and status of the studies that were successfully completed by the graduate. The Diploma Supplement is intended to enhance transparency and to facilitate academic and professional recognition of tertiary qualifications.[79]

These developments also extend beyond the European area. Douglass (2006) notes the parallel between the ECTS and the American degree standards and matriculation system. In addition, the association for *University Mobility in Asia and the Pacific*

78. The ECTS has been developed as part of the EU Erasmus programme for co-operation in higher education, and is now part of the integrated EU Lifelong Learning Programme 2007–2013. It is based on the principle that 60 credits measure the workload of a full-time student during one academic year hence one credit usually stands for around 25 to 30 working hours. Credits in ECTS are obtained after successful completion of the work required and appropriate assessment of the learning outcomes achieved. The ECTS Users' Guide which provides guidance on the use of ECTS is currently being revised to respond to the request of the Ministers from the 46 countries participating in the EHEA that ECTS be implemented properly on the basis of learning outcomes and student workload.

79. The Diploma Supplement was developed jointly by the Council of Europe, UNESCO and the European Commission to implement the Lisbon Recognition Convention. The Convention is legally binding for all parties that have ratified or accessed it. As the Convention and its subsidiary texts, the Diploma Supplement is fundamental to ensure quality procedures for the recognition of higher education qualifications. It came into force in 1999.

(UMAP[80]) has taken steps to pilot a UMAP Credit Transfer Scheme (UCTS) based on the ECTS model in the Asia-Pacific region (Mongkhonvanit and Emery, 2003). Countries eligible to UMAP membership include Australia, Chile, China, Japan, Korea, New Zealand and the Russian Federation among participants in the Review, as well as Canada, the United States and Malaysia among other significant players in international education. Therefore, the influence of ECTS and UCTS on other countries' practices is likely to increase in the future – through enhanced compatibility between credit transfer schemes or mere adoption of the European or Asia-Pacific schemes. The Diploma Supplement also extends beyond Europe and is being piloted in Australia.

Internationalisation of programmes' content and delivery

Another form of internationalisation consists in incorporating intercultural and international dimensions in the curriculum, teaching, research and extracurricular activities of TEIs to help students develop international and intercultural skills without ever leaving their country (OECD, 2004). This form of internationalisation – focusing on programmes' content and delivery – is often referred to as "internationalisation at home", an expression that was developed in reaction to the growing emphasis on student and academic mobility, to bring attention to those aspects of internationalisation which happen on a domestic campus (Wächter, 2003). From a policy perspective, this aspect is critical to develop internationally-competent citizens insofar as the overwhelming majority of tertiary students do not participate in more direct cross-cultural education experiences such as international mobility. In 2003, only 4% of OECD tertiary students were enrolled abroad, highlighting the need for home-based international exposure and training (OECD, 2005a).

A key component of internationalisation at home relates to the internationalisation of the curriculum (Bennell and Pierce, 2003), and is most commonly adopted through the "infusion approach", which consists in infusing the entire under-graduate curriculum with a sense of the international and global (Tonkin and Edwards, 1981).

While some authors acknowledge the growing importance of curriculum internationalisation to face the challenges of globalisation and increasing competition in tertiary education (Huang, 2006), efforts towards internationalising tertiary curricula have encountered critics and resistances within the academic world. In particular, some have expressed worries that the global competition for students could push towards a uniform market-driven curriculum – the McUniversity – which would spread mono-cultural and Anglo-centric views as if they were universal (Ryan, 2000; Parker and Jary, 1995). In addition, De Vita and Case (2003) criticise the infusion approach on the grounds that it builds upon an exclusively cognitive western learning philosophy – emphasising summative knowledge outcomes over more formative and reflexive processes. But in their view, the main drawback of international curriculum probably lies in the fact that it only provides partial exposure to international and intercultural differences through passive class-based learning, instead of active participation in cross-cultural interactions (De Vita and Case, 2003).

There are, however, ways to overcome the absence of direct intercultural interactions that characterise infused international curriculum. Making campuses and faculties more cosmopolitan can enhance intercultural interactions with foreigners, and in fact Japan

80. UMAP is an association of government and non-government representatives of the higher education sector in the Asia-Pacific region.

publicly subsidises international enrolments to assist the internationalisation of its domestic students (Marginson, 2007). Nevertheless, international students' surveys suggest that interactions with domestic students are not always as intensive as could be hoped, with international students more likely to mix with co-nationals or other international students (Deumert *et al.*, 2005; United Kingdom Council for International Education, 2006).

In addition to curriculum internationalisation and intercultural interactions on campus, Wächter (2003) argues that internationalisation at home should also integrate a foreign language component, as a communication tool to enable graduates to communicate across borders.

People mobility

The third – highly visible – form of internationalisation corresponds to the mobility of individuals across borders. In many nations, international mobility is a key policy theme, either from the perspective of sending nationals abroad or in some countries from the perspective of attracting foreigners as students, R&D workers, or even as potential skilled immigrants.

International student mobility can take many forms, from enrolment in a different country for a full-degree programme to enrolment in language programmes aimed at foreigners that do not strictly correspond to traditional programmes offered to domestic students. A significant part of student mobility also occurs as part of multilateral programmes such as the Erasmus and Nordplus programmes in Europe and in the Nordic and Baltic states respectively.[81] Increasingly, student mobility also takes place through inter-institutional agreements for short-term exchanges or entire study programmes designed in cooperation between partner TEIs – sometimes leading to double or joint degrees. Although all these forms of mobility are relevant to the process of internationalisation at the institutional level, it should be borne in mind that only the first one – namely the mobility of students who enrol regularly in another country for a full academic year – is included in international data such as those published by the OECD (2007a) and presented in the remainder of this Chapter.

Academic staff and researchers also cross borders and contribute to the process of internationalisation, through short term visits for professional development, sabbatical leave or regular employment in a foreign country for extended periods of time (OECD, 2004). These movements are important to build lasting scientific relations and contacts with TEIs in other countries. In addition, staff mobility sometimes happen in relation to programme mobility, for instance when an academic travels abroad to teach a course from their TEI in a branch campus or through an exchange programme.

The mobility of individuals across borders provides for more direct intercultural interactions with locals in the host country, and more intense international experience from the perspective of participants. In acknowledgement of this, several OECD governments – especially so in the European Union – have set up schemes and policies to

81. The Erasmus programme was established in 1987 by the European Commission and forms a major part of the European Union Lifelong Learning Programme 2007–2013. Its aim is to encourage and support academic mobility of higher education students and teachers within the EU, the European Economic Area (EEA), as well as candidate countries and Switzerland. Likewise, the Nordplus programme supports academic mobility, networks and joint projects between Nordic and Baltic States.

promote such mobility to foster intercultural contacts and help to build social networks for the future.

Institution and programme mobility

Lastly, new forms of internationalisation have emerged over the past 15 years, characterised by the mobility across borders of TEIs or their programmes. These forms of international delivery – which are often referred to as trans-national education – correspond to education activities in which the learners are located in a country different from the one where the awarding TEI is based (van der Wende, 2001). Several arrangements exist under the broad category of institution and programme mobility, as described by van der Wende (1999), Benell and Pierce (2003) and OECD (2004).

The mobility of educational programmes encompasses distance education courses offered by a TEI located abroad, joint courses or programmes offered in partnership between a local provider and a foreign TEI, or franchised courses or programmes whereby foreign TEIs franchise a local provider to offer their degrees, sometimes without involvement of staff from the home TEI.

The mobility of TEIs corresponds to foreign direct investment by TEIs or companies. The most accomplished forms of institution mobility are the opening of foreign campuses by universities and/or commercial providers or the establishment of a distinctly new TEI, but it may also involve participation in the capital of foreign TEIs, or partnerships with local TEIs, especially when government regulations forbid full control of TEIs by foreign capital.

Each of these means of delivery can exist alone, but trans-national education often involves more than one. Indeed, programme and institution mobility are actually rarely experienced in a pure form (*i.e.* one without the other) and more often go together, hence their grouping throughout this Chapter.

Programme and institution mobility is also often linked to people mobility: through academic staff mobility to teach in foreign campuses, or various partnership arrangements between TEIs located in different countries that involve the mobility of students between TEIs. For instance, twinning arrangements are a growing phenomenon in which students complete the first years of the programme in their own country before completing their degree abroad at the partner TEI. Foundation link courses constitute similar arrangements in which students take courses in their own countries to be directly recruited to degree courses at partner TEIs abroad (Benell and Pierce, 2003). These new forms of internationalisation – through foreign campuses and other kinds of deeper international engagement – are often used by TEIs as platforms for other activities such as marketing, international student recruitment, research collaboration, and establishment of research links.

10.3 Trends in internationalisation of tertiary education

All forms of internationalisation have developed and grown in importance over the past three decades. Student mobility is an important and relatively well documented aspect of this growth, but other forms of internationalisation have also gained momentum.

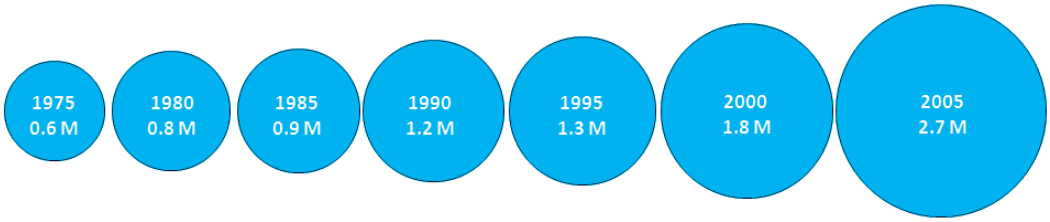
10.3.1 Student and academics' mobility

Student mobility

International student mobility[82] has increased greatly over the past three decades, from 0.6 million students worldwide in 1975 to 2.7 million in 2005 (Figure 10.1).

Figure 10.1. Three decades of growth in student mobility

Growth in the number of students enrolled outside their country of citizenship (1975-2005)



Source: OECD, 2007a.

Trends indicate an acceleration of this growth in recent years – with a doubling of foreign students since 1995 – mirroring the growing globalisation of economies and societies. This exponential growth is projected to continue in the future. Indeed, market research forecasts international student mobility to reach approximately 5.8 millions around 2020 (Böhm *et al.*, 2004) and 8 millions by 2025 (Altbach and Bassett, 2004).

The growth in international student mobility is significant *per se*, but also when put in the perspective of the corresponding growth in tertiary enrolments. In OECD countries, numbers of foreign students rose much faster than total numbers of tertiary students between 2000 and 2005, by 49% for the former against 21% for the latter (OECD, 2007b). Tertiary campuses have thus become more cosmopolitan thereby intensifying the intercultural aspect of internationalisation at home in host countries.

82. The data presented in this Chapter and drawing upon OECD's *Education at a Glance* (OECD, 2007a) cover only mobility for a degree programme – *i.e.* in which international students formally enrol in their country of destination. Short-term mobility and exchanges are not included.

Ideally, international student mobility is deemed to measure students who have crossed borders for the purpose of study. According to country-specific immigration legislations, mobility arrangements and data availability constraints, these international students can be defined in operational terms either as students who are not permanent residents of their country of study or alternatively as students who obtained their prior education in a different country (Kelo, Teichler and Wächter, 2006).

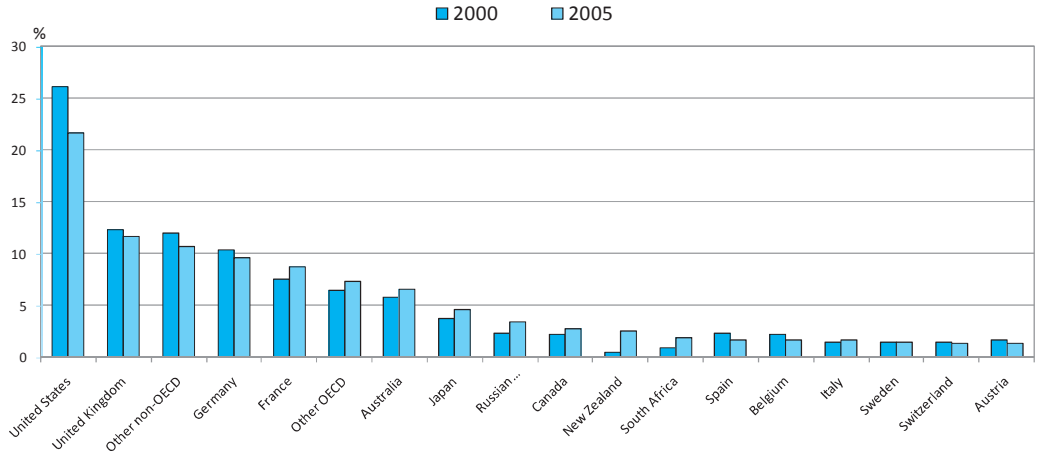
However, long term time series following this concept are not yet available hence all trend data presented in this Chapter are based upon the concept of foreign student, which is an imperfect proxy of student mobility insofar as it includes some immigrant foreigners who have arrived to their country of study before entering tertiary education. These foreign students are not true participants in international mobility, which results in overestimation of student mobility in countries with low naturalisation rates of their immigrants.

By contrast, 2005 data are generally based on the concept of student mobility described above, with the exception of a few countries which are not yet able to report data on student mobility and submit data on foreign students. The convention adopted throughout this Chapter is to use the terminology "international student" when referring to student mobility while the terminology "foreign student" relates to the imperfect proxy of non-citizens.

Nonetheless, this overall growth in international student mobility has affected countries differently. While the bulk of student mobility is still directed towards the OECD area, some new players on the international education market have emerged within and outside the OECD in the past few years, as illustrated by changes in market shares (Figure 10.2). These changes reflect different emphases of internationalisation policies across countries, ranging from proactive marketing policies in the Asia-Pacific region to a more passive approach in the traditionally dominant United States.

Figure 10.2. Destinations of international students over time: changes in market shares (2000 and 2005)

Proportions of all foreign students worldwide enrolled in each destination



Source: OECD, 2007a.

While Sakellaris and Spilimbergo noted in 2000 that the share of foreign students going to the United States had remained constant between 1965 and 1993 – at about 33% – the past decade has seen quite a different evolution. Australia, Canada, France, Japan, the Netherlands, New Zealand, the Russian Federation and South Africa have gained momentum on the international market for tertiary education. By contrast other destinations have lost ground in relative terms, most notably the United States but also Belgium, Chile, Germany, Spain, Switzerland and the United Kingdom (OECD, 2007a). Australia might shortly join this second group due to a flattening of demand from new international enrolees.

The proportion of international students in tertiary enrolments highlights Australia, Belgium,[83] France, New Zealand, Switzerland and the United Kingdom as having the most cosmopolitan campuses among the participants in the Review, with more than one out of ten international students among enrolees in 2005. In contrast, international students represent less than 3% of tertiary students in Chile, Finland, Greece, Japan, Korea, Norway, Poland, the Russian Federation, Slovenia and Spain (OECD, 2007a).

Countries also show different levels of intensity in the outward mobility of their nationals. Greece, Iceland and Norway were the biggest senders of students abroad in 2003, with a student expatriate population equivalent to more than 7% of their tertiary enrolments. Belgium, Finland, New Zealand,[84] Portugal, Sweden and Switzerland also

83. In the case of Belgium, the data include immigrant foreigners and might be overestimated.

84. In the case of New Zealand, this pattern also partly reflects the large proportion of the population living in Australia on a long-term basis.

had substantial proportions of students enrolled abroad, at more than 3% of domestic enrolments (OECD, 2005a).

Academics mobility

By contrast with student mobility which is fairly well documented, data are scarce when it comes to the international mobility of academic staff. The situation is further complicated by the multiple forms of academic mobility, from short-term moves of a few days/weeks to longer movements of over one year.

With respect to long-term mobility and employment abroad, the extent to which such mobility is permitted by the national policy framework provides a first indication of the extent of long-term international academics mobility in different countries. Table 10.1 indicates in this respect that most countries taking part in the Review allow the recruitment of international academic staff to work in their TEIs. This is indeed the case with no restrictions in Belgium (Flemish Community), Chile, Croatia, the Czech Republic, Estonia, Finland, Greece, Japan, Korea, New Zealand, Norway, Poland, Portugal, the Russian Federation, Spain, Sweden, Switzerland and the United Kingdom. In addition, the Netherlands leave this option to the discretion of TEIs while China consents to the recruitment of international staff in fields of study where shortages exist.

But this official openness to the recruitment of foreign nationals translates differently across countries in terms of actual mobility. Some participants in the Review report high levels of incoming movements – proxied by the proportion of foreign nationals in the academic staff of their TEIs. This is for instance the case in Switzerland where a third of academics are foreigners, the Netherlands (25% in the research universities), the United Kingdom (17%) or New Zealand. By contrast, the incoming mobility of academics is reportedly low in Finland as well as in the universities of applied science of the Netherlands and in Korea (2%). Mora (2004) also deplores that the internationalisation of academic staff is extremely limited in Spanish universities while Musselin (2004) sees it as more accidental than anything else in the European context. Jacobs and van der Ploeg (2006) argue that in much of Europe the market for lecturers and professors is closed to outsiders, although the United Kingdom, Scandinavia and the Netherlands have more open recruitment.

However, trends suggest that this form of long-term incoming mobility has increased in Korea in recent years as a result of universities' proactive invitations to professors from abroad. Similarly, TEIs in New Zealand are increasingly seeking to develop research contacts with TEIs abroad through hosting foreign academics. The internationalisation of faculties is often the result of individual TEIs' proactive policies. For instance, the *New University of Lisbon*'s faculty of economics has 96% foreigners among assistant professors, but this remains untypical of the general Portuguese situation.

Conversely, a number of countries allow their tenured academic staff to work in TEIs abroad for a temporary expatriation while guaranteeing their position for a given period. This is the case in China, the Czech Republic, Estonia, Finland, Korea, Mexico, New Zealand, Poland, the Russian Federation, Spain, Sweden, Switzerland and the United Kingdom. Croatia, Greece and Portugal also permit the temporary expatriation of academic staff within the framework of sabbatical leaves while this is left to the discretion of TEIs in Belgium (Flemish Community), the Netherlands and Norway (Table 10.1).

Table 10.1. Forms of internationalisation permitted by the national policy framework, 2007

	Delivery of educational programmes in foreign languages	Recruitment of foreign academic staff to work in domestic TEIs	Temporary expatriation of domestic tenured academic staff to work in TEIs abroad	Establishment of campuses owned by foreign TEIs on the national territory	Establishment of campuses abroad by domestic TEIs	Establishment of joint programmes/degrees with foreign TEIs
Australia[1]	No	*a*[2]	*a*[2]	Yes (subject to accreditation)	Yes (subject to approval for some TEIs[3])	Yes (subject to approval for some TEIs[3])
Belgium (Flemish Community)	Yes (master's programmes)	Yes	At the discretion of TEIs	Yes (subject to accreditation)	Yes (subject to accreditation and being self-supporting)	Yes
Chile	No	Yes	No	No (but participation of foreign capital in domestic private TEIs[4] is permitted)	No	No
China	No	Yes (in fields with staff shortages)	Yes	Yes (joint ownership by Chinese and foreign TEIs, subject to accreditation)	No	No
Croatia	Yes	Yes	Yes (sabbatical leaves)	Yes	No	Yes
Czech Republic	Yes	Yes	Yes	Yes	Yes	Yes
Estonia	Yes	Yes	Yes	No	No (for public TEIs)	Yes
Finland	Yes	Yes	Yes	Yes	Yes	Yes
Greece	Yes (post-graduate programmes)	Yes	Yes (sabbatical leaves and internat. exchange programmes)	No	No	Yes
Iceland	Yes	*m*	*m*	*m*	*m*	Yes
Japan	Yes	Yes	No	Yes	Yes (subject to restrictions)	Yes
Korea	Yes	Yes	Yes	Yes (Jeju Island, Free Economic Zones)	Yes (subject to restrictions on ownership of foreign premises)	Yes (subject to delivery of the programme in a domestic TEI)
Mexico	At the discretion of TEIs	No	Yes	Yes	Yes	Yes
Netherlands	At the discretion of TEIs	At the discretion of TEIs	At the discretion of TEIs	Yes	At the discretion of TEIs (subject to being self-supported and qualifications not recognised)	At the discretion of TEIs
New Zealand	Yes	Yes	Yes	Yes (subject to accreditation)	Yes (subject to accreditation)	Yes
Norway	Yes	Yes	At the discretion of TEIs	Yes (qualifications not necessarily recognised)	Yes (not covered by Norwegian quality assurance unless exception)	Yes
Poland	Yes	Yes	Yes	Yes (subject to restrictions[5])	Yes (subject to government approval)	Yes
Portugal	Yes	Yes	Yes (sabbatical leaves)	Yes	Yes	Yes
Russian Federation	Yes	Yes	Yes	Yes	Yes	Yes (double degrees)
Spain[1]	Yes	Yes	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	Yes (subject to accreditation to award recognised degrees)	Yes	Yes (no joint degrees)
Switzerland	At the discretion of TEIs	Yes	Yes	Yes	No	Yes
United Kingdom	No	Yes	Yes	Yes (qualifications not necessarily recognised)	Yes	Yes

Notes: *a*: Information not applicable because the category does not apply; *m*: Information not available; *TEI*: Tertiary education institution.
1. Information concerns universities only and does not account for the non-university sector.
2. The national policy framework does not make any provision on this aspect.
3. Non self-accrediting TEIs require approval from Australian government accreditation authorities to offer Australian qualifications overseas. From the beginning of 2008, offshore delivery of Australian higher education qualifications will be assessed as part of the regular quality audit processes that apply to each type of TEI.
4. The same licensing requirements as domestic TEIs must be fulfilled.
5. The restrictions will be indicated in a specific regulation.

Source: Derived from information supplied by countries participating in the project. The table should be interpreted as providing broad indications only, and not strict comparability across countries.

Reported trends suggest however that the number of academics and researchers going abroad for long periods has declined in recent years in some countries, for instance in Finland and Sweden. An exception is New Zealand where TEIs increasingly send their staff on sabbatical leave to develop research contacts. Marginson and van der Wende (2007a) also note that there is no clear increase in longer term academic migration, with the exception of mobility to the United States. Moreover, this type of academic mobility is essentially limited to the S&T fields.

In most countries, the main internationalisation of faculty is comprised by short-term leave, exchange visits and research collaborations (Enders and de Weert, 2004), and the proportion of teachers involved in exchanges for short stays abroad is considerably larger than it is for longer periods. Yet, data in this area are even more limited, with the exception of organised mobility schemes such as Erasmus in the EU area and the Nordplus programme among Nordic and Baltic countries. These data show that the duration of these stays is comparatively short – at 6.2 days on average (European Commission, 2007) – while the proportion of tertiary staff involved varies between countries participating in the Review, from a low 1.1% in the United Kingdom to as high as 5.6% in Spain in 2005. Mobility tend to be highest in Belgium, the Czech Republic, Estonia, Iceland, and most importantly Spain and Finland (Table 10.2).

Table 10.2. Teacher mobility under the EU Socrates programme

Percentage of academic staff involved (2005)

	Incoming	Outgoing
Belgium	3.2	3.4
Czech Republic	3.0	5.0
Estonia	2.6	3.9
Finland	6.5	5.3
France	1.7	1.5
Greece	2.3	1.5
Iceland	2.6	3.0
Netherlands	1.2	1.5
Poland	1.1	1.5
Portugal	2.6	1.6
Spain	4.9	5.6
Sweden	1.5	1.4
United Kingdom	1.1	1.1

Source: Calculations based on OECD, 2007b; and European Commission, 2007.

Underlying factors in student/academics' mobility

The growth in international student and academic mobility stems from various driving factors. Students and academics move across countries for a number of reasons, which have to do with the perceived quality of a foreign educational (or academic) experience, the value of this international experience on the labour market, the general attractiveness of the intellectual, cultural and political climate in the country of destination, and in the case of students, the ease of access to tertiary education abroad, including costs and the language of instruction. Yet, the issue of what drives students to pursue their education in a different country in the first place, and then choose a specific destination is complex,

and has not generated much systematic empirical research and analysis (Lee *et al.*, 2006). Partial information is however available in the case of student mobility, and helps identify the most salient underlying factors.

For instance, Kim (1998) has tested the importance of various explanatory factors on aggregate student mobility flows over time to elucidate international students' choice of a country of study. His results suggest that similar language and religion of the host country are important. Distance by contrast tends to dissuade international students – although Kim notes a fading effect of distance over time as transportation costs have fallen – while political stability became more important in recent years.

In a different fashion, Kemp *et al.* (1998) have used individual data to explore, in a marketing perspective, the study abroad intentions and preferred destinations of Indonesian and Taiwanese students. Their results show that the likelihood to study abroad is higher for males and respondents who can count on family support to finance their studies. The decision to study abroad is also enhanced by the perception that an overseas qualification is superior to domestic qualifications, or when there is a perceived need to better understand Western culture. With respect to the choice of destination, their results are consistent with those of Kim (1998), and underline the positive impact of a safe environment, geographic proximity and the presence of a network of friends and relatives in the country of study. Other prominent factors include the educational reputation of the programmes and the availability of information on their content.

Although these empirical studies only provide partial evidence of the complex mix or inter-mingled factors affecting students' mobility decisions and choices of destinations, they enable the identification of key variables. These mirror related literature on migration determinants. This similarity has led Altbach (2004) to borrow the framework of push and pull factors to migration economics in order to describe the forces within the home country that "push" individuals to study overseas, and the forces within the host country that "pull" them.

Bottlenecks in domestic provision and absence of some specialisations

Among push factors, Altbach (2004) notes capacity constraints in sending countries or the absence of some specialisations as important drivers of international mobility, compelling students to go abroad in order to obtain a tertiary qualification unavailable or un-accessible domestically. Bottlenecks in domestic provision can indeed make entry into tertiary education highly competitive, and it is sometimes easier for students to gain entry in TEIs abroad. Huang (2006) describes the impact of such bottlenecks in China while Kemp *et al.* (1998) highlight the quantitative importance of these factors in Indonesia and Taiwan. At the aggregate level, Cummings (1984) shows that excess demand for domestic tertiary education affects aggregate student enrolments abroad in the Asian context. But this phenomenon also explains student mobility within the OECD, where countries facing capacity constraints (*e.g.* Greece, Luxembourg) display high levels of outward student mobility (OECD, 2005a; OECD, 2007c). Outward mobility is also high in smaller education systems (*e.g.* Iceland, Ireland, Norway) which are unable to provide the full range of tertiary specialisations that their students might have interest in.

Financing of tertiary education in the country of origin and impact of tuition fees in alternate destinations

Related to capacity constraints in the sending country, is the way tertiary education is being financed in the country of origin of international students. Indeed, families have less incentive in investing large sums to support study abroad for their children if good quality education is available at home free of cost or nearly so (OECD, 2004). For these students, considerations of costs are likely to be important factors in deciding in which country to study. Conversely, students from countries where significant private investment is required for tertiary level studies at home may be more inclined to consider fee-paying provision abroad. This latter group of students is more likely to be sensitive to cost considerations from a consumer perspective, comparing value for money in alternative destinations.

Evidence suggests indeed that considerations of cost are certainly important factors in students' decision-making, but that this is not the case for all TEIs nor for all students (see Chapter 4).

With respect to TEIs, Marginson (2007) notes that cost issues are likely to be unimportant for the super league universities – those ranked among the top-20 or top-50 in the Shanghai or Times Higher Education rankings of world universities (Shanghai Jiao Tong University, 2007; Times Higher Education Supplement, 2007). These elite TEIs' appeal derives from their continued scarcity and prestige as positional goods, and the perceived social networks they may offer (Lee *et al.*, 2006).

Among the second tier universities however, rational consumer models apply and students are more likely to compare the cost of study in various destinations offering similar educational services. Australia and New Zealand have developed their tertiary education exports sector building – among others – on their lower cost of living and tuition fees relative to the United Kingdom and the United States (Figure 10.3; Marginson, 2007). Yet, this cost advantage has been eroding in recent years relative to the United States and the United Kingdom (IDP Education Australia, 2004). Meanwhile, other cheaper competitors have entered the international education market in South-East Asia whereas in Europe, Denmark, Finland, Norway and Sweden provide tertiary education free of charge (Table 10.3). This cost pattern associated with the existence of programmes in English probably explains part of the robust growth in the number of foreign students enrolled in some of these countries between 2000 and 2005 (OECD, 2007a).

Similarly, considerations of costs matter for some groups of students only, essentially those drawn from middle-class backgrounds, while the most affluent students are less constrained by levels of tuition fees and the cost of living in different destinations. A survey of Thai applicants to Australian TEIs shows for instance that for many of the elite, Australia is not the first choice. But the country attracts those unable to afford study in the United States and the United Kingdom (Pimpa, 2005).

The ability of students to pay for studies abroad depends to a large extent on their socio-economic background in their country of origin – *i.e.* elite or middle-class – but also for the second group on the more general economic conditions prevailing in their country of origin. Lee *et al.* (2006) have observed in this respect that middle-income countries host international students from poorer developing countries rather than developed nations, largely because of their financial affordability. This suggests a hierarchy of destination countries, with the most expensive countries of study – in terms

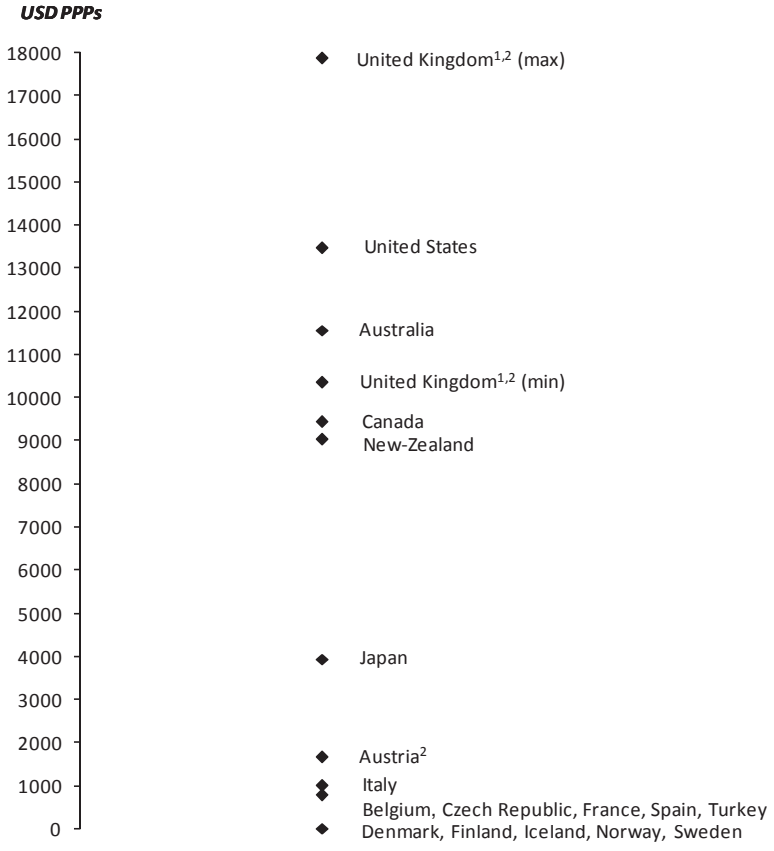
of tuition and living costs – attracting essentially students from affluent backgrounds and/or comparatively richer countries, while other students study in greater numbers in countries with cheaper total cost of study.

Another important element of students' ability to pay for tertiary education abroad is the extent to which public funding for tertiary education is portable. In some countries such as Belgium (Flemish Community), Chile, Finland, Iceland, the Netherlands, Norway and Sweden, the international portability of public funding for tuition clearly eases the financial constraint borne by students.

Business cycles are also important drivers of international student mobility. Bond and Lemasson (1999) show for instance how the economic crisis experiences by the Asian continent in the late 1990s coincided with a brutal drop in international students' registrations from the countries that suffered from strong devaluations of their national currency. Asteris (2006) noted a similar decline in non-EU enrolments in the United Kingdom, suggesting a relocation of international students towards cheaper destinations.

Figure 10.3. Annual average tuition fees charged to international students by public TEIs, 2005

Tuition fees in public tertiary-type A institutions (US$ converted using PPPs)



Note: 1. Government-dependant private institutions since public TEIs do not exist in the United Kingdom, 2004 data. 2. For non-European Union or non-European Economic Area students.

Source: OECD, 2007a; and OECD, 2006.

But Sakellaris and Spilimbergo (2000) show that students from developed and developing countries respond differently to business cycles in the home country, with enrolment of international students in the United States strongly procyclical for non-OECD countries whereas variations are countercyclical and less pronounced for OECD countries. The authors argue that ability to pay and credit constraints are more prevalent for developing countries, while opportunity cost considerations dominate for OECD countries. The results also indicate that large shocks to the exchange rate – *i.e.* depreciations of more than 20% – have a strong and persistent effect which is spread over roughly three years, which has important implications in terms of diversification for the sustainability of internationalisation strategies.

Possibilities for part-time/seasonal employment during study abroad

The costs of study abroad are not limited to tuition fees. Travel fares, health cover, study materials, institutional fees and the cost of living often place a high burden on international students' budgets – especially those studying in metropolitan areas. The way studies abroad may be financed is thus a criterion almost as important as the overall costs of study abroad. Indeed, the great majority of students self-finance at least part of their study abroad experience. In the United States, this is the case for two thirds of international students (Altbach, 2004). In Indonesia and Taiwan, over three quarters of students contemplating going abroad plan to self-finance their stay (Kemp *et al.*, 1998). In Europe, the student and family contribution to the total cost of study abroad ranges from 36% for Portuguese students to 61% for their Dutch peers and over 72% for Irish and Spanish students (Eurostudent, 2005).

Griffith and Rask (2007) have shown in the United States context, that students in need of financial support to cover the cost of their education tend to favour TEIs offering full-packages – including grants and loans/jobs – over grant-only packages. In the international context, such preferences would then translate in international students favouring study destinations where work opportunities are available to help them cover the costs of living associated with mobility, as well as tuition fees where applicable. A recent study of international students in Australia indicates that 64% of them work or have worked to finance their studies (Deumert *et al.*, 2005). In the United Kingdom, this is the case for 33% of non-EU international students (United Kingdom Council for International Education, 2006). The possibility and availability of part-time work may therefore figure prominently among the criteria considered by prospective students.

Academics' salaries and non-salary benefits

Economic considerations also play a role in long-term academic staff mobility, through salaries and non-salary benefits offered in different destinations (Jacobs and van der Ploeg, 2006). For instance, there is acknowledgement in the Netherlands that salary scales and total remuneration are uncompetitive *vis-à-vis* the United States, and that the absence of more flexible arrangements to set academic staff salaries inhibits the recruitment of the highest calibre faculty.

Migration theory suggests that migration decisions are the result of comparisons of salary levels – and other variables – in different destinations. From this perspective, the extent of academic staff expatriation from Europe to the United States is no surprise, given the large wage differential between European countries and the United States (Marginson and van der Wende, 2007a; Enders and de Weert, 2004). Likewise, the

greater mobility of academics in the science and technology disciplines may be linked to comparatively higher wage differentials given the high variation of remunerations between disciplines in the United States compared to the more homogenous salary scales prevailing in most European countries. Patterns of academic mobility driven by wage differentials are also observed in Asia, where Lee (2002) notes that the revision of Singapore's professor salary scales to levels on par with the United States (in PPP terms) has contributed to the internationalisation of the faculty – of which nearly half are now expatriates.

Yet, salary is usually not the single criterion considered by academics, whose decisions also take into account non-salary aspects such as working conditions, budgets for research and conferences and so on. New Zealand records a high number of foreign staff in its TEIs in spite of comparatively lower salaries and unfavourable exchange rate, which highlights the importance of these other factors. In particular, Schuster (1994) has shown that interest in permanent expatriation among British academics is higher among staff with a primary interest in research over teaching. Research conditions are also important for Canadians, who are lured abroad by dynamic academic communities and higher funds for research, conferences or laboratory equipment in comparison with budget cuts at home (Lewington, 1999). Richardson and McKenna (2002) confirm these career-building motivations among British academics.

Language of instruction: a critical factor in the choice of a country of study

But student and academics mobility to different countries is constrained by language abilities, and in this respect, the language spoken and used in instruction acts as both a hindrance and an incentive to international mobility.

The lack of language proficiency hinders international students' ability to follow an education programme and academics' ability to lecture in a foreign country. As a result, countries whose language of instruction is not widely spoken face more difficulties to attract international students and academics than – say – their English speaking peers. In the same way, students with poor foreign language proficiency are limited in the scope of foreign countries where to study, and student mobility flows tend to be significant between countries sharing a common language. For instance, Racine *et al.* (2003) have shown that the use of the French language by Quebec universities is a powerful magnet for the recruitment of francophone students. In fact, countries whose language of instruction is shared by one or more other countries display lower levels of international mobility to countries with a different language of instruction (Figure 10.4). These findings are consistent with earlier work by Kim (1998).

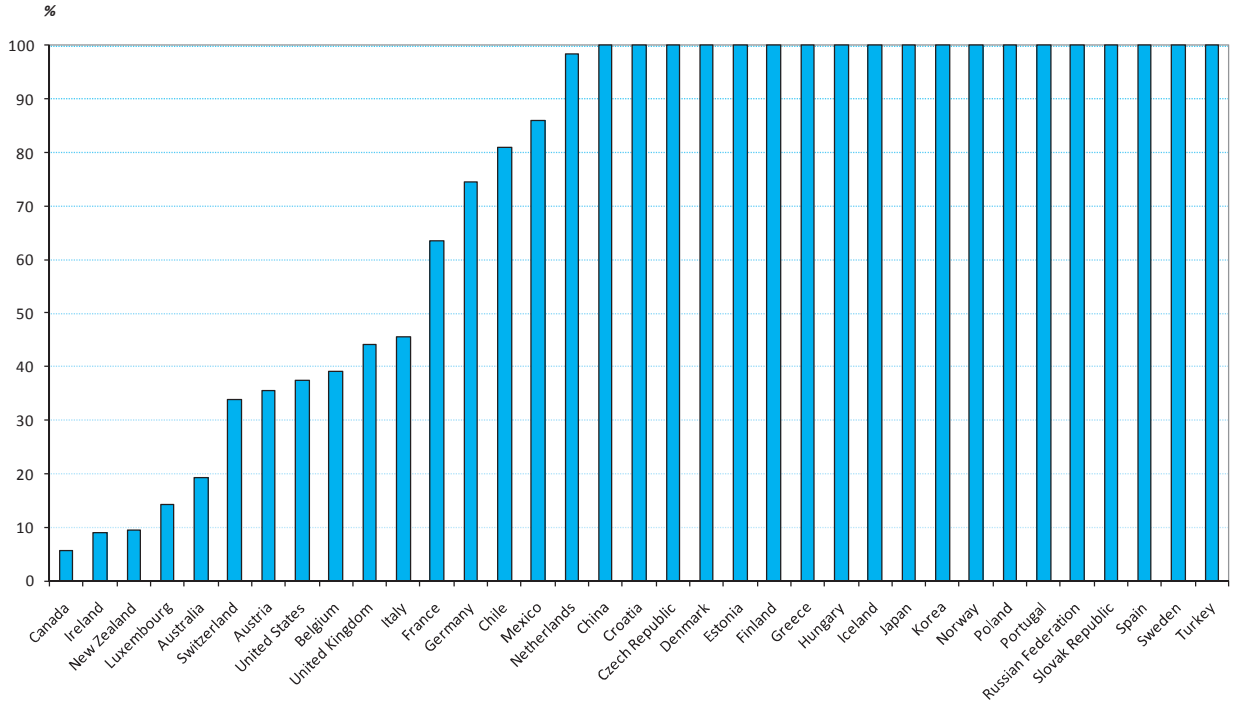
Meanwhile, learning a different language – either English or another widely spoken language – is often a motivation for studying abroad because "foreign languages are seen as the passport to travel, study abroad, but also to international work and internship experiences, as well as to an international career" (Knight, 2001). Therefore, countries whose language of instruction is widely spoken and read (*e.g.* English, French, German and Russian) dominate in the destinations of foreign students, be it in absolute or relative terms.

From this second perspective, there seems to be a rush for English-speaking instruction, as illustrated by the dominance of the five leading English-speaking destinations at the global scale which attract 46% of all foreign students worldwide (Figure 10.2). This rush can be explained by the advent of English as a global language –

about 20% of the world population can communicate in English to some degree – and the widespread use of English as the working language of business (Crystal, 2003; Knight, 2001). From students' perspective, Anglo-Saxon education systems also benefit from their traditionally flexible degree structures and emphasis on student-centered approaches (van der Wende, 2001). In the United Kingdom, a survey of non-EU international students indicates that English was a key factor in their decision to come to the United Kingdom for 75% of them (United Kingdom Council for International Education, 2006). The rapid increase in foreign enrolments in Australia, Ireland and, most importantly, New Zealand between 2000 and 2005 can be attributed in part to similar linguistic considerations (OECD, 2007a).

Figure 10.4. Language of instruction: a hindrance to mobility if alternative options exist, 2005

Percentage of international students enrolled in a destination with a different language



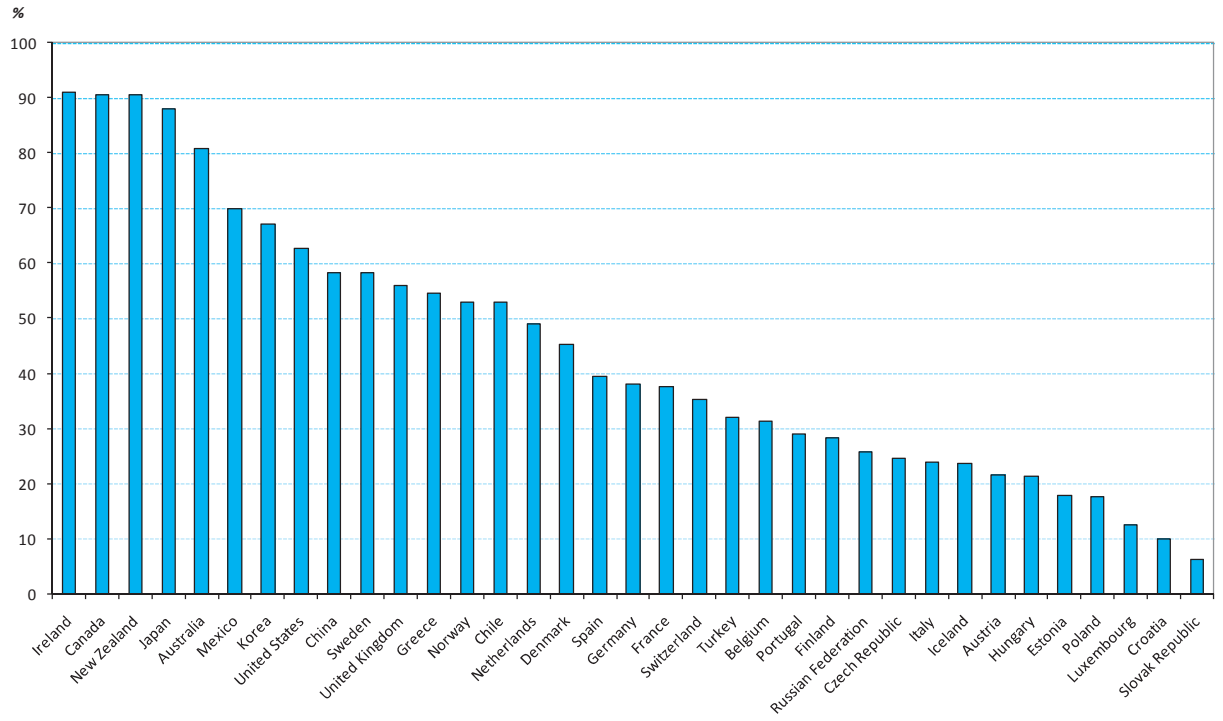
Source: Calculations based on OECD, 2007b.

Given this pattern, an increasing number of TEIs in non-English-speaking countries now offer courses in English (Maiworm and Wächter, 2002). Knight (2001) notes that these courses originally targeted domestic students to increase their future opportunities for study and work abroad. But a secondary motive is now coming into play, *i.e.* to overcome the linguistic disadvantage of these countries.

But the rush for English-speaking education is less prevalent in the European context. All countries for which more than half of students studying abroad are not enrolled in English speaking destinations are located in the broader European region, by contrast with the strong English preference of students from Asia and Latin America (Figure 10.5).

Figure 10.5. The rush for English-language instruction: a dominant phenomenon... outside Europe, 2005

Percentage of international students enrolled in an English-speaking country



Source: calculations based on OECD, 2007b.

Reputation of international qualifications and impact of rankings

Another aspect which acts as both a push and pull factor is the reputation of international qualifications. In the eyes of international students, world-class institutions often act as a signal for the overall quality of the entire tertiary education system. But these world-class TEIs are concentrated in a small number of countries, and this concentration acts as a magnet for the brightest students from countries unable to provide world-class standard tertiary education. Surveys of prospective international students confirm that reputation is a key driver of mobility flows (Kemp *et al.*, 1998; Pimpa, 2005).

Assessing the academic quality of education provided by different TEIs and programmes – let alone different countries – is no easy task. Few countries collect data on student learning outcomes in different TEIs and there is no such endeavour at the international level (Nusche, 2008). Asymmetries of information lead students – especially high-achieving ones – to base their enrolment decisions on perceptions of reputation instead, through imperfect proxies of quality such as the research performance of TEIs or rankings (Siow, 1997; Griffith and Rask, 2007; Clarke, 2007; Dill and Soo, 2005).

The asymmetric information problem is even more acute when students cross borders. Lee *et al.* (2006) note that status and prestige become even greater incentives when committing to study outside one's home country, and TEIs with successful researchers tend to enrol higher proportions of international students. The advent of global university

rankings in the past few years, such as the Shanghai and Times rankings, or the German-based CHE ranking in the European context, have had a growing impact on student and academic mobility (Shanghai Jiao Tong University, 2007; Times Higher Education Supplement, 2007; Center for Higher Education Development, 2007). Salmi and Saroyan (2007) explain this phenomenon by the absence of a single global quality assurance agency, which gives ranking systems the role of a quality regulator for international students.

There is also emerging evidence that rankings also boost academic staff mobility, as TEIs worldwide are competing more aggressively to recruit leading researchers that will be assets to maintain or enhance their position in the rankings (Marginson and van der Wende, 2007b).

But perceptions of quality are most relevant for high income and high-achieving students (Clarke, 2007), and more generally at the post-graduate level. Melin (2004) shows for instance that Swedish post-doctoral students are concentrated in traditionally-strong science producing countries. For the majority of international students who study at lower levels, other factors come into play.

Prestige of host country and intercultural experience

Among them, the attractiveness of specific destinations – by virtue of their geographic location, climate, culture or way of life – is equally important to students' decisions on where to study. Van Hoof and Verbeeten (2005) have shown that the three most important reasons for studying abroad identified within a group of mobile under-graduates to and out of the United States are to: *(i)* get an opportunity to live in another culture; *(ii)* travel; and *(iii)* specific attraction to the country chosen.

In addition, the intercultural experience of living and studying in a different country yields many benefits for individual participants beyond the acquisition of a foreign language. In terms of social skills, the benefits of study abroad most commonly identified in the literature include a change in stereotypes of other nationalities and the development of an alternative view of the world (van Hoof and Verbeeten, 2005), an increase in intercultural communication skills and diplomacy (Williams, 2005; Palifka, 2003), a gain in maturity and enhanced personal development (Sussex Centre for Migration Research and Centre for Applied Population Research, 2004), and character-building and the fostering of problem-solving skills (Palifka, 2003).

Labour market returns for international participants

But the returns of study abroad or academic mobility are not limited to language acquisition and the development of intercultural skills. A number of individuals cross borders with a view of enhancing their future career opportunities and harvest economic returns on the labour market (Baker *et al.*, 1996; Sussex Centre for Migration Research and Centre for Applied Population Research, 2004; Wiers-Jenssen and Try, 2005).

The returns to studying abroad depend to a large extent on both the policies of sending countries regarding financial aid to students going abroad and the tuition fee policies of countries of destination and their financial support for international students. The cost of living in countries of study and exchange rates also impact on the cost of international education. The long-term returns of an international educational experience also depend on how international degrees are signalled and valued by local labour

markets. Sadly, empirical evidence on the actual impact of study abroad on labour market performance is patchy and depends on whether students return to their home country upon graduation.

In the case of students who return to their home country upon graduation, empirical evidence on the individual returns of study abroad is fairly limited. This is because labour force survey data indicating periods of study abroad among individual characteristics are scarce, making it difficult to assess different career pathways according to this variable. Some analyses based on graduates' follow-up surveys contrast the experiences of mobile *vs.* non-mobile students, but they tend to measure the returns of student short-term student exchanges rather than the returns of degree programme mobility. Alternatively, surveys of past international students assess their perceptions of the benefits of mobility, but cannot be used to measure the impact of mobility *per se*.

Available evidence suggests the existence of a labour market premium of periods of study abroad once controlling for the effect of other individual characteristics. But this premium varies between countries. In Mexico, Palifka (2003) found that a study abroad period confers a 20% wage premium to university graduates relative to their peers trained only in Mexico with the exception of engineering graduates. In Norway, a similar study covering both short-term and degree-programme mobility found a moderate wage premium of 3.7% (Wiers-Jenssen and Try, 2005). By contrast, Ball and Chik (2001) observed no difference in the labour market outcomes for Malaysian graduates trained abroad and domestically.

But the wage premium of international student mobility seems less obvious in the American and European contexts. Van Hoof (1999) found that United States industry recruiters do not value international mobility very highly whereas in Europe, only 16% of former Erasmus students consider their wages to be above those of their non-mobile peers (Bracht *et al.*, 2006). Yet, mobility yields a number of other professional benefits: 54% of former Erasmus students consider that their stay abroad helped them secure their first job and they are more likely to be satisfied with the match between their diplomas and their current position and wages. They also display higher job turnover rates, possibly suggesting faster upward career paths.

As far as academic staff mobility is concerned, the Erasmus evaluation study also finds a number of professional benefits to international academic mobility in terms of both research and teaching, although wage *premia* do not seem to be a major outcome of mobility (Bracht *et al.*, 2006). Mobile academics report a general improvement of their research contacts (65%), a broadening of their academic knowledge during their stay (60%), involvement in innovative academic discussions (53%), an improvement in their teaching in general (45%), and the development or implementation of new teaching methods (40%).

In addition, Erasmus mobility has translated in subsequent temporary or permanent migration during the five years that followed the initial exchange. Bracht *et al.* (2006) found that former Erasmus students and academics are more likely to have worked abroad than their non-mobile peers (18% for students and 9% for academics).

Immigration motivations and/or impact of immigration policies in the countries of study

This leads to the next motivation for study abroad, namely longer-term plans for immigration in the country of study. Indeed, some international students see study abroad as a first step towards subsequent immigration in the country of study. Kemp *et al.* (1998)

report this is the case for 42% of prospective international students from Indonesia and Taiwan.

Such behaviour by international students is perfectly rational. Indeed, labour market studies of the integration of immigrants into the labour market extensively show that a local degree known to local employers provides international students with a clear advantage over other immigrants educated abroad (Bratsberg and Ragan, 2002; Cobb-Clark, 2000; Friedberg, 2000; Krahn *et al.*, 2000; Bevelander and Nielsen, 1999). Altbach (2004) notes that the aim of staying in the country of study to work and make a career is a strong pull factor towards some countries of destinations, and interestingly, international students' destinations highlight the attractiveness of specific countries in terms of subsequent immigration opportunities.

But immigration after completion of studies abroad is not always an initial motivation for study abroad. It can also be the result of incentives developed by host countries to lure their international students to stay. Indeed, many OECD countries have recently softened their immigration policies to encourage the temporary or permanent immigration of their international students in the context of skilled labour shortages (Tremblay, 2005). For instance, some countries selecting skilled immigrants on the basis of a point test grant extra points by virtue of a specified period of study in the country.

10.3.2 Other emerging forms of internationalisation

But changes in internationalisation patterns have not been limited to student and academic mobility. Other forms of internationalisation also show interesting trends over the past decade or so.

Programme curricula and organisation

The growing internationalisation of tertiary education has had several effects on tertiary programmes' curricula and organisation. These consequences appear both in the content and delivery of tertiary curricula, but also – more broadly – in the structure of tertiary degrees in various countries and means by which students can transfer credits earned across borders.

Internationalisation of curricula

The internationalisation of tertiary curricula gained momentum in the past decade. This trend translates in strengthened foreign languages teaching and enhanced international perspectives in the substantive content of tertiary curricula.

The growing emphasis put on foreign languages teaching derives from the acknowledgement that in a global economy, the lack of command of foreign languages – and more generally of knowledge of international conditions – creates a glass ceiling in employment, even for engineers and technical workers who may think that science-based competencies are all that matters. In this respect, the advent of English as a global language of communication has translated into increased accent on foreign languages teaching in non-English speaking countries, but meanwhile in lesser emphasis in Anglo-Saxon countries. Teaching of foreign languages covers both the preparation of domestic students to foreign languages, and – increasingly – teaching of other disciplines in foreign languages.

The trend towards delivering programmes in foreign languages – English mostly – has been especially noticeable in Nordic countries in the past decade (OECD, 2007a; van der Wende, 2001). But a number of other non-English speaking destinations have a national policy framework which allows the delivery of educational programmes in foreign languages. This is the case of Belgium (Flemish Community, for master's programmes), Croatia, the Czech Republic, Estonia, Finland, Greece (for post-graduate programmes), Iceland, Japan, Korea, Norway, Poland, Portugal, the Russian Federation, Spain and Sweden, and at the discretion of TEIs in Mexico, the Netherlands and Switzerland (Table 10.1).

With respect to the preparation of domestic students in foreign languages, trends are more difficult to assess at national level, although many TEIs in Korea require proficiency in foreign languages for students to earn a post-graduate degree.

There is also some evidence of a growing emphasis of TEIs on internationalising their curricula beyond foreign languages teaching or delivery. In Australia for instance, Harman (2006) reports that universities have put considerable efforts in the incorporation of international and intercultural perspectives and the adoption of inclusive pedagogy. The internationalisation of tertiary curricula has also occurred through the development of internationally-focused programmes in some countries. For instance, the Korean government has funded the establishment of nine graduate schools of international studies between 1997 and 2001. These schools conduct all their courses in English and graduates receive assistance in securing positions at international organisations.

Another noteworthy initiative with respect to the internationalisation of curricula is the Jean Monnet programme that was launched by the European Commission in 1990 to stimulate teaching, research and reflection in the field of European integration studies at the level of TEIs within and outside the EU. Since its inception, the Jean Monnet programme has helped to set up approximately 2 900 projects in the field of European integration studies, including 124 European Centres of Excellence, 761 Chairs and 1 982 permanent courses and European modules. The programme is now present in 60 countries worldwide and around 700 TEIs offer Jean Monnet courses as part of their curricula.

Convergence of programmes' structures as part of the Bologna Process… and beyond

Another significant trend relates to the profound changes in the organisation and structure of national tertiary education programmes as part of the Bologna Process. Yet, progress with the implementation of the Bologna BMD degree structure has been uneven across countries. The Stocktaking exercise prepared ahead of the 2007 London Ministerial meeting highlights good progress overall, with nearly three quarters of Bologna participating countries having more than 60% of their tertiary students enrolled in a 2-cycles degree system compatible with Bologna principles. Among participants in the Review, over 90% of students are enrolled in Bologna-compatible degree programmes in Finland, Iceland, the Netherlands, Norway and the United Kingdom. This proportion drops to 60-89% – suggesting a later implementation of the BMD structure – in Belgium, the Czech Republic, Estonia, France, Greece, Poland and Switzerland, and to 30-59% in Croatia, Portugal and Spain. The implementation of the BMD structure is lagging behind in Sweden where legislation to reform the tertiary education system in line with the Bologna structure was only voted in 2006, and even more so in the Russian

Federation where a tiny minority of students are enrolled in Bachelor and Master programmes[85] (Bologna Secretariat, 2007).

International credit transfer schemes

A related aspect concerns the ECTS which was introduced in 1989 within the framework of Erasmus and reinforced in 1999 with the Bologna Declaration. Together with the Lisbon Diploma Supplement, these instruments were established to promote student mobility in Europe, but they are now increasingly used to attract students from outside the EHEA by enhancing the transparency of programmes' content and hence boosting the attractiveness of European study destinations.

Again, progress with the implementation of the ECTS and the Diploma Supplement is generally good, although uneven across countries, as observed in the Stocktaking exercise prepared ahead of the 2007 London Ministerial meeting and in a study of the European Students' Union (ESU, 2007). As far as the ECTS is concerned, 37 out of 46 participating countries allocate ECTS credits – or fully-compatible credits – in at least 75% of their tertiary education programmes. Among participants in the Review, ECTS credits are universal in Belgium, Croatia, Finland, France, Greece, Iceland, the Netherlands, Norway, Poland, the Russian Federation, Sweden, Switzerland and Scotland. They were used in at least 75% of tertiary programmes or a fully-compatible system was in place in Estonia, Portugal and Spain, but this proportion dropped to 50-74% of tertiary programmes in the Czech Republic while participation in the ECTS is only optional in the rest of the United Kingdom, along the Northern Ireland and Welsh national credit systems (Bologna Secretariat, 2007).

With respect to the Diploma Supplement, 32 out of 46 participating countries provided – either automatically or upon request – a diploma supplement in the international format and in a widely spoken European language to their 2007 graduates. Among participants in the Review, all 2007 graduates automatically received a Diploma Supplement in the Czech Republic, Estonia, Finland, Greece, Iceland, Norway, Poland, Portugal, Sweden, Switzerland and most TEIs in Scotland, and upon request in Belgium and the Netherlands. However, the Diploma Supplement was only provided – upon request – to graduates of some programmes in Croatia, France, Spain and the rest of the United Kingdom, and incurred charges in the case of the Russian Federation[86] (Bologna Secretariat, 2007).

In practice, difficulties in relation to the recognition of foreign credentials at the stage of admission of foreign students have also been reported in some countries (ESU, 2007). They are mostly due to the problems associated with comparing grades from very different grading systems in a just way and the verification of documents.

85. The Russian Federation has adopted a new legislation in 2007 to make the adoption of the two-cycle degree system mandatory for all TEIs and the great majority of programmes (National Training Foundation, 2007).

86. The situation is changing however, since a 2005 decree states that European Diploma Supplements must be issued to graduating students of all accredited TEIs who have completed accredited educational programmes by 2008, automatically and free of charge (National Training Foundation, 2007).

Programme and institutional mobility

According to Altbach (2004), "we are at the beginning of the era of trans-national higher education, in which academic institutions from one country operate in another, academic programmes are jointly offered by universities from different countries, and higher education is delivered through distance technologies". Indeed the past decade has seen the emergence and growing development of off-shore delivery of education by TEIs, a trend which has been driven by multilateral agreements on trade in services as well as reforms of tertiary education in many countries that have made delivery more flexible and allowed foreign TEIs to operate on their domestic territory. Historically, Australia and the United Kingdom have pioneered this movement, but the United States has also become a major force in this area (van der Wende, 2001). In addition, a number of other countries – especially in Europe – have joined this trend and set up campuses abroad and other trans-national arrangements since 2000.

Operations of domestic TEIs abroad

An increasing number of OECD TEIs operate outside of their domestic territory. From the supply side, this trend is permitted by liberal national policy frameworks that allow the establishment of campuses abroad by domestic TEIs without restrictions in the Czech Republic, Finland, Mexico, Portugal, the Russian Federation, Spain, Sweden and the United Kingdom, and subject to restrictions in terms of accreditation, approval, quality assurance arrangements, ownership of overseas' premises or recognition in Australia, Belgium (Flemish Community), Japan, Korea, New Zealand, Norway and Poland (Table 10.1). In the Netherlands, universities are prevented from offering a full qualification on foreign soil, but some larger universities of applied science have established campuses abroad. As far as the demand side is concerned, foreign campuses respond to the needs of local communities by providing Western-style education at lower tuition fee levels than if students change countries (Harman, 2006). But the establishment of a Flemish campus in the United Arab Emirates also highlights the growing demand from expanding expatriate communities in some countries.

British and Australian TEIs have pioneered in this area as early as in the 1990s. In Hong Kong, half of the foreign degrees offered by private TEIs, distance learning programmes or partnerships with local universities involved British universities in 2004 (OECD, 2004). Similarly, Australian TEIs have set up campuses in Canada, Malaysia, Singapore, South Africa and Vietnam. Accordingly, the recent years have seen a marked increase in offshore enrolments and in the proportion of offshore enrolments among international students, at about a third of the total nowadays (Harman, 2006). These forms of internationalisation are expected to grow more rapidly in the future than the delivery to international students onshore. Yet, these endeavours are not risk-free and instances of failures have occurred in the past.

Growth has also been rapid in France: while the first foreign campus of a leading French business school was established in 2000, less than a decade later French TEIs operate campuses in Europe (Germany, Italy, Spain, the United Kingdom), the Middle East (Pakistan, Qatar and the United Arab Emirates) and Asia (China, Singapore) (Basini, 2007). There are also reports of efforts by TEIs in Canada, China, India, Singapore and South Africa to expand their activities abroad (McBurnie and Ziguras, 2001; OECD, 2004). At a more moderate level, TEIs from Belgium (Flemish Community) operate campuses in the United Arab Emirates. By contrast, offshore campus-based activities

remain limited in New Zealand. It has been argued that this is the result of lower gains per student and higher levels of risk (Ministry of Education of New Zealand, 2004).

More recently, virtual TEIs which operate exclusively on line have emerged. Although some of them have gained good international reputation and enrol large numbers of students located in different countries, it remains to be seen whether virtual TEIs will remain marginal or become new instruments of internationalisation (Box 10.1).

Operations of foreign TEIs on domestic territory

Conversely to the establishment of campuses abroad by domestic TEIs, a number of countries' legal frameworks allow the establishment on their territory of campuses owned by foreign TEIs. This is the case – without restriction – of Croatia, the Czech Republic, Finland, Japan, Mexico, the Netherlands, Portugal, the Russian Federation, Spain and Switzerland. In addition, Australia, Belgium (Flemish Community), China and New Zealand allow foreign TEIs to operate on their territories subject to accreditation restrictions, while Norway, Sweden and the United Kingdom impose restrictions related to the recognition of degrees awarded. China, Poland and Korea also impose restrictions, of a geographic nature in the case of Korea while China imposes co-ownership of the campus with a domestic TEI (Table 10.1). In practice, many obstacles still remain – for instance on the citizenship composition of the governing boards of foreign TEIs. The Korean situation illustrates these obstacles: there is a maximum of two thirds of foreign directors in a private (hence foreign) university board, and as a result, no foreign-affiliated school had established in Korea as of 2004.

Box 10.1. Virtual universities as an instrument of internationalisation?

E-learning is becoming increasingly prominent in tertiary education. The past decade has seen the emergence of a number of virtual universities providing tertiary courses and programmes through the Internet. The OECD Centre for Educational Research and Innovation (CERI) recently carried out a survey of OECD TEIs providing e-learning education services to better understand practices at institutional level (OECD, 2005b). This survey identified a number of virtual universities operating exclusively on line, but highlighted significant variation in the extent of their international stance.

For a number of these virtual TEIs, a significant proportion of students are located abroad, hence contributing to the export industry of their country and turning these TEIs into instruments of internationalisation. This is for instance the case of the United Kingdom-based Open University, where 14% of the 180 000 students live outside the United Kingdom. But virtual TEIs offering e-learning programmes in languages other than English are also active in this area, as illustrated by the Open University Catalunya in Spain where international action is considered one of the strategic pillars of the institution's mission and international students represent 21% of enrolments. Similarly, 8% of the Fern Universitat Hagen students live outside Germany and in Mexico, the Virtual University of Tec de Monterrey is active in delivering cross-border online degree programmes in Spanish in Mexico, Spain, the United States and a good number of Latin American countries.

By contrast, some virtual TEIs operate essentially for the domestic market and are not used as instruments of internationalisation. In the Netherlands for instance, less than 3% of the Open Universiteit Nederland students lived abroad in 2006, while this is the case for less than 1% of the student body of the Open Polytechnic of New Zealand and the Cyber University in Japan.

Yet, provision for the domestic market is sometimes the first step towards export provision. For instance, the Korean International Cyber University endeavours to create cyber-education courses in Korean and Women's studies to be provided to people all around the world after initially serving the domestic market. Likewise, the Swiss Virtual Campus programme aims to encourage TEIs to make better use of ICT by providing official recognition of the quality of interactive virtual courses and integrating them in the curricula through the European Credit Transfer System. Reflecting the multilingual nature of the country, online courses are offered in several languages whenever possible to facilitate their export to other countries (see also Box 6.2).

Joint programmes

Given the obstacles as well as the risks faced by TEIs in setting up campuses in foreign countries, the majority of trans-national operations take the form of joint programmes with TEIs abroad through franchise arrangements with a partner TEI in the international students' home country. Joint programmes are permitted without restriction by the national policy frameworks of Belgium (Flemish Community), Croatia, the Czech Republic, Estonia, Finland, Greece, Iceland, Japan, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Russian Federation, Spain, Switzerland and the United Kingdom. By contrast, Sweden allows joint programmes but not joint degrees, Australia imposes quality assurance restrictions while Korea requires the joint programme to be delivered in a domestic TEI (Table 10.1).

In practice, joint programmes are quite widespread among Australian TEIs' offshore activities, essentially with TEIs located in China (including Hong Kong), Malaysia and Singapore (AVCC, 2003). In most cases, these joint programmes are operated through formal agreements with foreign providers whereby Australian TEIs develop the programme and oversee academic standards. Similarly, a number of Dutch TEIs have established joint foreign university institutes in Egypt, Greece, Italy, Japan, Morocco, the Russian Federation, Spain, Syria and Turkey. But the most accomplished form of joint programmes is found in Belgium (Flemish Community) and the Netherlands, which have jointly established a trans-national TEI in 2001: the University of Limburg.

Overall, recent trends suggest that although programme and institution mobility is not so important as yet, more action is to occur in this area and OECD countries will have to think about how to handle and regulate this emerging form of internationalisation.

10.4 Issues at stake and related policy challenges

The above discussion has highlighted the complexity of internationalisation of tertiary education both in terms of the multiplicity of its forms, drivers, trends, and as we shall see below, rationales. This complexity leads to numerous challenges for policy makers, in terms of approach to internationalisation, optimisation of mobility flows, attention to equity of access to international education, protection of students and quality assurance, and monitoring of brain circulation.

10.4.1 Optimising mobility flows

The first challenge for policy makers is to devise a sound approach to internationalisation, and optimise mobility flows – both incoming and outgoing – consistently with national goals. The optimisation of mobility flows entails a number of sub-challenges, in terms of promoting the attractiveness of the education system to prospective international students, encouraging the mobility of domestic students, maximising returns of internationalisation and ensuring the sustainability of international strategies.

Policy approaches to internationalisation

Policy approaches to internationalisation describe the manner in which internationalisation is being conceptualised and implemented in various countries or regions, and the aspects which are emphasised to develop and implement an internationalisation policy or strategy. Knight (2004) underlines in this respect that

approaches to internationalisation are not mutually exclusive as countries may follow several approaches in parallel, nor fixed as approaches to internationalisation may change over time. Most importantly, there is no right or wrong approach since internationalisation strategies need to be considered within the framework of country-specific strategies and constraints. As put by Marginson and van der Wende (2007a), "Nations and institutions bring varying capacities and agendas to global exchange (… and) have space in which to pilot their own global engagement."

Earlier OECD work has identified four main rationales for internationalisation (OECD, 2004):

– The mutual understanding approach

This is the traditional approach to internationalisation, built upon the traditional values of academic exchange and cooperation. Internationalisation has long been supported in OECD countries on the ground that better understanding of other cultures and possible ties/personal links between the political and economic elites of the host and sending countries can strengthen political and economic ties and enhance social cohesion in increasingly multicultural societies. In addition, student mobility often figures prominently in OECD countries' foreign aid commitments. For instance, Norway has a longstanding tradition of providing generous support to developing countries through cooperation in tertiary education and scholarship schemes.

Over time, this cooperative approach has slowly given way to a more competitive approach to internationalisation and driving factors of a more economic nature, starting in Anglo-Saxon countries, but also increasingly so in Europe. The cooperative approach is still very strong in continental Europe, driven by the EU's agenda and mobility programmes (Erasmus, Socrates) and also, according to van der Wende (2001), by the lack of incentives for TEIs to compete for international students in many countries. But the Lisbon Process is now implicitly inviting European TEIs to compete more resolutely than in the past for students, influence, prestige and money on the global scale.

– The revenue-generating approach

In this second approach – which Slaughter and Rhoades (2004) have called "academic capitalism and the new economy" – educational services are offered to international students at unsubsidised rates that cover at least the cost of their education. Like any other market service, the revenue-generating approach has a goal of enrolling a large number of international students or the control of a large share of the market.

This second approach developed in response to the increasing demand for tertiary education from both national and international students and the difficulties this poses for the funding of tertiary education. Australia, New Zealand and the United Kingdom can be said to have adopted an approach to the internationalisation of tertiary education partly driven by revenue-generating considerations. In Australia for instance, fees from international students amount to 15.4% of publicly-funded TEIs' total income in 2005, and exceed 20% of revenue in some highly-internationalised TEIs. In New Zealand, they accounted for 13% of TEIs' total revenue in 2004.

– The skilled migration approach

In the past few years, ageing societies, the rise of the knowledge economy and global competition for skills provided a new driver for the internationalisation in many OECD countries, whereby the recruitment of international students is part of a broader strategy to recruit highly skilled immigrants on the hope that some of them remain in their host country after their studies and at least stimulate academic life and research while they study. Whereas the revenue-generating approach brings economic benefits to the TEIs as well as the economy of the receiving country, the skilled migration approach has a clear economic drive but a limited direct economic impact on the tertiary education sector.

This is the approach largely taken by Germany, but also to some extent Switzerland. This rationale is also strong for Australia, Canada, New Zealand, the United Kingdom and the United States, highlighting that approaches to internationalisation are not mutually exclusive.

– The capacity-building approach

Finally, some countries have a deliberate import approach to internationalisation – by encouraging their students to study abroad and foreign TEIs to operate in their country – with a view to build or improve their capacity in tertiary education (OECD, 2007d). Indeed, study abroad and recourse to international providers can prove a cost-effective alternative to domestic provision when resource constraints at the national level impede the provision of tertiary education either in sufficient quantities, of the appropriate standard, or in the desired disciplines.

This is the approach adopted by a number of Asian countries – prominently China, Malaysia and Singapore – to widen the access of their population to tertiary education and in a second stage help local TEIs build capacity through the transfer of educational know-how in curriculum design and quality assurance (Asteris, 2006). This approach is also used by smaller industrialised countries such as Iceland to overcome the lack of economies of scale in highly specialised fields.

Promoting the attractiveness of national tertiary education systems

In general, there is a wide consensus among countries participating in the Review that opening up tertiary education for larger numbers of international students and recruiting staff more internationally would have many important benefits in terms of *i)* bringing new talents into the TEIs and the country; *ii)* helping further internationalise the environment in TEIs, including at the under-graduate level; *iii)* broadening the experience among staff; *iv)* facilitating cooperation with research environments abroad; and *v)* potentially raising considerable income. Several policy levers can help achieve this overarching goal of promoting the attractiveness of the tertiary education system to international students and staff.

Marketing policies

Kwiek (2001) notes that TEIs in the Western world increasingly borrow marketing methods from the private sector, as they come to see education as a service export. And indeed, the international marketing of tertiary education is an important instrument to attract international students and faculties into national education systems. Marketing policies include several aspects.

The first one relates to the development of a brand image/identity of tertiary education for the international market, and the use of diplomatic, economic and education channels to disseminate it. Most countries taking part in the Review have adopted national policies or schemes to develop the brand image of their tertiary education system towards international audiences.

As a first step, information brochures or Web sites aimed at prospective international students are developed at the national level in Australia, Belgium (Flemish Community), China, the Czech Republic, Estonia, Finland, Iceland, Japan, Korea, the Netherlands, New Zealand, Norway, Poland, Portugal, the Russian Federation, Spain, Sweden, Switzerland and the United Kingdom (Table 10.3). For instance, the British Prime Minister launched a new initiative in 1999 to increase the number of international students and the EducationUK Web site (*www.educationuk.org*) came out of this initiative (British Council, 2007a). Similarly, the Korean government developed a government Web site in 2001 (*www.studyinkorea.go.kr*) and launched the "Study Korea" project in 2005 with the intention of attracting 50 000 international students to Korea by 2010 (NIIED, 2007).

In addition, a number of governments also support marketing efforts of their tertiary education sector abroad. This is the case in Australia, Belgium (Flemish Community), China, Finland, Japan, Korea, the Netherlands, New Zealand, Poland, Portugal, the Russian Federation, Sweden and the United Kingdom (Table 10.3).

In some countries, marketing activities are performed by organisations/agencies devoted to this task. For instance, *Education New Zealand* is funded by public and private TEIs through a compulsory levy on international student fees to promote the national brand and generic image of New Zealand as a study destination, carry out market research, coordinate TEIs' marketing activities and advise the government. In Sweden, the *Swedish Institute* presents Swedish tertiary education at various international educational fairs, while similar activities are carried out by *Edufrance*, the *Netherlands Organisation for International Cooperation in Higher Education* (NUFFIC) and the *Centre for International Cooperation in Higher Education* (SIU) for Norway. In Korea, governmental support to marketing activities is essentially financial, helping TEIs to participate in education fairs.

Some governments also use their diplomatic representations to strengthen long-term education partnerships with key regions. This is the case of Australia and New Zealand. The Netherlands has also set up offices run by NUFFIC to promote tertiary education abroad (Box 10.2).

In some cases, specific marketing is also directed at subject specialisations in areas of excellence (in a trade perspective) or critical areas of the economy where skilled graduate employees are in short supply and global penetration is desired (in a human resources development perspective). The Netherlands adopted such an approach to establish a reputation and a brand mark as a leading nation in some areas.

Box 10.2. Promoting tertiary education through offices abroad: New Zealand, the Netherlands and Australia

New Zealand Education Counsellors

The New Zealand government has appointed seven education counsellors to its diplomatic missions in Belgium, Chile, China, India, Korea, Malaysia and the United States with another planned for Saudi Arabia.

Their chief task is to build and strengthen bilateral education relationships nationally and at the level of TEIs, to support the efforts of the New Zealand education sector to expand export opportunities, and to contribute to New Zealand broader development and foreign policy goals. Education counsellors are also expected to work to expand tertiary linkages, especially in research and the creative, biotechnology, communications and information technology industries, which are the areas the government has identified as vital for the transformation of the economy.

Netherlands Educational Support Offices

The Netherlands has opened five Netherlands Education Support Offices (NESOs) in China, Indonesia, Mexico, Taiwan and Vietnam. Offices in the Russian Federation and Thailand are expected to be opened in 2008, and three more offices are under consideration.

NESOs' main tasks are the generic promotion of Dutch tertiary education through information to students and promotion activities, and the enhancement of cooperation between TEIs in the Netherlands and in the NESO regions through support and liaison for the academic communities of the Netherlands and of the country they are situated in. While NESOs' major role is to provide information and guidance to students, scientists and other professionals who wish to study and/or research at Dutch TEIs, NESOs' role in matchmaking TEIs is growing in some countries. For example, NESO Indonesia offers assistance to Indonesian universities in finding the most appropriate study programmes and courses and in finding technical assistance, under the sponsored programme by the Asian Development Bank to strengthen tertiary education in Indonesia.

Australian Education International network

The Australian Department of Education, Employment and Workplace Relations (DEEWR) also works through an International Network comprising Australian Government accredited personnel (counsellors) and locally engaged staff. This network represents Australia's interests in 18 economies (Belgium, Brazil, Chile, China, France, India, Indonesia, Japan, Korea, Malaysia, Mexico, Pakistan, Singapore, Taiwan, Thailand, United Arab Emirates, United States and Vietnam).

This international network allows Australian Education International (AEI) to advance Australia's interests in international education through the generic promotion of Australian education and training, government-to-government representation, provision of strategic policy advice to Australian education providers on in-country education and training developments and assistance to Australian education providers in their overseas networking and operations.

Table 10.3. Internationalisation policies, 2007

	Inward mobility of international students												Outward mobility of domestic students	
	National policies/schemes designed to encourage the enrolment of international students													
	Information brochures or Web sites	Support to marketing of tertiary education abroad	Quality assurance framework for international students	Visa policy easing conditions of entry	Visa policy allowing international students to work upon graduation	Fee policy allowing TEIs to charge full-fees	Permission for TEIs to deliver programmes in a foreign language	Support to international students (*e.g.* housing, counselling)	Scholarships for top international students	Other	Payment of tuition fees by international students	Possibility for international students to apply for a work visa upon graduation	Existence of grants/loans to study abroad for domestic students	Provisions on the return of students upon graduation in study abroad grants/loans
Australia[1]	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	*a*	Yes (generally higher fees)	Yes (special visa schemes/conditions for all graduates)	Yes, specific mobility grants (living and travel costs; max. 1 year; post-graduates)	No
Belgium (Flemish Community)	Yes	Yes	No	No	No	No	Yes (master's programmes)	No	No	*a*	Yes (higher fees except students from EU, EEA, developing countries)	Yes (same visa conditions as other prospective migrants)	Yes, general grants/loans (tuition and living costs; some restrictions)	No
Chile	No	No	No	No	No	No	No	No	No	*a*	Yes (same fees)	Yes (same visa conditions as other prospective migrants)	Yes, general grants/loans (tuition and living costs)	Yes (delivery conditional upon commitment to return in most cases)
China	Yes	Yes	No	No	No	Yes	No	No	Yes	*a*	Yes (higher fees)	No	Yes, specific mobility grants/loans (tuition and living costs)	Yes (delivery conditional upon commitment to return)
Croatia	No[2]	No	Yes	No	No	Yes	Yes	No	No	*a*	Yes (higher fees except students from EU, EEA upon accession)	Yes (same visa conditions as other prospective migrants)	Yes, specific mobility grants (all or part of tuition and living costs)	Yes (delivery conditional upon commitment to return for grants covering all tuition and living costs)[3]
Czech Republic	Yes	No	No	No	No	Yes[4]	Yes	Yes	No	*a*	Yes (higher fees except students from EU, EEA)[4]	Yes (same visa conditions as other prospective migrants; need to return to home country first)	Yes, specific mobility grants (living costs)	No
Estonia	Yes	No	Yes	Yes	No	Yes	Yes[5]	Yes	Yes	*a*	Yes (higher fees except students from EU, EEA)	Yes (same visa conditions as other prospective migrants; need to return to home country first)	Yes, specific mobility grants/loans (living costs)	No (with the exception of one scheme)
Finland	Yes	Yes	No	No	Yes	No	Yes	Yes	No	*a*	No	Yes (special conditions for all graduates: 6 months to look for a job)	Yes, general grants/loans (tuition and living costs)	No
Greece	No	No	No	No	No	No	No	No	No	Establishment of Hellenic International University[6]	Yes (higher fees[7] except students from EU, EEA)	Yes (same visa conditions as other prospective migrants)	No	*a*
Iceland	Yes	No	No	No	Yes	No	Yes	No	No	*a*	Yes (same fees)	Yes (special conditions for all graduates)[8]	Yes, general grants/loans (living costs)	No
Japan	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	*a*	Not stipulated by national policy framework	Yes (within a certain period after graduation: 6 months to look for a job)	Yes, specific mobility grants/loans (tuition and living costs)	Yes (delivery conditional upon commitment to study/teach/work abroad in a TEI, research institute or international organisation)
Korea	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	*a*	Yes (same fees)	Yes (special conditions for graduates in specific fields/occupations for a max. of 3 years)	Yes, specific mobility grants (tuition and living costs)	No
Mexico	No	No	No	No	No	Yes	Yes	No	No	*a*	Yes (higher fees)	No	Yes, specific mobility grants/loans (tuition and living costs)	Yes (delivery conditional upon commitment to return)
Netherlands	Yes	Yes	Yes	Yes[9]	Yes	Yes	Yes	No	Yes	*a*	Yes (higher fees[10] except students from EU, EEA)	Yes (within a certain period after graduation: 3 months to look for a job)[11]	Yes, general grants/loans (tuition and living costs)	No
New Zealand	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Network of Education Counsellors abroad; possibility to work during studies	Yes (higher fees except doctoral students enrolled since 19 April 2005 and post-graduates under bilateral agreements such as with France and Germany)	Yes (within a certain period after graduation: 6 months to look for a job)[12]	Yes, general grants (tuition, living and travel costs; doctoral students; only a limited number)	*a*

Table 10.3. Internationalisation policies, 2007 (continued)

	Inward mobility of international students												Outward mobility of domestic students	
	National policies/schemes designed to encourage the enrolment of international students													
	Information brochures or websites	Support to marketing of tertiary education abroad	Quality assurance framework for international students	Visa policy easing conditions of entry	Visa policy allowing international students to work upon graduation	Fee policy allowing TEIs to charge full-fees	Permission for TEIs to deliver programmes in a foreign language	Support to international students (*e.g.* housing, counselling)	Scholarships for top international students	Other	Payment of tuition fees by international students	Possibility for international students to apply for a work visa upon graduation	Existence of grants/loans to study abroad for domestic students	Provisions on the return of students upon graduation in study abroad grants/loans
Norway	Yes	No	Yes	No	Yes	No	Yes	Yes (1100 per year)	No	*a*	No (except at private institutions where domestic students also pay fees)	Yes (special conditions for all graduates for a max. 1 year; automatic for EU/EEA citizens)	Yes, general grants/loans (living costs); specific grants/loans (tuition)	No
Poland	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No	*a*	Yes (higher fees except students from EU, EEA)	*m*	No	*a*
Portugal	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	*a*	Yes (same fees)	Yes (special conditions for all graduates)	Yes, specific mobility grants (tuition and living costs; only for post-graduates)	No
Russian Federation	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	*a*	Yes (higher fees except students with a scholarship)	No[13]	Yes, specific mobility grants (tuition, living and travel costs; max. 1 year)	No
Spain[1]	Yes	No	No	Yes	No	No	Yes	Yes	No	*a*	Yes (same fees)	*m*	Yes, general grants/loans (living costs); specific mobility grants/loans (living costs)	No
Sweden	Yes	Yes	No	Yes	No	No	Yes	No[14]	Yes	*a*	No[15]	Yes (same visa conditions as other prospective migrants)	Yes, general grants/loans (living costs); specific loans (tuition and additional living costs)	No
Switzerland	Yes	No	No	Yes	No	No	Yes	No	No	*a*	*m*	*m*	Yes (only post-doc students)	*m*
United Kingdom	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	*a*	Yes (generally higher fees except students from EU[16])	Yes (special conditions for all graduates for a max. of 1 year; max. of 2 years in Scotland)	No	*a*

Definitions:
Inward mobility of international students refers to the physical movement of students from a foreign country to study in a domestic TEI. It does not include international students enrolled in distance education programmes or offshore branches of domestic institutions.
Full-fees refer to the policy by some countries not to subsidise the education of international students from public funds.
Scholarships for top international students refer to grants and scholarships aimed at international students only, and which are granted on the basis of academic merit.
Special visa schemes/conditions refer to immigration provisions in certain countries that are designed to facilitate the immigration of tertiary graduates who received part of their tertiary education in the country.
Outward mobility of domestic students refers to the physical movement of domestic students to study in a foreign country. It does not include domestic students enrolled in distance education programmes of foreign tertiary education institutions, or in local campuses of foreign tertiary education institutions.
Specific mobility grants/loans refer to grants and loans schemes for which enrolment abroad is among the eligibility criteria.
General grants/loans refer to grants and loans schemes for which enrolment abroad is not an eligibility criteria.

Notes: *a*: Information not applicable because the category does not apply; *m*: Information not available; *TEI*: Tertiary education institution
1. Information concerns universities only and does not account for the non-university sector.
2. A Web site was under construction at the time this Table was prepared.
3. Students receiving a grant that covers full tuition and living costs get a guaranteed civil service employment at the end of their studies.
4. Full-fees apply to programmes that are delivered in foreign languages. Most international students are enrolled in those programmes.
5. Instruction in foreign languages is at the discretion of TEIs for public universities and private TEIs but requires Minister's approval in the case of public professional TEIs and VET schools.
6. The Hellenic International University was established by law to encourage international students to study in Greece. It has not operated yet.
7. The majority of international students studying in Greece are on a scholarship scheme. Those without a scholarship pay fees.
8. International students who have been in Iceland for a minimum of three years may apply for a permanent work permit.
9. Only if the student is enrolled in a TEI adhering to the code of conduct for recruitment of foreign students.
10. International students can receive grants from TEI or from the national grant scheme.
11. From 2008, the period to look for a job will be extended to 12 months.
12. In addition, New Zealand qualified international students get additional points for immigration purposes.
13. Only employers can apply for work visa, thus graduates need to return to their home country first and wait until an employer obtains a visa.
14. Although most TEIs provide support to international students, there is no national policy regarding this issue since internationalisation is at the discretion of TEIs.
15. Although there is a proposal to introduce fees for non-EU/EEA students, no decision has yet been taken and it is unclear whether such a policy will be introduced.
16. Part-time and post-graduate fees are un-regulated for all students whether domestic, EU or non-EU.

Source: Derived from information supplied by countries participating in the project. The table should be interpreted as providing broad indications only, and not strict comparability across countries.

Information and courses databases

In addition to brochures and Web sites, some countries have improved the visibility of their educational offer to prospective international students through interactive information tools on courses availability and descriptions accessible from a single gateway rather than searching individual TEIs' Web sites. The Australian "Going to Uni" Web site (*www.goingtouni.gov.au*) illustrates good practice in this respect. This Web site provides a single national database about approved tertiary education courses, costs and support arrangements for students (DEST, 2007). Although initially designed for all students, it proved to be a user-friendly information entry gate for prospective international students, thanks to its interactive search functions. In the United Kingdom, the *Universities and Colleges Admission Services* (UCAS) course search database offers similar features (*www.ucas.com/students/coursesearch*).

In non-English speaking countries, developing English versions of similar course information databases could prove an effective way of promoting the national education system internationally. The *Studychoice* Web site in the Netherlands (*www.studychoice.nl*) is a good example in this area. This easy-to-use English-language application guides prospective international students through more than 2500 bachelor's and master's degree programmes in the Netherlands, allowing them to choose from more than 90 different criteria to obtain a personal comparison of study programmes on offer (Surf Foundation, 2007). In Norway, the *Study in Norway* Web site (*www.studyinnorway.no*) also provides an overview of master's programmes taught in English.

Poles of excellence

Centres of excellence or traditional expertise in some disciplines are also important, especially to attract post-graduate students who are more sensitive to research performance and global rankings. The advent of global rankings of TEIs in the past few years has raised awareness in government and tertiary education circles on the need to strengthen centres of excellence in order to promote the attractiveness of programmes to prospective international students. According to Marginson and van der Wende (2007a), these rankings have prompted the desire for higher ranked universities both as symbols of national achievement and prestige, and as engines of knowledge economy growth.

In the Asia-Pacific region, the Australian government took the initiative to fund five international centres of excellence to profile expertise internationally. Similarly, current policy developments in Korea aim at establishing 10 world-class research-centred TEIs by 2012 open to the international market, while New Zealand also funds seven centres of research excellence.

In continental Europe, the weak representation of TEIs in two of the best-known global rankings systems – only four TEIs in both the 2007 Shanghai and Times Higher top-50 – has prompted policy reflection and action in both EU and national government circles, with proposals for greater investment in European tertiary education and research and for the further concentration of funding in networks and centres of excellence (Marginson and van der Wende, 2007b). For instance, the recent creation of the Paris School of Economics in France – a private TEI gathering top-academics from the various Parisian universities – aims at positioning itself in the world elite to compete with its London counterpart. Similarly, public policy in the Netherlands is directed towards

stimulating excellence in its areas of strength, with international students as a target group. Finland also benefits from strong and well-funded graduate programmes in health, scientific and technological disciplines.

Co-operation and mobility programmes

Institutionalised mobility programmes are another way to promote the attractiveness of national or regional education systems. For instance the Erasmus Mundus programme – which seeks to promote intercultural understanding through co-operation with third countries – also improves the visibility and attractiveness of European tertiary education in third countries.

Grant schemes targeting international students/scholars

In addition to high-profile centres of excellence and mobility programmes, the availability of scholarships and loans is a strong incentive to attract international students. In the European Union, the Erasmus Mundus programme provides EU-funded scholarships for third country nationals participating in its master's courses, thereby enhancing the attractiveness of European tertiary education world-wide. High-achieving students are especially courted, and several countries have developed schemes to offer financial support to gifted international students. This is the case in Australia, China, Estonia, Japan, Korea, the Netherlands, New Zealand, Portugal, Sweden and the United Kingdom (Table 10.3). In Norway, financial support for doctoral students takes the form of four-year employment contracts to ensure social security entitlements. The importance of these schemes varies between countries however. Marginson (2007) notes for instance that more than four graduate students in ten receive university or government scholarships in the United States, while government foreign aid scholarships represent less than 1% of international enrolments in Australia.

Among countries where high fees are charged to international students (Figure 10.3), the United Kingdom increased the number of Chevening scholarships in 1999,[87] set up a scholarship scheme to assist some able students and also funds a special scheme for outstanding research students. Similarly, the Australian government introduced the Endeavour Programme in 2003 in an attempt to attract high-achieving individuals into Australian academia through scholarships for international post-graduate research students. In Korea, a similar scholarship programme exists – but it is limited in scope.

In addition to scholarships, New Zealand also provides domestic student status to international doctoral students, allowing them to pay lower tuition fees. In Australia, loan schemes are available to help overseas-trained professionals acquire Australian qualifications through the FEE-HELP loan scheme (see Chapter 4).

In continental Europe – were tuition fees are traditionally lower – scholarship schemes are also used to attract international students. Current reforms in the Netherlands aim at expanding and streamlining the Huygens scholarship programme to attract top quality students. In Portugal, financial support is limited to graduate students.

87. The Chevening programme provides around 2 300 new scholarships each year to overseas students for post-graduate studies or research at United Kingdom's TEIs.

Interestingly, there seems to be less support to attract top academics/researchers in national education systems. One noticeable exception is Belgium (Flemish Community), where the Odysseus programme provides funds to help TEIs attract excellent researchers from abroad.

Opportunities for work to finance studies abroad

Another policy lever by which host countries can make their tertiary education system more attractive to prospective international students is their policy regarding possibilities for taking up part-time work while studying. Indeed, this source of income may help international students finance part of the cost of study abroad. Latin American students underlined the importance of this source of additional income during the country review of Spain. As a result, study destinations where opportunities exist for part-time work during studies benefit from a competitive advantage relative to alternative destinations. This awareness led the United Kingdom to ease restrictions on work whilst studying in 1999.

A number of countries allow their international students to work on a part-time basis during their studies, albeit with differing levels of control (Table 10.4). Finland and Sweden appear to be the most liberal countries since international students do not even need a work permit. By contrast, China and Spain are the most restrictive with part-time work fully forbidden in China, and requiring proof that it does not undermine study goals in Spain. Other countries require a work permit, for all international students in Australia, Japan and the Russian Federation, and only for non-EU/EEA[88] students in the EU and EEA countries.

Host countries often impose restrictions on working hours. Sweden is the most liberal country in this respect with no limits on working hours, followed by Japan where undergraduate international students can work up to 28 hours per week during semesters. In Australia, Belgium, Finland, France, Greece, Korea, New Zealand, Norway, Poland, the Russian Federation and the United Kingdom, international students can work up to 19-20 weekly hours during semesters and full-time during study breaks. The permitted weekly hours are more restrictive in Iceland, the Netherlands, Switzerland and Japan for research students. Korea also imposes restrictions on the type of activities that international students can perform.

88. The European Economic Area (EEA) agreement was negotiated in 1992 between the European Union, its then member States and 7 member countries of the European Free Trade Agreement (EFTA). Following the enlargement of the European Union, the EEA was maintained to allow the three remaining non-EU countries – Norway, Iceland and Liechtenstein – to participate in the internal market while not assuming the full responsibilities of EU membership. The EEA agreement contains provisions to allow cooperation between signatory States in a range of activities including research and technological development and education.

Table 10.4. Possibilities for international students to work: legal framework

Country	Conditions/restrictions	Source
Australia	- Need a work permit: students can apply for permission once they commence their courses - Maximum 20 hours per week - Full-time work during breaks	http://studyinaustralia.gov.au/Sia/en/StudyCosts/Working.htm
Belgium	- Need a work permit (non EU/EEA students) - Maximum 20 hours per week - Full-time work during breaks	www.kuleuven.be/jobstudent/pdf/Student_employment.pdf
China	- Foreign students cannot be employed in China while attending school in China	www.study-in-china.org/site2/culture/content.asp?id=1351
Czech Republic	- Foreign students on a study visa (*i.e.* non EU/EEA students) cannot be employed	Law No. 326/1999, §64 and Law No. 435/2004, §98
Finland	- No need for a work permit - Maximum 20 hours per week - Full-time work during breaks	www.helsinki.fi/rekry/materiaalit/students_guide.pdf www.varsityadmission.com/Foreign/Country/Finland/
France	- Need a work permit (non EU/EEA students) - Maximum 19.5 hours per week - Full-time work during breaks	www.edufrance.fr/en/a-etudier/sejour01-6.htm
Greece	- Need a work permit (non EU/EEA students) - Maximum 20 hours per week	www.imepo.gr/documents/Nomos3386_en.pdf
Iceland	- Need a work permit (non EU/EEA students) - Maximum 15 hours per week (non EU/EEA students) - Full-time work during breaks (non EU/EEA students)	www.ask.hi.is/page/work
Japan	- Need a work permit - Maximum 28 hours per week (university and college students) or 14 hours per week (research students) - Up to 8 hours per day during breaks	www.jasso.go.jp www.varsityadmission.com/Foreign/Country/Japan/
Korea	- Need a work permit - After one semester of studies - Selected activities - Maximum 20 hours per week - Full-time work during breaks	www.studyinkorea.go.kr
Netherlands	- Need a work permit (non EU/EEA students) - Maximum 10 hours per week - Full-time work during June, July and August	www.studyin.nl/preparing-to-stay/Working-while-studying.html
New Zealand	- Need a work permit - Maximum 20 hours per week - Full-time work during breaks	www.minedu.govt.nz/index.cfm?layout=document&documentid=9468&indexid=6671&indexparentid=6663&goto=00-04#P752_74861
Norway	- Need a work permit (non EU/EEA students) - Maximum 20 hours per week - Full-time work during breaks	www.studyinnorway.no/sn/study_in_norway/student_residence_permit/working_permit_for_students
Poland	- Need a work permit (non EU/EEA students, except 3 months holiday employment) - Maximum 20 hours per week - Full-time work during breaks	www.studyinginpoland.com/faqs www.wsg.byd.pl/cwz/cwz-eramzus.htm
Portugal	- Need a work permit (non EU/EEA students)	www.dges.mctes.pt
The Russian Federation	- Need a work permit - Maximum 20 hours per week - Full-time work during summer break	www.varsityadmission.com/Foreign/Country/Russia/
Spain	- Foreign students cannot carry out any paid activity unless it doesn't impair study aims	www.learn4good.com/travel/es_visa.htm#can%20i%20work
Sweden	- No need for a work permit - No limitation of hours	www.studyinsweden.se/templates/cs/Article___4978.aspx www.migrationsverket.se/english.jsp?english/eeu/efamilj_euees.jsp
Switzerland	- Need a work permit (non EU/EEA students) - After 6 months of study - Maximum 15 hours per week	www.ects.ch/engl/Study.html
United Kingdom	- Need a work permit (non EU/EEA students) - Maximum 20 hours per week - Full-time work during breaks	www.ukvisas.gov.uk/servlet/Front?pagename=OpenMarket/Xcelerate/ShowPage&c=Page&cid=1018721067373#Q10

Policies related to language of instruction

Policies allowing TEIs to deliver part or all of their educational programmes in a foreign language may also help attract international students who are not fluent in the language of instruction. This policy tool may be especially useful for countries wishing to attract international students in scientific disciplines, given that the latter are usually less likely to be fluent in many different languages and more prone to enrol in countries offering education programmes in English.

The delivery of tertiary education programmes in a foreign language is permitted by the national policy framework in the vast majority of non-English speaking countries taking part in the Review: Croatia, the Czech Republic, Estonia, Finland, Iceland, Japan, Korea, the Netherlands, Norway, Poland, Portugal, the Russian Federation, Spain, Sweden and Switzerland (Table 10.3). Belgium (Flemish Community) also allows TEIs to deliver part of their programmes in a foreign language in master's programmes. In most countries, this actually translates into English-language instruction, although there is evidence of Chinese-taught programmes in the Netherlands (Surf Foundation, 2007).

In Europe, the growth of English-language instruction was fostered by the restructuring of degree structures as part of the Bologna reforms through the introduction of new English-taught bachelor's and master's programmes (van der Wende, 2001). A growing number of courses and programmes are offered in English in Belgium (Flemish Community), Norway and Sweden, while positive developments have occurred in Portugal where English-language programmes were virtually inexistent until now (OECD, 2007a). This trend is especially significant at master's level, *e.g.* the majority of Dutch master's programmes are offered in English and their students can prepare their dissertations in either Dutch or English. Similar growth in English-taught courses and programmes took place in Korea where 7.5% of university classes were already taught in English in 2000 (Ministry of Education of Korea, 2001). Korean TEIs adopted an interesting policy to attract international students, whereby they commit to teach classes in the English language whenever one international student is enrolled.

But the provision of instruction in foreign languages is not the only way to overcome language barriers. An alternative strategy is to assist prospective international students in familiarising themselves with the language of their host country. In this respect, Japan provides preparatory language education – ranging from 6 months to 2 years duration – to future international students in a number of East-Asian and Middle-Eastern countries (Huang, 2006). In Sweden and Portugal, language courses are provided once international students arrive in the country.

Support to international students/faculty

Finally, a number of policies of support to international students and academics – and most prominently those facilitating their immigration formalities, helping them find accommodation, or providing them with specific support services – can help make their study/work abroad experience more enjoyable. Such policies have a powerful impact on mobility flows through the feedback – positive or negative – of past international students or academics to their friends contemplating study/work abroad.

In acknowledgement of this, Portugal adopted a new legal framework for foreigners in July 2007, which sets up a simplified regime for the admission of scientists, university professors and highly qualified foreigners who intend to work in Portugal – whether temporarily or permanently. The new regime lays down specific rules on entry, stay, exit

and removal which apply to foreigners intending to carry out research, teach in a TEI or perform a highly-skilled activity in Portugal.

The recent experience of the United States illustrates the power of student feedback to their peers. The United States experienced in 2004 its first decline in international student enrolments since 1971, and 40% of TEIs that faced a fall in under-graduate enrolments blamed it on visa delays or denials in the aftermath of the events of 11 September 2001 (Lee *et al.*, 2006; OECD, 2005a). Lee *et al.* (2006) indicate that the unwillingness of some international students to submit themselves to what they perceived as discomforting and unnecessary responses to 9/11 has pushed many of their friends and relatives to seek post-secondary experiences in Australia, New Zealand and Europe.

Dissatisfaction with immigration formalities is not limited to the United States. Puustinen-Hopper (2005) reports considerable dissatisfaction with the Finnish immigration formalities by international doctoral students and researchers. Similar complaints have also been voiced in the Netherlands and the United Kingdom in terms of lengthy and costly visa applications. In the United Kingdom, a recent survey estimated at £18.5 millions the potential loss of tuition and related revenues resulting from initial visa rejections, while a third of non-EU international students indicated they would look at other destinations were visa procedures to become more cumbersome and/or costly (United Kingdom Council for International Education, 2006). Van Aken (2001) also finds that the mobility of international students is hampered to varying degrees by visa problems in Denmark, France, Germany, the Netherlands and the United Kingdom.

As a result, a number of countries have adopted specific visa policies or quotas to ease the conditions of entry of international students. This is the case of Estonia, the Netherlands, Poland, Portugal, Spain, Sweden and Switzerland (Table 10.3). In Portugal, special access arrangements exist for students from Portuguese-speaking ex-colonies and descendants of Portuguese emigrants. France and the United Kingdom have also attempted to streamline their immigration formalities for international students (Lupieri, 2007).

But the unique needs of international students require specific support beyond immigration formalities. Kher *et al.* (2003) show how many support services – including admission, registration, residence life and dining – do not cater to the unique needs of international students in the United States, despite their greater needs. Lloyd (2003) notes difficulties of international students in finding suitable accommodation, dealing with enrolment procedures or finding social support, while Pritchard and Skinner (2002) in the United Kingdom and Grey (2002) in Australia report difficulties in forging friendship with natives. This strand of research calls for better support and pastoral care for international students.

The Czech Republic, Estonia, Finland, Japan, Korea, New Zealand, Norway, Poland, Portugal, the Russian Federation, Spain and the United Kingdom have adopted national policies or schemes of specific support for international students (Table 10.3). Such support ranges from financial support to TEIs to build dormitory facilities in Korea to more comprehensive codes of practice for the pastoral care of international students in Estonia, the Netherlands and New Zealand.

New Zealand policy is exemplary in this respect. All tertiary staff and agents – including those offshore – are subject to a *Code of Practice for the Pastoral Care of International Students*. This code covers a broad range of areas where international students need support: educational and linguistic preparation; assistance to adapt to a new

cultural environment; advice in relation to accommodation, travel, health and welfare; information and advice on addressing harassment and discrimination; monitoring of student attendance and course progress; and mandatory communication with the families of students at risk. The enforcement of the code is assured through an independent public agency – the International Education Appeals Authority (IEAA) – which receives and arbitrates complaints from students. In the Netherlands, a similar "code of conduct regarding international students in the Netherlands" was adopted in 2006 which commits signatory TEIs to provide adequate information to international students in relation to programmes, fees, housing and other issues that in the past have been the cause of complaint.

Encouraging the mobility of domestic students

Improving the attractiveness of the tertiary education system to international students and academics is only one aspect of mobility optimisation. Most countries participating in the Review are equally eager to encourage their domestic students to go abroad in order to develop their linguistic and cross-cultural skills and enhance the competitiveness of their future labour force.

Travel regulations

The first and foremost policy lever in this respect relates to foreign travel regulations. Although the situation does not apply in most countries where citizens are free to travel internationally, one has to remember that the freedom of international travel is a pre-condition for encouraging the mobility of domestic students. In Korea, this is a relatively recent feature since the liberalisation of overseas travel only began in 1989. The free mobility of students and academics is also fairly recent in the Czech Republic, Croatia, Estonia, Poland and the Russian Federation where the directions of student mobility flows were restricted by ideology until the early 1990s. In China, ordinary citizens have only been able to hold a passport since 1985 (Tremblay, 2005). It is also important to note that even in situations where authorisations to travel overseas for study-related purposes would be automatically granted, the possibility for relatives to visit international students may alter their decisions by lowering mobility-related anxieties.

Language abilities

The development of language abilities among the domestic student population is another tool by which countries can enhance the outward mobility of their domestic students. Indeed, it has been shown that the higher students rate their foreign language proficiency, the higher is their participation in international mobility (Eurostudent, 2005). Yet, language abilities of students are to a large extent the result of previous foreign language education as well as other connected policies (*e.g.* dubbing of Anglo-Saxon TV programmes). But some tertiary education policies may provide incentives for students at lower levels of education to invest time and efforts in their foreign language classes. In Korea for instance, proficiency in foreign languages is required to earn a tertiary post-graduate degree, with a requirement of passing one foreign language exam for a master's and two foreign language exams for a doctorate degree. Accordingly, nearly 4 out of 10 Korean studying abroad are enrolled in language programmes. In Sweden, students receive intensive foreign language training in preparation for study abroad.

Recognition and credit transfer systems

Recognition policies and credit transfer systems are also key factors to enhance student mobility. Within Europe, regional provisions for the recognition of foreign qualifications and degrees have removed obstacles to the outward mobility of students to neighbouring EU countries. As an illustration, the European-wide recognition of medical degrees leads a number of students to enrol abroad to bypass the *numerus clausus* applicable in their country of origin. Yet, the situation is less favourable when it comes to the recognition of degrees earned outside of the EU area. For instance, there are concerns in the Netherlands that the machinery for assessing and recognising foreign qualifications is cumbersome, possibly impairing the mobility of Dutch students outside of the EU area. Similar difficulties exist in a number of Asia-Pacific countries, including Korea, where the UNESCO Regional Convention on the Recognition of Studies, Diplomas and Degrees is not fully implemented.

Credit transfer systems are another useful tool to enhance the outward mobility of domestic students for shorter durations than a full degree programme. The main policies in this area relate to the establishment of regional credit transfer systems at the broader European level (ECTS) and in the Asia-Pacific region (UCTS), as described above. But national policies vary as to the proportion of credits which can be transferred from abroad. Korea changed its legislation in 2000 to allow Korean students to transfer up to half of the credits needed for graduation in Korean universities from abroad.

Financial support to international mobility of domestic students

Finally, a powerful incentive for students to enrol abroad is financial support. With the exception of Greece, Poland, the Russian Federation and the United Kingdom, all participants in the Review provide some form of financial support to encourage the outward mobility of their domestic students (Table 10.3). But, the coverage, extent and form of this financial support vary greatly across countries.

Some countries only support the additional travel and living costs incurred by study abroad. This pattern of financial support with grants/loans covering all or part of travel and living costs is found in Australia, the Czech Republic, Estonia, Iceland and Spain (with a mix of general and specific grants and loans). In Australia for instance, the government funds a number of under- and post-graduate scholarships under the Endeavour Programme to help Australians study abroad in recognition of their comparatively low international mobility. In addition, the Overseas Study HELP income-contingent loan allows eligible students to undertake some of their course overseas. In the European Union, the Erasmus Mundus programme also offers scholarships for EU nationals studying at partner TEIs throughout the world.

Portability of grants/loans

In stark contrast, Belgium (Flemish Community), Chile, China, Croatia, Finland, Japan, Korea, Mexico, the Netherlands, New Zealand, Norway, Portugal, the Russian Federation, Sweden and Switzerland support the total cost of study abroad, *i.e.* tuition and living cost. In the most liberal systems, the general support schemes are fully portable internationally and students can choose to enrol in an institution in their country or abroad. This is the case in Belgium (Flemish Community, with restrictions), Chile and Finland (Eurodoc initiative).

Norway is an interesting example of portable grants and loans. Students wishing to pursue studies in a foreign country have a right to financial support to cover tuition fees charged by foreign TEIs, up to a certain level and on the condition that the programme be fully recognised in the host country. The tuition funding is given partly as a grant and partly as a loan. In addition, they are entitled to the standard financial aid package which is fairly generous by international standards – with a total basic monthly amount of about EUR 1 000 in 2002/2003 for living costs compared to a maximum of EUR 350 for Polish students for instance. Similarly, the Icelandic student loan scheme does not discriminate between students enrolled in Iceland or abroad, and stands out for its generosity. Countries usually impose restrictions on the portability of grants and loans. In the Netherlands and Sweden, it is conditional on quality assurance requirements of the host TEI. In Portugal, portable grants are restricted to doctoral and post-doctoral studies abroad. In New Zealand, portable scholarships and post-doctoral fellowships also target high-performing research students and outstanding scientists, while in Chile, China, Croatia and Mexico, the portability of grants is conditional upon a commitment from students to return to their home country (Table 10.3).

Maximising returns of internationalisation

The encouragement of incoming and outgoing student mobility need to be seen within the broader context of the national approaches to internationalisation. Indeed, a number of policy tools can help countries reap the full benefits from internationalisation, and hence maximise its returns.

Tuition fee policies and their impact

The first and foremost is the tuition fees policy, and the level of fees applied to international students. Charging the full cost of education to international students may provide a useful source of revenue for TEIs, and contribute indirectly to the financing of the education system through economies of scale that enable to cross-subsidise the education of domestic students. It can also represent a noticeable contribution to services exports. At the same time, while this policy is fairly easy to implement in countries where the demand from international students is sustained – *e.g.* English-speaking destinations – it may be counter-productive in countries with lesser natural appeal to international students and higher elasticity of international enrolments to the cost of studies. Indeed, increasing tuition fees could in that case deprive the host country from the externalities of international enrolments in terms of internationalisation at home. On the other hand, international students may represent a high financial burden for countries where tertiary tuition fees are low or inexistent given high unit costs in tertiary education (Gerard, 2007; Del Rey, 2001). The possible adverse impact of increasing tuition fees then needs to be balanced against the financial burden of subsidising the tertiary education of international students in systems facing strong financial pressures due to the expansion of tertiary participation.

A number of countries have adopted national policies allowing (or sometimes, compelling) TEIs to charge higher or full-fees to international students. This is the case in Australia, Belgium (Flemish Community), China, Croatia, the Czech Republic (for study programmes delivered in foreign languages), Estonia, Greece, Mexico, the Netherlands, New Zealand, Poland, the Russian Federation and the United Kingdom (Table 10.3). Yet, most of these countries have adopted provisions to grant domestic fees to some categories of international students in accordance with their national goals. In the EU member

countries, this is the case for other EU and EEA citizens, although the United Kingdom restricts this exception to students from the sole EU. Belgium (Flemish Community) also grants domestic status to students originating from developing countries. New Zealand also grants domestic status to research and doctoral students in a drive to attract them in the country. Interestingly, the countries which charge full-fees can be divided in two groups reflecting the rationales discussed above.

The first group comprises Anglo-Saxon destinations as well as the Netherlands – a country offering a large number of programmes in English – and is clearly driven by revenue-generating motives. Full-fee policies can provide a useful policy lever to encourage TEIs to recruit and enrol large numbers of international students. In the Netherlands for instance, tuition fees for a master's in engineering are about 5.5 times higher for non-EU/EEA students than for their EU counterparts. High fees do not necessarily discourage international students as long as the quality of education provided and its likely returns for individuals make the investment worthwhile, as illustrated by New Zealand's three-fold increase in international enrolments between 2000 and 2004 despite a 24% increase in average international fees over the period. However, levels of tuition fees may play a role when students choose between similar educational opportunities abroad, and may explain the low progress of foreign enrolments in the United Kingdom and the United States between 2000 and 2005 in the context of fierce competition from other primarily English-speaking destinations offering similar educational opportunities at a lower cost (OECD, 2007a).

The second group of countries charging higher or full-fees to international students includes – with the exception of Belgium (Flemish Community) – countries with lower income per capita than the OECD average where the financial pressure incurred by international students may be more difficult to bear (OECD 2007a). But debates on the rationale for subsidising the education of international students also take place in more affluent countries like Belgium (Flemish Community), Finland and Sweden as a result of rapid growth in international enrolments and related costs (Gerard, 2007; Del Rey, 2001). In Sweden for instance, the pressure of applications from non-EU/EEA countries has led the government to consider the implementation of fees as a way to limit the burden on taxpayers.

Other countries have chosen not to impose higher fees to their international students. Although the rationale for publicly-subsidising the education of foreigners may be questioned, this would be understating the non-tuition benefits of incoming student mobility in terms of trade and externalities on domestic students and immigration intake.

Trade value of internationalisation

The internationalisation of tertiary education – and in particular student mobility and the cross border activities of TEIs – yield economic benefits related to the trade value of cross-border education provision (OECD, 2004). Tuition fee policies are a major element of the overall impact of internationalisation on the trade balance. As a matter of fact, several countries have actually made international education an explicit part of their socio-economic development strategies and charge full-fees to international students to generate trade benefits. In New Zealand, export education has become the 3rd largest services export earner, and was worth NZD 2.2 billion in 2004. Similarly, a 2007 study estimated that international students in tertiary education in the United Kingdom contributed about GBP 5 billion in tuition fees and other spending in 2003/2004 (British Council, 2007b). But Asteris (2006) argues that the real contribution of education

services exports to the external account – and by extension for the economy – is in fact more important than these estimated amounts suggest. This is due to the very small import content of education services relative to other exports and the small amount of overseas remittances incurred since TEIs are generally owned by nationals. For their part, Greenaway and Tuck (1995) draw attention to the commonality between trade and student mobility links, arguing that international students are more likely to favour their country of study later in life.

But the trade value of internationalisation goes beyond tuition fee revenues through associated spending of international mobile students who can make a significant contribution to the local economy. In New Zealand for instance, it is estimated that just under half of the total trade value of export education in 2002 went to New Zealand's wider community through the creation of 10 000 full time jobs, increases in property values and its positive impact on tourism as friends and relatives visit international students (Asia 2000 Foundation of New Zealand, 2003). At the local level, Dockery *et al.* (1999) estimate that the 1 957 international students enrolled at Curtin University of Technology in 1994 generated approximately 1 000 jobs in Western Australia. In New Zealand, the city of Dunedin is a good illustration of the downstream impact of internationalisation for smaller campus cities, with 2 000 international students contributing to the local economy of a city of 110 000 inhabitants through accommodation and living expenses.

Externalities deriving from internationalisation in R&D

In addition to externalities on the local economy, the international mobility of academics and students – especially those in research programmes – can yield positive externalities in terms of R&D. These externalities are of several kinds (see Chapter 7).

Firstly, the international mobility of academics and students fosters international networks and yields externalities in terms of technology transfer, sharing of scientific equipment and greater scope for cooperation. In acknowledgement of these externalities, Korea funds scholarships to under-graduate engineering students wishing to study abroad, with an aim to increase networking between human resources in technical fields and strengthen cooperation in developing the latest technology.

In addition, international students can make a significant contribution to research. In this respect, Australia, Switzerland and the United Kingdom benefit most from this externality among countries participating in the Review – with more than 30% of tertiary-type A second degrees or advanced research degrees awarded to international students. The contribution of international students is also significant in Belgium, Japan and New Zealand (OECD, 2007a).

Lastly, a third type of externality derives from the contribution of international students to the viability of some post-graduate programmes, as is the case in the United Kingdom.

Immigration policies targeting international students and scholars

Another policy tool through which countries can leverage the returns of internationalisation is their immigration policy. Indeed, the growing demand for skills from the new economy implies that most developed countries face long-term risks as a result of their ageing populations, increased competition for skills in the global labour

market, and specific skills shortages. Most worrying, according to Douglass (2006) is the rise of new high-technology industries and research clusters outside of the traditional hegemony regions, which might lessen the ability of the United States as well as other developed countries to attract foreign talent in the future. In this perspective, allowing international students to stay in their country of study to work can be critical to build a skilled workforce for the future.

All countries participating in the Review except China, Mexico, the Russian Federation and Switzerland allow international students to apply for a work visa upon graduation. However, the conditions for doing so differ to a great extent. Indeed, while international students are subject to the same conditions as other prospective immigrants in Belgium (Flemish Community, with the exception of researchers), Chile, Croatia, the Czech Republic, Estonia, Greece, Poland and Sweden, specific schemes/conditions easing their entry have been set up in Australia, Finland, Iceland, Japan, Korea, the Netherlands, New Zealand, Norway, Portugal and the United Kingdom (Table 10.3). For instance, the Netherlands has established a "fast-track" procedure whereby all foreign students and other prospective knowledge migrants deal with just one government authority and are issued the same type of permit.

In Australia, Finland, Iceland, Norway, Portugal and the United Kingdom (under the new *International Graduate Scheme*), these specific conditions apply to all international graduates without restriction. Other countries have however confined these preferential entry schemes to graduates from specific countries[89] or working in specific fields or occupations (Korea). In addition, these schemes are often limited in time, with international students granted a specific period to find a job (Finland, Japan, the Netherlands, New Zealand, Norway, the United Kingdom).

Benefits for sending countries

But countries may also generate returns to internationalisation by sending students abroad, through knowledge and technology transfers. In this respect, Kim (1998) shows within the framework of an endogenous growth model that developing countries can benefit from international student mobility through the import of advanced knowledge – embedded in returning students – which contributes to the accumulation of human capital and hence economic growth. His empirical tests confirm that sending students abroad in technology-related fields is beneficial for middle-income countries,[90] provided that these students actually return to their home country upon completion of their studies.

Ensuring the sustainability of international strategies

The last policy challenge in terms of optimising mobility flows relates to the sustainability of internationalisation strategies. The rapid growth in international enrolments in some countries has indeed raised concerns related to possible risks deriving from the volatility of student mobility flows. Not only do they respond to perceived changes in the quality of service offered, tuition fee levels, costs of living or immigration

89. The most obvious example is the free mobility of EU citizens throughout the EU area.

90. Results show that the number of students enrolled in a developed country is significantly and positively associated with the sending country's growth rate, provided the income gap between the 2 countries is neither too small nor too large. But this positive contribution only holds for international students majoring in technology-oriented fields.

legislations in the various study destinations, but a number of changes are currently taking place that might alter the position of some key players in the international education market in the coming years.

First of all, a number of emerging economies that initially used student mobility to overcome limitations in domestic provision are now in a position to expand their own capacity, and accommodate students that would formerly have studied abroad. Asteris (2006) estimated that a number of local TEIs which have developed through collaborative programmes might be able to reach complete autonomy within a decade. In addition to this process of import-substitution, there is also growing competition among providers of international education within the OECD area with increasing provision of tertiary programmes in the English language, but also in the Middle-East and South-East Asia at a much lower cost than in traditional destination countries (Harman, 2006). Lastly, global shocks can make student mobility flow highly reactive, as the recent history highlighted. Indeed, student mobility flows have exhibited significant shifts across providers as a result of the Asian crisis in 1997-1998 and later on in the aftermath of the events of 11 September 2001. For instance, the United Kingdom incurred a drop in non-EU international enrolments of over 10% when the Asian crisis hit, while the country later benefited from the post-September 11 tightening of visa entry conditions in the United States (Asteris, 2006).

TEIs in Australia and New Zealand are increasingly aware of the risks deriving from possible fluctuations in international student numbers and the impact this could have for their financial sustainability in the event of a sudden decline. Of particular concern is their over-reliance upon a limited number of countries of origin. New Zealand and the United Kingdom have therefore launched policy initiatives to diversify the country base of their international intake in order to reduce risks.

But the issue of sustainability is also relevant for sending countries. In Korea for instance, the growing numbers of students going overseas to study represents a serious threat to the finances of domestic TEIs.

10.4.2 Preserving access and ensuring equity

Another challenge for policy makers is to ensure that internationalisation policies remain compatible with equity objectives. These are twofold. First, internationalisation policies need to ensure that the intake of international students does not displace or limit the access of domestic students to tertiary studies. In addition, the additional costs incurred by study abroad imply that tertiary education policies need to warrant that international options are open to all students irrespective of their socio-economic background.

Displacement of domestic students

The presence of international students brings numerous benefits to host TEIs. First of all, the presence of a potential international client base compels them to offer highly reactive, client-driven and high-quality programmes that stand out among competitors. In addition, international enrolments bring in an international perspective to campus life and thus contribute to internationalisation at home goals. They can also help TEIs reach the critical mass needed to diversify the range of educational programmes offered. Lastly, they increase TEIs' financial resources when international students bear the full cost of their education. Given these advantages, concerns have been voiced as to possible

negative side-effects of internationalisation, whereby TEIs would have an incentive to recruit international students at the expense of domestic students. For obvious incentive reasons, it would then be expected for this issue to be more prominent in countries that charge the full-cost of tertiary education to international students in a revenue-generating perspective. Indeed, when TEIs receive more revenue per capita from international than domestic students, they have clear incentives to recruit the former than the latter.

There is however no evidence so far of such a phenomenon of displacement of domestic students by international students in OECD countries at the aggregate level (OECD, 2004). In Australia for instance – where financial incentives are strong for TEIs to enrol international students – the legislation contains provisions for the enrolment of fee-paying international students *beyond* the government-funded places reserved for domestic students, and not *instead*, thus prohibiting the displacement of government-funded domestic students. This is confirmed by a recent audit on the impact of international students in universities in Victoria, which concluded that there is no displacement of domestic students by international students (Auditor General Victoria, 2002). In the United States, Borjas (2004) also found little evidence of a crowding-out effect in United States graduate programmes at the aggregate level, *i.e.* for the typical United States-born student.

The situation is however less clear-cut when looking at particular TEIs. Indeed, Borjas (2004) claims that at institutional level, foreign students have displaced United States-born white men from post-graduate studies, with the crowding out increasing significantly with the elitist and prestigious character of the TEI. The situation of elite universities is indeed likely to be different given the strong demand from international students for study places in high-status TEIs (Lee *et al.*, 2006).

The growing importance of global rankings is likely to galvanise concerns related to the displacement of domestic students in the years to come – as elite TEIs will come under increasing pressure from international students – even though the aggregate situation could be fairly different with international students filling the gap resulting from the projected decline in domestic demand in many OECD countries. In the context of ageing populations, internationalisation is therefore quite likely to become an issue of survival for TEIs rather than a source of displacement.

Socio-economic characteristics of international students and mobility support schemes

Another dimension of equity relates to the composition of the international student body. Indeed, international education incurs additional costs relative to domestic study. In the case of trans-national education, tuition fees charged by foreign TEIs usually exceed domestic fees, while international student mobility incurs the additional costs of travel and accommodation for the duration of the study abroad period. These costs may discourage students from poorer backgrounds from taking part in international education despite its positive outcomes for individual participants.

Yet, little is known on the socio-economic characteristics of students who take part in international education – and especially its costliest form of study abroad for a full degree – relative to students who do not take part in international mobility.

A recent survey on the socio-economic background of Erasmus students provides some indication of the socio-economic characteristics of European students taking part in this short-term mobility scheme, and sheds light on the existence of equity issues in short-term student mobility within the European context (European Commission, 2006).

Indeed, 61% of the 15 000 Erasmus students surveyed had at least one parent working in high level occupations in 2004/2005 while these occupations accounted for only 39% of the employed labour force in the EU-25 area (Eurostat, 2006). In the United Kingdom, a study of outgoing Erasmus students shows that they are more likely to be younger, female, white and from families in the higher social classes when compared to non-mobile students, for whom finance is the main barrier to mobility (Sussex Centre for Migration Research and Centre for Applied Population Research, 2004). But these figures are likely to understate the real extent of equity issues given that the Erasmus programme focuses on short term-mobility – the average duration of study abroad was 6.5 months among respondents of the Survey – and the financial burden of international student mobility is obviously higher for full-degrees, when students pay tuition fees in their host TEI.

In this latter respect, another study covering all international students in Europe – *i.e.* Erasmus students as well as free-movers – confirms that students from low-educated families make substantially less use of the opportunities for studying abroad than those from families with higher educational attainment. The differences in mobility participation rates between students from privileged and under-privileged families are highest in Spain (15 *vs.* 6% respectively) and Finland (18 *vs.* 12%) while France and Portugal display more homogenous participation rates in international mobility (Eurostudent, 2005).

Equity issues in internationalisation can in principle be addressed through means-tested grants and scholarships. However Andere (2004) deplores that the wide use of merit-based scholarships to finance student mobility is regressive from an equity perspective because in many countries, the best performing students are overwhelmingly drawn from high-SES backgrounds. Unfortunately, the mobility grants and scholarship schemes available in countries participating in the Review tend to be overwhelmingly awarded on the basis of academic merit, with the exception of Norway where study grants are universal, and Australia where the Overseas Study HELP (OS-HELP) income-contingent loan allows eligible students to undertake some of their course overseas. As a result, this equity issue is generally not addressed.

10.4.3 Ensuring quality and protecting customers

The third challenge for policy makers is to ensure quality and protect participants in international activities. There are three important aspects of the discussion of quality and internationalisation. The first relates to the impact of internationalisation activities on educational quality, the second examines how to assess and enhance the quality of international initiatives, while the third explores how quality can serve internationalisation objectives as a marketing instrument towards international customers.

Impact of internationalisation on education quality

With respect to the impact of internationalisation on education quality, there is in general wide consensus on the benefits brought about by internationalisation in terms of enhanced comparability of degrees and as a result, easier benchmarking against international standards. This benchmarking function is a strong rationale for internationalisation, both in Europe as highlighted in the Bologna Declaration and in Asia-Pacific countries (Bologna Secretariat, 1999; Knight and de Wit 1997).

There is also wide recognition of the impact of internationalisation on the content of tertiary curricula. In Iceland for instance, it is acknowledged that the growth in international enrolments enriched the content of curriculum offered and had an evident influence on the growth in courses taught in English. Knight (2001) notes however that an implicit assumption in this positive impact is that enhancing the international dimension of teaching and research is a must in a global environment in which understanding and knowledge of the impact of globalisation are critical.

Another benefit of internationalisation relates to prestige. Cederlund (1999) notes indeed the high symbolic value and impact of international agreements on the perceived quality and prestige of TEIs.

However, internationalisation also creates new challenges for TEIs, and several authors have questioned the possible adverse impact on tertiary education quality resulting from internationalisation.

A first range of concerns derive from the growing reference to international standards. While such standards enhance the credibility of TEIs and systems, they can also be a double-edged issue and legitimate concerns have arisen as to and the risks of standardisation – or "McDonaldisation" – of tertiary education and homogenisation of world culture along Western values that can result from an excessive emphasis on internationally recognised standards (Knight, 2001; Knight and de Wit 1997).

Another source of concern which has been raised in Korea relates to the quality of courses and programmes offered in a foreign language. Reports suggest indeed that the lack of qualified English teachers and the absence of a monitoring system raise significant quality issues in some language programmes operated by Korean TEIs (KEDI, 2006).

Other apprehensions in relation to the impact of internationalisation on quality are generally related to the presence of international students. Indeed, concerns have arisen in several highly internationalised countries as to the capacity of the system to absorb and cater for large international student communities. Such concerns have been especially acute given the uneven spread of international students across TEIs and fields of study, resulting in high proportions of international students in some TEIs/programmes. In Australia for instance, the share of international students varied widely across TEIs in 2005 – from a low 4% to as high as 60% of enrolments.

The most common allegations relate to lowering entrance standards as TEIs attempt to recruit more international students (ACA, 1997), insufficient language skills of international students (New Zealand Universities Academic Audit Unit, 2003) and additional demands being placed on academic staff, all of which result in some courses being abridged to accommodate students with poor preparation and inadequate language skills, and therefore impacting adversely on the outcomes of both domestic and international students (Gezentsvey, 2003; New Zealand Universities Academic Audit Unit, 2000). With respect to academics mobility, Borjas (2000) also claims that foreign-born teaching assistants have an adverse impact on the class performance of under-graduate students due to insufficient language proficiency. Lastly, Lee *et al.* (2006) argue that there is also an opportunity cost of focusing on international students, with resources being moved away from work in the area of local outreach and services to local students towards international recruitment and services to international students.

Yet, evidence of such a negative impact of internationalisation on quality is far from straightforward. With respect to entrance standards, Pimpa (2005) shows that entry requirements is one of the benchmarks used by prospective international students to judge

the quality of foreign TEIs, which suggests that TEIs willing to attract them would have an incentive to raise rather than lower their entry requirements. New Zealand data also suggest that the quality of international students is not an issue since they display higher completion rates in 5 years than domestic students – at 43% compared to 39%. Olsen *et al.* (2006) reach similar conclusions in Australia, where there is no difference overall between domestic and international students, and where the latter even outperform domestic students in science, information technology, engineering, education, arts and agriculture/environment.

To address these concerns, New Zealand TEIs have however strengthened their language admission requirements and foundation programmes to ensure that students are adequately prepared to begin their studies, both academically and linguistically. Some TEIs have also developed professional development programmes for their staff focusing on improving delivery in classes with large international enrolments. Lastly, the *Code of Practice for the Pastoral Care of International Students* requires TEIs to ensure minimum skills, and proposes minimum standards.

International quality assurance policies

The development of internationalisation of tertiary education – in its multiple forms – transcends and challenges national regulatory frameworks as countries need to assess and ensure the quality of their international activities domestically and abroad, while at the same time protect their citizens enrolled in foreign TEIs abroad or in their own country. Van Damme (2002) contends that in this respect, national regulatory frameworks are increasingly inadequate, although a number of countries have adopted various quality assurance policies and schemes to deal with international aspects of tertiary education.

Various approaches and instruments to the quality assurance of internationalisation exist. In some countries and/or TEIs, the quality assurance of internationalisation is dealt with by focusing on international activities as part of regular quality self-assessments. Another strategy is to develop codes of practice specifying a set of minimum requirements to be respected or situations to be avoided. Some countries or networks also resort to certification processes like those developed by the Global Alliance for Transnational Education (GATE), while internationalisation strategies and activities are sometimes included in broader accreditation processes at the institutional or programme level (van Damme, 2002; van der Wende, 1999).

Internationalisation at home

With respect to internationalisation at home, the *Netherlands Universities Foundation for International Cooperation in Higher Education* (NUFFIC) developed for instance a set of guidelines to help TEIs undertake the self-assessments of their international activities (NUFFIC, 1995). In the same fashion, the Finnish Centre for International Mobility also worked up a self-assessment checklist for TEIs to evaluate and improve their international work (Snellman 1995).

Another interesting approach has been followed in Portugal, where a series of large scale international partnerships have been launched between *consortia* of Portuguese universities and leading North American TEIs through joint professional master's and doctoral programmes (see Box 7.3). These partnerships have allowed the introduction of new quality assurance practices in the Portuguese TEIs and have proved to be true agents of change in the tertiary education system.

Student mobility

As far as student mobility is concerned, the development of quality assurance mechanisms to protect international students has to a large extent been led by the host countries themselves. Indeed, the government authorities as well as the TEIs of the most highly internationalised systems are fully aware that poor educational quality, support services, pastoral care or business failure by a minority of rogue providers could put the whole sector at risk through adverse reputational effects. They have put in place various mechanisms to assure consumer protection, by way of codes of conduct, financial incentives, information to prospective international students and immigration legislation. Among countries participating in the Review, Croatia, Estonia, Japan, the Netherlands, New Zealand, Norway, the Russian Federation and the United Kingdom have adopted quality assurance frameworks for international students (Table 10.3).

Codes of conduct have been developed at the national level by the major Anglo-Saxon destinations. In New Zealand for instance, the enrolment of international students is restricted to TEIs that have signed the *Code of Practice for the Pastoral Care of International Students*. This code of practice suggests minimum standards in various areas including the English language proficiency of international students. In Australia, a similar code specifies TEIs' obligations in a range of areas, and TEIs' compliance with the code is subject to an external assessment as part of regular quality audits. In the United Kingdom, TEIs also follow the Association of College's Charter of Excellence in International Education and Training in England while in Scotland, suggested good practice is provided by the International Student Recruitment and Support Good Practice Guidelines for Scottish Education Institutions (United Kingdom Council for International Education, 2006). But similar instruments also exist in non-English speaking destinations, *e.g.* in Estonia or the Netherlands.

Information and financial mechanisms are other relevant policy instruments. For example, Australia developed a list of courses and programmes endorsed by government authorities as suitable for international students since 2000 (DEST, 2006). With respect to financial incentives, Australian TEIs are only able to enrol international students – and collect fees – in accredited courses. Another interesting initiative is the request by New Zealand that private TEIs have adequate protection of student fees in the event of closure. These arrangements mirror the comprehensive framework that has been in place in Australia since 2000 which guarantees overseas students the education for which they have paid.

But the ultimate policy tool to protect students is the immigration legislation, which can be used to enforce quality provision by restricting student residence permits to TEIs meeting minimum quality standards. This is the case in Australia and New Zealand where TEIs need to be registered or approved by a quality assurance body (DEST, 2006).

In addition to these policy instruments by host countries, a few sending countries which support financially the mobility of their citizens have also established safeguards by making this support conditional upon some form of accreditation or recognition of the host TEI.

Programme and institutions mobility

A few countries extend their quality assurance oversight to the operations of their domestic TEIs abroad. This is the case in Australia and the United Kingdom, where the government-funded audits of the activities of TEIs extend to those operating offshore.

Similarly, a certification process has been developed for all New Zealand public and private providers offering programmes offshore (Knight, 2001). However, these initiatives remain fairly unique. Other countries generally have little quality oversight and formal regulatory processes of the operations abroad of their TEIs. This is for instance the case in the Netherlands.

As far as the operations of foreign TEIs on the domestic territory are concerned, quality control is also important in light of the prestige associated with international degrees in some countries, implying a risk of seeing fraudulent and semi-fraudulent TEIs operate degree mills. Such quality issues can be dealt with through the application of stringent accreditation mechanisms uniformly to international TEIs just like domestic ones. Yet, few countries seem to include foreign providers within the framework of their national accreditation and quality assurance systems (Table 10.1). Australia, Belgium (Flemish Community), China, Korea, New Zealand and Sweden constitute exceptions in this respect. In Sweden and the United Kingdom by contrast, the scope of their quality oversight is limited to the recognition of the degrees offered while in Norway, it is up to the foreign TEI to seek accreditation or operate without automatic recognition of its degrees.

With respect to distance education, the United Kingdom has developed Guidelines for quality assurance of distance education in the United Kingdom. Although not exclusively designed to protect international students, these guidelines help TEIs check the soundness of their distance learning arrangements in terms of programme design and delivery, student development and support, student communication and representation, and student assessment. They also offer suggestions on quality assurance and control which TEIs can use, elaborate, and adapt according to their own needs, traditions, cultures and decision-making processes.

But quality assurance processes are not sufficient, the dissemination of quality-related information is equally important, and unfortunately, often lacking. For instance there are indications in Korea that a growing number of students enrolled abroad unknowingly attend non-accredited TEIs and waste their money on worthless diplomas (KEDI, 2006). There is therefore a need for existing national and international schemes to be co-ordinated and strengthened to meet the policy goals of protection of learners, greater transparency of qualifications, fair and transparent recognition of professions, and increasing international co-operation among national quality assurance and accreditation agencies. In this context, UNESCO and OECD have developed guidelines on *Quality Provision in Cross-border Higher Education* which involve the development of a Web-based information portal on recognised TEIs/providers at the international level (OECD and UNESCO, 2005; Box 10.3).

Quality as a marketing instrument

But quality assurance is not limited to control. It can also be seen as a vital element of the broader marketing of the tertiary education system. In Australia for instance, a stated government goal is to support TEIs efforts to provide quality international education services so as to enhance Australia's reputation as an education leader (Nelson, 2003). Australia's *Transnational Quality Strategy* was therefore developed to ensure that education and training delivered overseas is comparable to that delivered in Australia. Similarly, the activities of the *Finnish Higher Education Evaluation Council* (FINHEEC) are now part of the national strategy for increased international visibility and competitiveness.

10.4.4 Brain gain or drain

Lastly, a fourth challenge for policy makers is to monitor and manoeuvre the migration implications of the internationalisation of tertiary education. To a large extent, this discussion relates to the migration impact of the mobility of students and academics, although other forms of internationalisation – by contributing to the development of linguistic and cross-cultural skills embedded in students – may also contribute to enhancing their opportunities for an international career.

Box 10.3. OECD/UNESCO Guidelines for Quality Provision in Cross-border Higher Education

The *Guidelines for Quality Provision in Cross-border Higher Education* have been elaborated in close collaboration between the OECD and UNESCO, and were approved by the OECD Council and supported by the UNESCO general conference in 2005.

The Guidelines provide an international framework to protect students and other stakeholders from low-quality provision and disreputable providers. They provide guidance to key stakeholders on how to share the responsibility of assuring quality provision of cross-border higher education between sending and receiving countries.

There are four main policy objectives for the Guidelines:

- Students/learners' should be provided with protection from the risks of misinformation, low-quality provision and qualifications of limited validity.
- Qualifications should be readable and transparent in order to increase their international validity and portability. Reliable and user-friendly information sources should facilitate this.
- Recognition procedures should be transparent, coherent, fair and reliable and impose as little burden as possible to mobile professionals.
- National quality assurance and accreditation agencies need to intensify their international cooperation in order to increase mutual understanding.

The Guidelines recommend actions to governments but also to five other stakeholders: TEIs (including academic staff), student bodies, quality assurance and accreditation bodies, academic recognition bodies and professional bodies. The Guidelines encourage collaboration and exchange both internally between governments and these stakeholders, but also externally between sending and receiving countries.

The Guidelines are based on a set of principles, which start with the recognition of national sovereignty over quality assurance and the diversity of systems that this produces around the world. One of their major features is that they enhance responsibility for partnerships, sharing, dialogue, and mutual trust and respect between sending and receiving countries, thus assuring quality and relevance in cross-border higher education. Even though the Guidelines are non-binding, Member countries are expected to implement the Guidelines as appropriate in their national context.

Following the adoption of the Guidelines, the OECD has conducted a survey to assess progress with their implementation and found that some dissemination and implementation activities have been carried out in several signatory countries, through translation of the guidelines in national language or amendments to the quality assurance frameworks. In addition, UNESCO is developing a Web portal, as an information tool to improve access to up-to-date, accurate, and comprehensive information on recognised TEIs/providers at the international level.

Related Web sites:

www.oecd.org/edu/internationalisation/guidelines

http://portal.unesco.org/education/en/ev.php-URL_ID=52702&URL_DO=DO_TOPIC&URL_SECTION=201.html

This complex challenge encompasses several aspects. The first one relates to the positive contribution of internationalisation of tertiary education to the development of human resources, by overcoming constraints in domestic capacity, capitalising on synergies and complementarities between education systems, and developing the cross-cultural skills of the future labour force. Yet, these potential benefits of internationalisation are likely to be defeated whenever mobile students and academics

decide to stay in their host country to work, and are lost to their country of origin. The rapid development of international student mobility in the past 3 decades and the parallel trend towards the globalisation of the labour market for the highly-skilled have revived concerns that the "brain gain" expected from internationalisation could turn into a "brain drain."[91] Evidence on stay rates is thus examined in a second stage. Meanwhile, most OECD countries are competing for skilled workers while trying to ensure a fair share of the gains with their partners. The policy options used in this respect are thus reviewed.

Contribution to human resources development

The contribution of international student mobility to human resource development takes many forms.

First, student mobility is one way of addressing bottlenecks in domestic tertiary education provision where domestic capacity is not large enough to enrol all qualified students and a growing middle class can afford to send their children abroad for a foreign education (Knight, 2001). Several countries – especially in South-East Asia – have used this policy lever to increase their tertiary educated workforce and serve national economic development goals.

In addition, study abroad allows countries – especially the smaller and/or least-developed ones – to take advantage of complementarities in tertiary education systems, by providing a cost-efficient alternative to domestic provision in highly specialised disciplines where economies of scale cannot be generated nationally, or by sending students in centres of excellence whose standards could not be reached nationally. With respect to academics, international mobility similarly allows countries to share the costs of expensive scientific equipments by forging partnerships in research with centres of excellence worldwide, and sending domestic researchers there for some time. With these objectives in mind, a number of countries within and outside the OECD have adopted a deliberate strategy of sending their students and academics abroad – especially at higher levels. In the case of developing countries, this strategy often receives the support of the host countries. For instance, the Swedish International Aid Agency offers assistance to developing countries in the form of contracts of education at Swedish TEIs for which it pays. Norway also has a longstanding tradition of foreign aid through tertiary education cooperation.

Finally, student and academics mobility also contribute to human resource development through enhanced linguistic and cross-cultural skills which allow them to effectively participate in increasingly global and knowledge-based economies.

91. Brain drain is traditionally defined as the "emigration of skilled and professional personnel from developing countries to advanced industrialised nations' (Miyagiwa, 1991), although this concept has also been used by extension to reflect the emigration of skilled workers and professionals from developed countries – mainly to the United States and other OECD countries of immigration. However, the need to differentiate between the situation of developing and developed nations – whereby the former only experience a loss of skills while the latter see the emigration of their highly skilled nationals compensated by entries of highly-skilled workers from developing countries – has led to the expression of "brain exchange" to characterise the second group of countries (Lee *et al.*, 2006).

Stay rates and immigration impact

Yet, the contribution of student mobility to this human resource development goal critically depends on the return of a significant proportion of international students. As Knight (2001) puts it, "although the desire to remain in a country for work experience after graduation is often seen as understandable, a prolonged or permanent stay jeopardises the sending country's plans for developing the human-resource base needed to modernise its systems and infrastructure."

The potential loss of national talent has long been an issue associated with the increased mobility of students and scholars, for both developing and developed countries. Indeed, the integration of former students in the labour market of the host country is facilitated by their high level of education, their mastery of the host country's language and familiarity with local social codes, and the fact that their degree is known to local employers. It is generally widely accepted that some students who study abroad subsequently settle in their country of study, but this has not been measured at the international level.

In this respect, a recent analysis by Dreher and Poutvaara (2005) fills this empirical gap, and shows that the stock of foreign students from a given country of origin enrolled in a given destination is an important predictor of subsequent migration between the two countries. Although this analysis only covers fourteen destinations – Australia, Belgium, Canada, Denmark, France, Germany, Japan, Luxembourg, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom and the United States – its results have the potential to revive concerns in relation to the risks of brain drain deriving from international student mobility. For their part, Baruch *et al.* (2007) explore the decision making process of individuals on the basis of survey data of international students from developing countries enrolled in business studies in the United Kingdom and the United States. They find that the most significant predictors of students' decision to stay are their adjustment in the host country, the presence of strong family ties and the labour market situation in the country of study, while strong family ties in the home country encourage them to return. They also note that a sizeable proportion of international students intend to stay in their country of study temporarily to repay their study loans and gain a highly-valued international experience with a view to a later return.

This somewhat positive outlook, whereby post-study emigration may be a temporary phenomenon, is consistent with recent views in the literature which tend to see the issue more from the positive angle of free talent flow rather than the negative element of brain drain (Carr *et al.*, 2005; Stark, 2005; Knight, 2001).

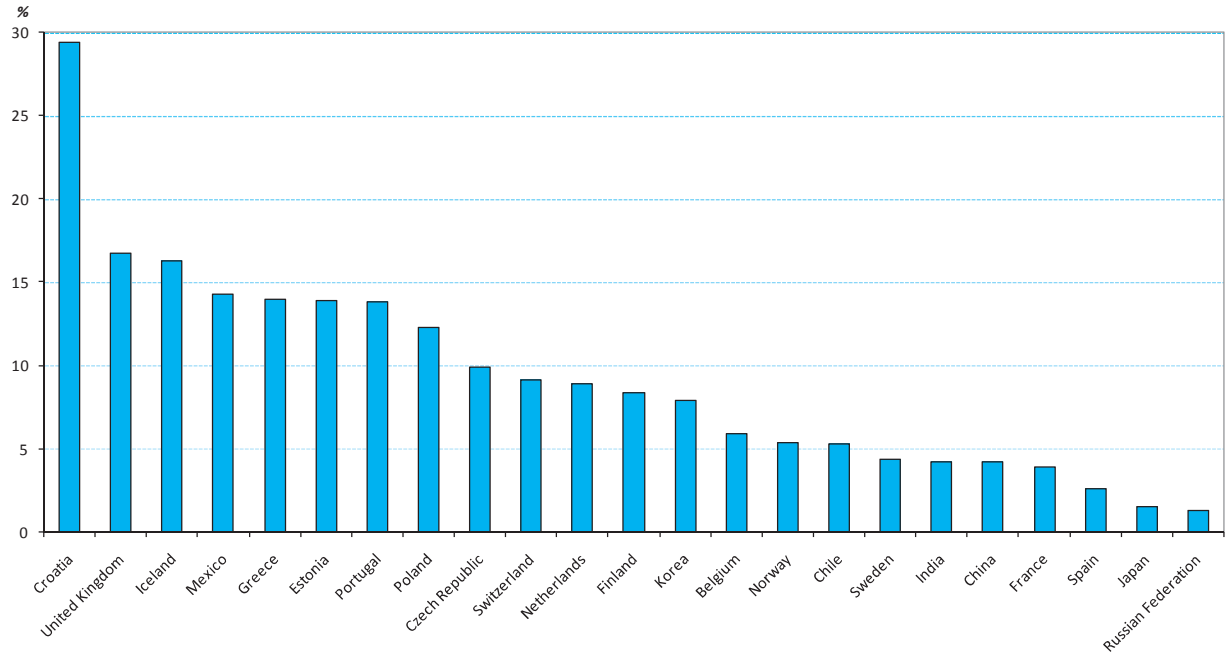
In fact, most countries participating in the Review report evidence of a brain exchange rather than a brain drain. In Iceland for instance, it is generally believed that the majority of students enrolled abroad return, thereby contributing to human resources development. In the United Kingdom where the possibility of a brain drain to the United States is a recurrent concern, a recent study suggests instead that there is a brain gain rather than a brain drain with the United States. Similarly, New Zealand research indicates that the country experiences more of a brain exchange – with a replacement of emigrants by more-skilled immigrants – than the often-talked-about brain drain (Glass and Choy, 2001).

The past decade has seen positive developments in developing countries as well, whereby some countries have succeeded in turning brain drain into brain circulation, and capitalising on their emigrant Diaspora beyond the sole flow of financial remittances. Lee

et al. (2006) describe the situation of the Indian Diaspora and Indian graduates who have returned home and contributed tremendously to the economic development of certain areas. And in fact, the involvement, association and connection with the Diaspora, have been considered as one of the most important strategies as a way to reap benefits from brain drain in developing countries (Meyer and Brown, 1999; Ouaked, 2002; Saxenian, 2002 and 2005).

This positive stance is confirmed by Docquier and Marfouk (2004) computations of emigration rates (to OECD countries) of tertiary educated workers from 190 countries of origin. Based on recent OECD data on stocks of immigrants by country of origin and level of educational attainment in various countries, their emigration rates for tertiary educated workers reflect the combined stay rates of all student mobility flows up to 2000 as well as other skilled migration flows which are independent of student mobility. Therefore, they can only provide an indication of the extent of brain drain, and highlight countries of origin where a careful monitoring of student mobility stay rates might be useful. These data show that with the exception of Croatia – where nearly a third of tertiary educated workers live outside their country of birth – brain drain is not a massive phenomenon among countries participating in the Review, even though a noticeable proportion of tertiary educated workers born in the Czech Republic, Estonia, Greece, Iceland, Mexico, Poland, Portugal and the United Kingdom lived outside their country of birth in 2000 (Figure 10.6). Interestingly, China and India – whose international students reported the highest intentions to stay in the United States in 2000 – display comparatively low emigration rates overall (Tremblay, 2002).

Figure 10.6. Emigration rate of tertiary educated population, by country of birth, 2000



Source: Docquier and Marfouk, 2004.

Policies aimed at ensuring a fair share of gains

Countries taking part in the Review have adopted a number of policy initiatives to ensure a fair share of gains between countries of origin and destination of international students in terms of the migration impact of internationalisation.

With respect to developing countries, potential conflicts may arise as host countries increasingly seek to attract highly-educated international students from developing countries for later temporary or permanent settlement. In such situations, conflicts of objectives arise both with the countries of origin of the students, but also within the host country itself with the aid and development agencies whose policies aim at assisting developing countries to upgrade the skills of their populations.

From the perspective of sending countries, several countries participating in the Review have adopted specific provisions whereby financial support to undertake studies abroad is conditional upon a commitment of students to return upon completion of their studies. This is the case in Chile, China, Croatia, Estonia (for one support scheme) and Mexico (Table 10.3).

But host countries can also adopt policies to address the conflict of objectives with their aid authorities in a way that does not limit students' freedom to choose whether to return or stay. An interesting initiative in this respect is the Norwegian Quota Scheme, which provides support, through the State Educational Loan Fund, to a certain number of students from specified countries in Central and Eastern Europe, Central Asia and other countries to undertake studies in Norway. Upon completion of studies, the loans are transformed into grants if the students return to their home country to settle there permanently, whereas they have to be repaid by students who choose to stay in Norway or settle in a third country. In addition, these students are increasingly recruited through cooperation between TEIs in Norway and in the students' home countries rather than on the "open market", again with an aim to limit brain drain.

But policy tools aimed at limiting the extent of brain drain are also used in more industrialised countries. For instance, New Zealand provides interest-free student loans and bonded scholarships for borrowers and recipients who stay in New Zealand upon completion of their studies, in a drive to encourage New Zealand citizens to remain within the country.

In addition, a number of countries have established specific programmes to reverse past brain drain and attract their talents back into the country. The policy tools to reach this goal range from fellowships in Australia to assist universities to compete for the world's best researchers, to tax incentives in New Zealand to encourage expatriate school teachers and science and engineering doctoral graduates to return, while China, Iceland and Switzerland have developed other interesting initiatives (Box 10.4).

Box 10.4. Attracting talent back from abroad: Switzerland and China

A number of countries have developed incentives to lure their expatriate talents back into the country. These range from the mobilisation of diaspora networks to financial incentives or more comprehensive packages.

Mobilisation of diaspora networks and financial incentives in Switzerland

With respect to diaspora networks, Switzerland established an online network – *www.swisstalents.org* – in order to encourage networking among expatriate Swiss scientists and to foster contacts and links with their peers in Switzerland (Cervantes and Guellec, 2002).

In addition, the Swiss National Science Foundation (SNSF) has resorted to a variety of measures to stem the loss of Swiss researchers. In 1999 it created "SNSF Professorships" for the purpose of attracting the best people back from abroad, among other things. The professorships enable young scientists with several years of recognised research experience to make a significant step forward in their academic careers, and also enable researchers to resume their careers at a Swiss TEI on return from a study abroad. According to SNSF, the proportion of researchers abroad who returned with an SNSF professorship to Switzerland was 37% in 2006 (SNSF, 2007).

Comprehensive packages in China

Finally, China developed a comprehensive package of incentives to encourage its international students to return upon completion of their studies. Indeed, after a rapid growth of international student mobility since 1978 and several phases of transition, the government has finally formed the working principles: "support for overseas study, encouragement for returning, freedom for coming and going."

Chinese authorities have encouraged international students to return in various ways: by some special financial support (*e.g.* Fund for Returnees to Launch S&T Research, which benefited nearly 11 000 individuals since its inception in 1990), by strengthening the development of enterprises parks and incubators for returnees (*e.g.* Supporting Fund for Starting Enterprises for Outstanding Talents who Return from Overseas studies), by helping the returnees' children to study in local schools and helping their spouses to find jobs (Ministry of Education of the People's Republic of China, 2007).

10.5 Pointers for future policy development

The trends and challenges of internationalisation described in this Chapter point to several areas where policy development could help countries achieve their internationalisation goals and maximise the returns of opening up to international cooperation and exchange.

The policy suggestions that follow are drawn from the experiences reported in the Country Background Reports, the analyses of external review teams, and the wider research literature. Not all of the policy implications apply equally to all 24 participating countries. In a number of cases many or most of the policy suggestions are already in place, while for other countries they may have less relevance because of different social, economic and educational structures and traditions. The implications also need to be treated cautiously because in some instances there is not a strong enough research base across a sufficient number of countries to be confident about successful implementation. Rather, the discussion attempts to distil potentially useful ideas and lessons from the experiences of countries that have been searching for better ways to internationalise their tertiary education systems. However, some common themes are evident in the country reforms now underway. Policy recommendations are therefore grouped under several headings relating to the overall strategy and steering of internationalisation policy, the strengthening of the attractiveness and international competitiveness of the tertiary

education system, the strengthening of the internal dimension of internationalisation and the optimisation of the internationalisation strategy.

Overall strategy and steering of internationalisation policy

Develop a national strategy and comprehensive policy framework for internationalisation

The background for internationalisation varies considerably across countries according to their economic and political power, size and geographic location, dominant culture, the quality and typical features of their tertiary education system, the role their language plays internationally, as well as their previous internationalisation policies. In this context, it is important for countries to develop a national strategy or master plan for internationalisation in light of their country-specific goals in the tertiary education sector, but also beyond education (human resources development, research and innovation *etc.*) Obviously, this strategy needs to adapt to country-specific circumstances, building upon natural advantages and acknowledging constraints, and there is no ideal internationalisation strategy other than maximising the benefits of internationalisation in the national context. The main difficulty is to resist the temptation to replicate models designed for countries facing very different circumstances. For instance, the success of some Anglo-Saxon countries in developing a tertiary education export sector cannot easily be replicated elsewhere and fine tuning is needed to find the right balance between different forms of internationalisation and decide where to put efforts.

Improve national policy coordination

Developing a national strategy also helps in elaborating a sound policy framework in the various areas of public policy, maximising synergies among related policies. It is important that policy directions followed by educational authorities in terms of internationalisation are compatible and consistent with those of related policy areas.

In particular, policy coordination may be sought with public authorities in charge of immigration, to ensure that visa blockages and delays do not inhibit the global competitiveness of the tertiary education system by discouraging international students and globally mobile intellectual labour. Policy coordination may also extend to possibilities for international students to work during their studies, and/or stay to work in their country of study upon graduation, if skilled immigration is sought after. Coordination of policies with science and technology authorities may also be useful to make sure that international exchange and cooperation agreements effectively contribute to research and innovation at the national level, while coordination with labour authorities may warrant that international activities are targeted to train skilled workers and recruit international students in the disciplines, levels of education and areas of employment most relevant to the national economy. Lastly, policy coordination with foreign affairs authorities may be required to ensure that financial support to incoming international students meets the goals of both labour and immigration authorities – in a future immigration perspective – as well as the objectives of development assistance to developing countries. In this latter respect, the engagement of national aid agencies may be considered to make sure that the education of nationals from developing countries includes provisions to avoid or counteract brain drain and encourage brain circulation instead.

A good model for enhancing national policy coordination may be to establish an inter-governmental committee or cluster group with representatives from these various public policy areas to ensure a whole-of-government approach to internationalisation.

Encourage TEIs to become proactive actors of internationalisation

While the national/sector level has an important influence on the international dimension of tertiary education through policy steering, funding, programmes, regulatory frameworks, and cross-departmental policy coordination, internationalisation activities are pursued at the institutional level, and within TEIs at the discipline level. Given the diversity of TEIs, the principal potentials for national policy lie more in creating the framework conditions for them to become proactive actors of internationalisation, through interventions designed to remove blockages, by granting more autonomy to TEIs to make them more responsive to their external environment, or by including a special internationalisation strategy in the annual negotiations between the tertiary education authorities and TEIs as a way to promote their engagement in international cooperation and exchange. Financial incentives may also encourage TEIs to internationalise. The introduction of tuition fees for international students is one possible option although it needs to be carefully assessed against the background of country-specific goals, traditions and circumstances to ensure that it does not prejudice the international attractiveness of the tertiary education system. In countries less able to compete on non-educational factors but where the presence of international students on domestic campuses is nonetheless sought, these financial incentives could instead take the form of tuition subsidies or targeted funds to assist TEIs' international activities. In some cases, targeted funding may also be envisaged to assist TEIs in the development of internationalisation-related infrastructure.

Promote sustainable strategies of internationalisation

While the bulk of internationalisation work is carried out in TEIs, government authorities have a role to play to steer institutional strategies in directions that are sustainable over time in order to protect the sector and achieve the goals set in the national strategy. Greater sustainability of internationalisation strategies can be achieved by promoting the diversification of international activities.

The range of international activities could be diversified further to better serve national objectives or take national circumstances into consideration, *e.g.* development of "twinning" programmes to recruit international students in countries that do not have a natural comparative advantage, encouragement of foreign TEIs' operations in the country to stimulate competition with domestic providers, and encouragement of forms of internationalisation that are more conducive to keeping human resources in the country wherever brain drain is a concern.

The diversification of internationalisation partners should also be encouraged to temper risks and soften the impact of potential shocks on demand, especially in systems where the revenue-generating approach prevails. Obviously, countries of origin are to a large extent exogenously determined and large sending countries such as China and India will keep representing large proportions of international students for many destinations, yet some diversification could still be achieved, *e.g.* through targeted marketing in under-represented markets, expansion of instruction in English or in the language of large

source countries (*e.g.* in Chinese). The issue of diversification is also relevant for importing countries.

Finally, it would seem important to focus attention on ensuring that international students are spread throughout the tertiary education system, regardless of the type, size or location of their host TEIs, both from an equity perspective in terms of internationalisation at home and to temper the risks resulting from an over-reliance of some TEIs upon international students. These considerations may justify public intervention to correct imbalances in the distribution of international students, *e.g.* assistance to smaller/remote TEIs to recruit international students and provide them with adequate support.

Create structures to assist TEIs in their internationalisation strategies

Indeed, several side-effects of internationalisation have highlighted the need for greater support to TEIs in their internationalisation strategies. Whenever a country faces problems related to the quality of its international student intake, it would be useful to create a specific structure/agency to support TEIs – and especially the smaller ones – in their recruitment efforts and strategies. This would allow smaller TEIs lacking experience and infrastructure to build capacity to deal with these issues and develop international networks over time, by building upon the coordinating agency's own infrastructure, experience and economies of scale. In parallel, this agency could also help TEIs build capacity to deal with the quality assurance aspects of their internationalisation strategy, *e.g.* by disseminating good practice, enhancing coordination with quality assurance bodies, and through more targeted actions.

Attractiveness and international competitiveness of the tertiary education system

A number of policy developments may also be used to strengthen the international profile of national tertiary education systems, and hence build up their attractiveness.

Create structures to promote the national tertiary education system

Coordinated activities may have persuasive effects on attracting international students into the country by promoting the brand image of national tertiary education towards international audiences. International marketing activities are especially relevant to reach new markets/partners. In this respect, there are efficiency gains to be made and scale economies to be generated by concentrating market research activities and the promotion of the brand image of national tertiary education in one single structure/agency, which could be funded by TEIs in proportion of their share of international enrolments. This agency could monitor internationalisation trends, carry out market research, develop brochures and interactive course databases, advise TEIs in developing their internationalisation strategy and possibly assist them with international recruitment activities. In addition, government authorities could more actively use diplomatic missions abroad to promote national tertiary education, ease immigration formalities, and showcase national research achievements and the potential for collaboration. Marketing activities may also be useful to promote specific regions through collaboration and partnerships between TEIs, local governments and chambers of commerce.

Enhance the international comparability of tertiary education

It would make sense for countries wishing to enhance the international competitiveness of their tertiary education system to give highest priority to issues surrounding the international comparability and recognition of degrees and credits. Recent developments in Europe within the framework of the Bologna Process and in the Asia-Pacific region through the UMAP (University Mobility in Asia and the Pacific) Credit Transfer Scheme raise important policy questions for outsider countries of whether to join these transparency-enhancing movements and how. Participation in international credit transfer systems and involvement in international networks of professional recognition have the potential to significantly boost student mobility and exchange, while the emergence of internationally-readable degree structures as part of the Bologna Process calls for Bologna-compatible degree structures within – but also increasingly outside – the Bologna area in order to remain competitive internationally.

Develop alternatives to current global rankings

In an increasingly transparent and internationally-comparable environment, issues surrounding the quality of tertiary education delivered become more important. In this context, the emergence in recent years of global rankings of world universities has had a profound impact on internationalisation. Yet, global rankings are not without problems, and there is a risk that the growing publicity of these global rankings results in misleading perceptions of TEIs' – and by extension, tertiary education systems' – quality. It would therefore be in the interests of countries to support the development of more sophisticated instruments and methodologies for the global comparison and benchmarking of TEIs' quality than the current global rankings' methodologies. Ideally, these measures should capture different aspects of performance (including value-added in teaching), would be adapted to accommodate the diversity of TEIs' types and missions, and would be interactive enough to enable prospective students and other stakeholders to obtain rankings tailored to their own criteria. Efforts towards the development of comparative measures of learning outcomes at institutional level should also be encouraged.

Improve information to prospective international students

But TEIs' performance is only one aspect of transparency. The attractiveness of the tertiary education system may be enhanced by improving information towards prospective international students in a whole range of other areas, including the dissemination of information on programmes and courses' costs (tuition fees as well as costs of living) and their accreditation.

Foster centres of excellence at post-graduate level…

Fostering a small number of world class centres of excellence in areas of comparative strength could prove valuable for countries with an interest in attracting international students at the post-graduate level given their propensity to consider the research performance of TEIs in their choice of a destination. In this respect, reinforcing the capacities and the professionalisation of institutional leadership may increase the capacity of TEIs to identify and support centres of research excellence.

… but ensure quality provision in under-graduate cross-border education as well

At the same time, issues surrounding quality assurance across national borders should have high priority at the under-graduate level of education as well, since this is where the bulk of international activities take place. It is indeed in the interest of countries to ensure quality provision in international activities, as a way to safeguard their reputation in the case of exporting countries, and to protect consumers from the perspective of importing countries.

Effective quality assurance and accreditation mechanisms should therefore be put in place to protect learners from the risk of misinformation, low quality provision, and qualifications of questionable validity, *e.g.* through greater co-ordination between national quality assurance agencies and those involved in the internationalisation of tertiary education or by submitting TEIs operating cross-border to national accreditation and quality assurance requirements.

The implementation of the OECD/UNESCO *Guidelines for Quality Provision in Cross-border Higher Education* (Box 10.3) and co-operation between national quality assurance agencies at international level should also be promoted. TEIs could also be encouraged to provide specific support mechanisms for international students both before their arrival and during their studies (*e.g.* counselling, monitoring of progress).

Internal dimension of internationalisation

A number of policy initiatives have the capacity to strengthen the internal dimension of internationalisation.

Develop on-campus internationalisation

Policy initiatives and TEIs' efforts should be targeted at the development of on-campus internationalisation, in recognition that only a small proportion of students take part in international student mobility, and the latter are more likely to belong to privileged socio-economic backgrounds. It would therefore be appropriate to integrate an international or intercultural dimension in tertiary curricula, and develop the language and cross-cultural skills of domestic students directly on-campus.

This can be done by allowing – and encouraging – TEIs to deliver part of their programmes in foreign languages and to intensify international enrolments in order to widen the scope for intercultural exchanges on-campus. These kinds of curriculum offerings should however be developed at the initiative of TEIs, while the scope for public policy would lie in providing models of global education and technical assistance.

International perspectives and cross-cultural exchanges may also be brought through the academic staff delivering lectures and classes, by a more active policy of recruiting foreign academics in TEIs as a way of establishing creative research environments and truly cross-cultural campuses. In some countries, this would entail reforms of career and recruitment policies, international agreements on the transfer of pension rights, or greater flexibility in academic salary scales to attract academics from abroad.

Joint degree programmes developed in cooperation with foreign TEIs also have the potential to expose domestic students to different views and teaching styles. An additional advantage of joint degree programmes lies in short-term staff exchange that is usually involved, which may provide a cost-effective alternative to the permanent recruitment of

foreign academics wherever academic recruitment legislations/practices are closed to outsiders or salary levels are uncompetitive.

Encourage the mobility of domestic academic staff and students

Notwithstanding the potential of on-campus internationalisation, the mobility of domestic staff and students should be encouraged in countries where outgoing mobility tends to be low.

Building-up a culture of mobility amongst students can be achieved by encouraging TEIs to integrate short-term exchanges as regular parts of their programmes and develop twinning programmes with foreign TEIs, through dissemination information on the benefits of mobility, the development of credit transfer schemes and recognition mechanisms, the portability of public funding as well as financial support such as means-tested mobility grants or loan schemes and their adaptation to the specific needs of students (mature, with family responsibilities or with a disability).

Incentives to promote the mobility of academics could take the form of including international activities and mobility among the criteria for promotion and career advancement.

Optimisation of internationalisation strategy

Finally, a number of policy levers may help countries optimise their internationalisation strategy according to their specific goals and circumstances.

Inform policy-making in the area of internationalisation

In most countries, there appears to be a limited capacity to trace the career path of individuals who took part in some form of internationalisation relative to those who did not. This gap in the information base makes it difficult to ascertain the extent to which internationalisation activities benefit individuals and assist national development. This calls for better information on the "international experience" of individuals in tertiary graduate or labour force surveys. Little is known either on the costs of incoming student mobility in countries where no – or under-priced – tuition fees are charged. While it may be rational for the public sector to subsidise the education of international students in acknowledgement of the externalities they yield, the costs ought to be transparent for the purpose of good public policy.

Take advantage of international complementarities

It would also be important to take advantage of complementarities between systems of tertiary education. Indeed, highly specialised programmes in one system may train students whose home system is either less specialised in a specific domain or lacks it entirely. The principle of inter-system complementarities has implications for international student mobility since public support for degree-mobility might need to be targeted to post-graduate studies or under-graduate programmes unavailable at home.

Public support to student mobility at the under-graduate level of education might be better spent on promoting wider participation in shorter-term exchanges in an equity perspective.

Manage the migration impact of internationalisation

In countries where the non-return of international students is a source of concern, some forms of internationalisation relying upon collaborative programmes with foreign TEIs may prove a sound strategy to build capacity in tertiary education know-how while limiting the risks of non-return among students going abroad for limited periods to pursue their education.

References

Academic Cooperation Association (ACA) (1997), *Making the Case for International Cooperation in Higher Education: the Meise Consensus*, ACA, Brussels.

Aken, D. van (2001), "The Time and the Trouble: Mobility Obstacles for Incoming Students From Outside Europe", *Journal of Studies in International Education*, Vol. 5, No. 4, pp. 291-316.

Altbach, P. (2004), "Higher Education Crosses Borders", *Change*, Vol. 36, No. 2, pp. 18-24.

Altbach, P. and R. Bassett (2004), "The Brain Trade", *Foreign Policy*, September-October, pp. 30-31.

Andere, E. (2004), "The International Higher Education Market: Mexico's Case", *Journal of Studies in International Education*, Vol. 8, No. 1, pp. 56-85.

Asia 2000 Foundation of New Zealand (2003), *The Export Education Industry: Challenges for New Zealand*, Occasional Paper, Wellington.

Asteris, M. (2006), "British Universities: the 'Coal Exporters' of the 21st Century", *Journal of Studies in International Education*, Vol. 10, No. 3, pp. 224-240.

Auditor General Victoria (2002), *International Students in Victorian Universities*, Melbourne.

Australian Vice-Chancellors Committee (AVCC) (2003), "Offshore Programs of Australian Universities: Offshore Programs Conducted Under Formal Agreements Between Australian Universities and Overseas Higher Education Institutions or Organisations", Canberra.

Baker, M., J. Creedy and J. Johnson (1996), *Financing and Effects of Internationalisation in Higher Education: an Australian Study*, Department of Employment, Education, Training and Youth Affairs (DEETYA), Canberra.

Ball, R. and R. Chik (2001), "Early Employment Outcomes of Home and Foreign Educated Graduates – the Malaysian Experience", *Higher Education*, Vol. 42, pp. 171-189.

Baruch, Y., P. Budhwar and N. Khatri (2007), "Brain Drain: Inclination to Stay Abroad After Studies", *Journal of World Business*, Vol. 42, pp. 99-112.

Basini, B. (2007), "La Bataille Mondiale du Savoir" [The Global Knowledge Battle], *Le Journal du Dimanche*, 15 April 2007.

Bennell, P. and T. Pierce (2003), "The Internationalisation of Tertiary Education: Exporting Education to Developing and Transitional Economies", *International Journal of Educational Development*, Vol. 23, pp. 215-232.

Bevelander, P. and H. Nielsen (1999), "Declining Employment Assimilation of Immigrants in Sweden: Observed or Unobserved Characteristics?", *CEPR Discussion Paper*, No. 2132, Centre for Economic Policy Research, London.

Böhm, A., M. Follari, A. Hewett, S. Jones, N. Kemp and D. Meares (2004), *Forecasting International Student Mobility – a UK Perspective*, British Council, Universities UK and IDP Education Australia, London.

Bologna Secretariat (1999), Joint Declaration of the European Ministers of Education, 19 June 1999.

Bologna Secretariat (2007), Bologna Process *Stocktaking – London 2007*, accessed 23 July 2007 from *www.dfes.gov.uk/londonbologna/uploads/documents/6909-BolognaProcessST.pdf*

Bond, S. and J-P. Lemasson (1999), *A New World of Knowledge: Canadian Universities and Globalisation*, International Development Research Center, Ottawa.

Borjas, G. (2000), "Foreign-born Teaching Assistants and the Academic Performance of Undergraduates", *NBER Working Paper*, No. 7635, National Bureau of Economic Research, Washington, D.C.

Borjas, G. (2004), "Do Foreign Students Crowd Out Native Students from Graduate Programs?", *NBER Working Paper*, No. 10349, National Bureau of Economic Research, Washington, D.C.

Bracht, O., C. Engel, K. Janson, A. Over, H. Schomburg and U. Teichler (2006), *The Professional Value of Erasmus Mobility*, International Centre for Higher Education Research, Kassel, accessed 22 July 2007 from *http://ec.europa.eu/education/programmes/socrates/erasmus/evalcareer.pdf*

Bratsberg, B. and J. Ragan (2002), "The Impact of Host-Country Schooling on Earnings-A Study of Male Immigrants in the United States", *Journal of Human Resources*, Vol. 37, pp. 63-105.

British Council (2007a), *Education UK* Web site, *www.educationuk.org*, accessed 22 July 2007.

British Council (2007b), *Global Value – The Value of UK Education and Training Exports: an Update*, accessed 20 March 2008 from *www.britishcouncil.org/eumd-information-research-global-value.htm*

Carr, S., K. Inkson and K. Thorn (2005), "From Global Careers to Talent Flow: Reinterpreting 'Brain Drain'", *Journal of World Business*, Vol. 40, pp. 386-398.

Cederlund, K. (1999), *Universitet: platser där världar möts* [Universities: Places Where the World Meets], SNS, Stockholm.

Center for Higher Education Development (CHE) (2007), *Study and Research in Germany: University Rankings*, published in association with *Die Zeit*, accessed 18 July 2007 from *www.daad.de/deutschland/hochschulen/hochschulranking/06543.en.html*

Cervantes, M. and D. Guellec (2002), "The Brain Drain: Old Myths, New Realities", *OECD Observer*, May 2002.

Clarke, M. (2007), "The Impact of Higher Education Rankings on student Access, Choice, and Opportunity", *Higher Education in Europe*, Vol. 32, No. 1, pp. 59-70.

Cobb-Clark, D. (2000), "Do Selection Criteria Make a Difference? Visa Category and the Labour Market Status of Immigrants in Australia", *Economic Record*, Vol. 76, pp. 15-31.

Council of Europe (2005), *Standards for Recognition: the Lisbon Recognition Convention and its Subsidiary Texts*, Higher Education Series No. 3, Strasbourg, Council of Europe Publishing.

Crystal, D. (2003), *English as a Global Language*, Cambridge University Press, Cambridge.

Cummings, W. (1984), "Going Overseas for Higher Education: the Asian Experience", *Comparative Education Review*, Vol. 28, No. 2, pp. 241-257.

Damme, D. van (2002), "Trends and Models in International Quality Assurance in Higher Education in Relation to Trade in Education", *Higher Education Management and Policy*, Vol. 14, No. 3, pp. 93-136.

Del Rey, E. (2001), "Economic Integration and Public Provision of Education", *Empirica*, Vol. 28, pp. 203-218.

Department for Education, Science and Training (DEST) of Australia (2006), *The Australian Commonwealth Register of Courses and Institutions for Overseas Students* (CRICOS), Canberra.

Department of Education, Science and Training (DEST) of Australia (2007), *Going to Uni* Web site, *www.goingtouni.gov.au*, accessed 23 May 2007.

Deumert, A., S. Marginson, C. Nyland, G. Ramia and E. Sawir (2005), "Global Migration and Social Protection Rights: The Social and Economic Security of Cross-Border Students in Australia", *Global Social Policy*, Vol. 5, No. 3, pp. 329-352.

De Vita, G. and P. Case (2003), "Rethinking the Internationalisation Agenda in UK Higher Education", *Journal of Further and Higher Education*, Vol. 27, No. 4, pp. 383-398.

Dill, D. and M. Soo (2005), "Academic Quality, League Tables, and Public Policy: A Cross-national Analysis of University Rankings", *Higher Education*, Vol. 49, pp. 495-533.

Dockery, A., M. Thorpe and P. Haslehurst (1999), "International Students at Curtin University: Their Impact on the Western Australian Economy", *Australasian Journal of Regional Studies*, Vol. 5, No. 1, pp. 23-35.

Docquier, F. and A. Marfouk (2004), "Measuring the International Mobility of Skilled Workers (1990-2000): Release 1.0", *World Bank Policy Research Working Paper*, No. WPS 3381, Washington, D.C.

Douglass, J. (2006), "The Waning of America's Higher Education Advantage: International Competitors Are No Longer Number Two and Have Big Plans in the Global Economy", *Center for Studies in Higher Education, Research and Occasional Paper Series*, CSHE 9.06.

Dreher, A. and P. Poutvaara (2005), "Student Flows and Migration: An Empirical Analysis", *IZA Discussion Paper Series*, No. 1612.

Enders, J. and E. de Weert (2004), "Science, Training and Career", *Higher Education Policy*, Vol. 17, No. 2, pp. 129-133.

European Commission, DG Education and Culture (2006), *Survey of the socio-economic background of ERASMUS students*, DG EAC 01/05, Brussels.

European Commission, DG Education and Culture (2007), *Teacher Mobility Within the EU: a Statistical Analysis*, accessed 16 July 2007 from *http://ec.europa.eu/education/programmes/socrates/erasmus/stat_en.html*

European Students' Union (ESU) (2007), *Bologna with Students' Eyes – 2007 Edition*, ESU.

Eurostudent (2005), Social and Economic Conditions of Student Life in Europe 2005: Synopsis of Indicators, Hannover, HIS, Hochshul-Informations-System. *www.his.de/Eurostudent/report2005.pdf*

Eurostat (2006), *EU Labour Force Survey – Principal Results 2005*, Statistics in Focus, No. 13/2006, Luxembourg.

Friedberg, R. (2000), "You Can't Take it With You? Immigrant Assimilation and the Portability of Human Capital", *Journal of Labour Economics*, Vol. 18, pp. 221-251.

Gerard, M. (2007), "Financing Bologna: Which Country Will Pay for Foreign Students?", paper presented to the 24th *Days of Applied Microeconomics*, Friburg University, 31 May-1 June 2007.

Gezentsvey, M. (2003), *Attitudes toward International Students and International Education: A test of the Instrumental Model of Group Conflict*, Victoria University of Wellington, Wellington.

Glass, H. and W. Choy (2001), *Brain Drain or Brain Exchange?* Treasury Working Paper 01/22, The Treasury, Wellington.

Greenaway, D. and J. Tuck (1995), *Economic Impact of International Students in UK Higher Education*, Committee of Vice-Chancellors and Principals, London.

Grey, M. (2002), "Drawing with Difference: Challenges Faced by International Students in an Undergraduate Business Degree", *Teaching in Higher Education*, Vol. 7, No. 2, pp. 153-166.

Griffith, A. and K. Rask (2007), "The Influence of the US News and World Report Collegiate Rankings on the Matriculation Decision of High-ability Students: 1995-2004", *Economics of Education Review*, Vol. 26, pp. 244-255.

Harman, G. (2006), "Australia as a Higher Education Exporter", *International Higher Education*, Vol. 42.

Held, D., A. McGrew, D. Goldblatt and J. Perraton (1999), *Global Transformations*, Stanford, Stanford University Press.

Hoof, H. van (1999), "Why Send Students Abroad? A Comparison of the Opinions of Hospitality Industry Recruiters on International Internships and International Exchange Programs", *FIU Hospitality Review*, Vol. 17, No. 1-2, pp. 63-72.

Hoof, H. van and M. Verbeeten (2005), "Wine is for Drinking, Water is for Washing: Student Opinions About International Exchange Programs", *Journal of Studies in International Education*, Vol. 9, No. 1, pp. 42-61.

Huang, F. (2006), "Internationalisation of University Curricula in Japan: Major Policies and Practice since the 1980s", *Journal of Studies in International Education*, Vol. 10, No. 2, pp. 102-118.

IDP Education Australia (2004), *Comparative Costs of Higher Education for International Students 2004*, media briefing, accessed 27 June 2007, from *www.lindentours.com/univ_officials/linden_letters/IDP%20Comparative%20Costs.pdf*

Jacobs, B. and F. van der Ploeg (2006), "Guide to Reform of Higher Education: A European Perspective", Economic Policy, Vol. 21, No. 47, pp. 535-592.

Kelo, M., U. Teichler and B. Wächter (2006), "Toward Improved Data on Student Mobility in Europe: Findings and Concepts of the Eurodata Study", *Journal of Studies in International Education*, Vol. 10, No. 3, pp. 194-223.

Kemp, S., G. Madden and M. Simpson (1998), "Emerging Australian Education Markets: A Discrete Choice Model of Taiwanese and Indonesian Student Intended Study Destination", *Education Economics*, Vol. 6, No. 2, pp. 159-169.

Kher, N., G. Juneau and S. Molstad (2003), "From the Southern Hemisphere to the Rural South: a Mauritian Students' Version of 'Coming to America'", *College Student Journal*, Vol. 37, No. 4, pp. 564-569.

Kim, J. (1998), "Economic Analysis of Foreign Education and Students Abroad", *Journal of Development Economics*, Vol. 56, No. 2, pp. 337-365.

Knight, J. (2001), "Issues and Trends in Internationalisation: A Comparative Perspective", in Bond, S. and J-P. Lemasson (eds.), *A New World of Knowledge: Canadian Universities and Globalisation*, International Development Research Center, Ottawa.

Knight, J. (2003), "Updated Internationalisation Definition", *International Higher Education*, Vol. 33, pp. 2-3.

Knight, J. (2004), "Internationalisation remodelled: Definition, Approaches and Rationales", *Journal of Studies in International Education*, Vol. 8, No. 1, pp. 5-31.

Knight, J. and H. de Wit (1997), *Internationalisation of Higher Education in Asia Pacific Countries*, European Association for International Education, Amsterdam.

Korean Educational Development Institute (KEDI) (2006), *Country Background Report for Korea*, accessed 9 February 2008 from *www.oecd.org/edu/tertiary/review*

Krahn, H., T. Derwing, M. Muldrand and L. Wilkinson (2000), "Educated and Unemployed: Refugee Integration into the Canadian Labour Market", *Journal of International Migration and Integration*, Vol. 1, pp. 59-84.

Kwiek, M. (2001), "Social and Cultural Dimensions of the Transformation of Higher Education in Central and Eastern Europe", *Higher Education in Europe*, Vol. 26, No. 3, pp. 399-410.

Lee, M. (2002), "The Academic Profession in Malaysia and Singapore: Between Bureaucratic and Corporate Cultures", in P. Altbach (ed.), *The Decline of the Guru: The Academic Profession in Developing and Middle-income Countries*, Boston College, Chestnut Hill, pp. 141-172.

Lee, J., A. Maldonado-Maldonado and G. Rhoades (2006), "The Political Economy of International Student Flows: Patterns, Ideas, and Propositions", in J. Smart (ed.), *Higher Education: Handbook of Theory and Research*, Vol. 21, pp. 545-590.

Lewington, J. (1999), "Canadian Universities are Losing Top Professors to US Institutions", *Chronicle of Higher Education*, 17 September 1999.

Lloyd, N. (2003), *A Research Study Exploring the Attitudes and Experiences of International Students Enrolled in the Faculty of Engineering, Computing and Mathematics at the University of Western Australia*, Unpublished manuscript, Equity and Diversity Office, University of Western Australia.

Lupieri, S. (2007), "Enseignement, sur l'Air de l'International" [Education, International Melody], *Enjeux Les Echos*, 1 April 2007.

Maiworm, F. and B. Wächter (2002), *English-Language-Taught Degree Programmes in European Higher Education*, Academic Cooperation Association, Lemmens, Bonn.

Marginson, S. (2004), "Competition and Markets in Higher Education: a 'Glonacal Analysis'", *Policy Futures in Education*, Vol. 2, No. 2, pp. 175-224.

Marginson, S. (2007), "Global Position and Position-Taking: the Case of Australia", *Journal of Studies in International Education*, Vol. 11, No. 1, pp. 5-32.

Marginson, S. and M. van der Wende (2007a), "Globalisation and Higher Education", *OECD Education Working Papers Series,* No. 8.

Marginson, S. and M. van der Wende (2007b), "To Rank or to be Ranked: the Impact of Global Rankings in Higher Education", University of Twente, forthcoming in *Journal on Studies in International Education*.

McBurnie, G. and C. Ziguras (2001), "The Regulation of Transnational Higher Education in Southeast Asia: Case Studies of Hong Kong, Malaysia and Australia", *Higher Education*, Vol. 2, pp. 85-105.

McKinnon, K., S. Walker and D. Davis (2000), *Benchmarking – A Manual for Australian Universities*, Department of Education, Training and Youth Affairs, Canberra.

Melin, G. (2004), "Postdoc Abroad: Inherited Scientific Contacts or Establishment of New Networks?", *Research Evaluation*, Vol. 13, No. 2, pp. 95-102.

Meyer, J-B. and M. Brown (1999), "Scientific Diasporas: a New Approach to the Brain Drain", *UNESCO Management of Social Transformations (MOST) Discussion Paper*, No. 41, Paris.

Ministry of Education of Korea (2001), *Courses Conducted in Foreign Languages in Korean Universities*, internal documents.

Ministry of Education of New Zealand (2004), *New Zealand's Offshore Tertiary Education Programmes: Stocktake for the 2003 Academic Year*, Wellington, Ministry of Education.

Ministry of Education of the People's Republic of China (2007), *Work Related to Students and Scholars Studying Abroad*, accessed 29 August 2007 from *www.moe.edu.cn/english/international_2.htm*

Miyagiwa, K. (1991), "Scale Economies in Education and the Brain Drain Problem", *International Economic Review*, Vol. 32, No. 3, pp. 743-759.

Mongkhonvanit, P. and S. Emery (2003), "Asian Perspectives on European Higher Education", *Higher Education in Europe*, Vol. 28, No. 1, pp. 51-56.

Mora, J. (2004), "Academic Staff in Spanish Universities: Country Report Spain", in J. Enders and E. de Weert (eds.), *The International Attractiveness of the Academic Workplace in Europe*, Herausgeber und Bestelladresse, Frankfurt, pp. 395-414.

Musselin, C. (2004), "Towards a European Academic Labour Market? Some Lessons Drawn from Empirical Studies on Academic Mobility", *Higher Education*, Vol. 48, pp. 55-78.

National Institute for International Education Development of Korea (NIIED) (2007), *Study in Korea* Web site, *www.studyinkorea.go.kr*, accessed 11 June 2007.

National Training Foundation (2007), *Bologna Process – National Report of the Russian Federation 2005-2007*, accessed 20 March 2008 from *http://portal.ntf.ru/portal/pls/portal/docs/1/39198.DOC*

Nelson, B. (2003), *Engaging the World through Education: Ministerial Statement on the Internationalisation of Australian Education and Training*, Minister for Education, Science and Training.

Netherlands Universities Foundation for International Cooperation in Higher Education (NUFFIC) (1995), *Quality in Internationalisation: Guidelines for the Assessment of the Quality of Internationalisation in Higher Professional Education*, NUFFIC, Amsterdam.

New Zealand Universities Academic Audit Unit (2000), *Academic Audit Unit Report – Lincoln University*, Wellington.

New Zealand Universities Academic Audit Unit (2003), *Academic Audit Unit Report – Massey University*, Wellington.

Nusche, D. (2008), "Approaches to Learning Outcomes Assessment in Higher Education: A Comparative Review of Selected Practices", *OECD Education Working Papers Series*, No. 15, OECD, Paris. *www.oecd.org/edu/workingpapers*

OECD (2004), *Internationalisation and Trade in Higher Education: Opportunities and Challenges,* OECD, Paris.

OECD (2005a), *Education at a Glance: OECD Indicators 2005*, OECD, Paris.

OECD (2005b), *E-learning in Tertiary Education: Where do We Stand?*, Centre for Educational Research and Innovation (CERI), Paris.

OECD (2006), *Education at a Glance: OECD Indicators 2006*, OECD, Paris.

OECD (2007a), *Education at a Glance: OECD Indicators 2007*, OECD, Paris.

OECD (2007b), *Education database*, accessed 18 September 2007 from *http://dotstat/wbos/default.aspx*

OECD (2007c), Economic Surveys: Greece, OECD, Paris.

OECD (2007d), *Cross-Border Tertiary Education: A Way Towards Capacity Development*, OECD and IBRD/The World Bank.

OECD and UNESCO (2005), *Guidelines for Quality Provision in Cross-border Higher Education*, OECD, Paris.

Olsen, A., Z. Burgess and R. Sharma (2006), "The Comparative Academic Performance of International Students in Australia", *International Higher Education*, Vol. 42, pp. 11-12.

Ouaked, S. (2002), "Transatlantic Roundtable on High-skilled Migration and Sending Countries Issues", *International Migration*, Vol. 40, No. 4, pp. 153-166.

Palifka, B. (2003), "Study Abroad and the Transition from School to Work for Mexican College Graduates", *Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM) working paper*, accessed on 22 July 2007 from *http://homepages.mty.itesm.mx/bpalifka/short-term.pdf*

Parker, M. and D. Jary (1995), "The McUniversity: Organisation, Management and Academic Subjectivity", *Organisation*, Vol. 2, pp. 319-338.

Peace Lenn, M. and L. Campos (1997), *Globalisation of the Professions and the Quality Imperative: Professional Accreditation, Certification and Licensure*, Magna Publications, Madison.

Pimpa, N. (2005), "Marketing Australian Universities to Thai Students", *Journal of Studies in International Education*, Vol. 9, No. 2, pp. 137-146.

Pritchard, R. and B. Skinner (2002), "Cross-Cultural Partnerships Between Home and International Students", *Journal of Studies in International Education*, Vol. 6, No. 4, pp. 323-354.

Puustinen-Hopper, K. (2005), *Mobile Minds – Survey of Foreign PhD Students and Researchers in Finland*, Academy of Finland, Helsinki.

Racine, N., P. Villeneuve and M. Thériault (2003), "Attracting Foreign Students: The Case of Two Universities in Québec", *Journal of Studies in International Education*, Vol. 7, pp. 241-252.

Richardson, J. and S. McKenna (2002), "Leaving and Experiencing: Why Academics Expatriate and How They Experience Expatriation", *Career Development International*, Vol. 7, No. 2, pp. 67-78.

Ryan, J. (2000), *A Guide to Teaching International Students*, Oxford Centre for Staff and Learning Development, Oxford.

Sakellaris, P. and A. Spilimbergo (2000), "Business Cycles and Investment in Human Capital: International Evidence on Higher Education", *Carnegie-Rochester Conference Series on Public Policy*, Vol. 52, No. 1, pp. 221-256.

Salmi, J. and A. Saroyan (2007), "League Tables as Policy Instruments", *International Higher Education*, Vol. 47, pp. 2-4.

Saxenian, A. (2002), "Brain Circulation: How High-skill Migration Makes Everyone Better Off", *Brookings Review*, Vol. 20, No. 1, pp. 28-31.

Saxenian, A. (2005), "From Brain Drain to Brain Circulation: Transnational Communities and Regional Upgrading in India and China", *Studies in Comparative International Development*, Vol. 40, No. 2, pp. 35-61.

Schuster, J. (1994), "Emigration, Internationalization, and 'Brain Drain': Propensities among British Academics", *Higher Education Journal*, Vol. 28, No. 4, pp. 437-452.

Scott, P. (1998), "Massification, Internationalisation and Globalisation" in P. Scott (ed.), *The Globalisation of Higher Education*, Society for Research into Higher Education/Open University Press, Buckingham, pp. 108-129.

Scott, P. (2000), "Globalisation in Higher Education: Challenges for the 21st Century", *Journal of Studies in International Education*, Vol. 4, No. 1, pp. 3-10.

Shanghai Jiao Tong University (2007), *Academic Ranking of World Universities by Broad Subject 2007*, Institute of Higher Education, Shanghai Jiao Tong University, accessed 27 June 2007 from *http://ed.sjtu.edu.cn/ARWU-FIELD.htm*

Siow, A. (1997), "Some Evidence on the Signalling Role of Research in Academia", *Economics Letters*, Vol. 54, No. 3, pp. 271-276.

Slaughter, S. and G. Rhoades (2004), *Academic Capitalism and the New Economy: Markets, States, and Higher Education*, Johns Hopkins University Press, Baltimore.

Snellman, O. (1995), *Internationalisation of Higher Education: Goals, Prerequisites and Quality Assurance*, Centre for International Mobility, Helsinki.

Stark, O. (2005), "The New Economics of Brain Drain", *World Economics*, Vol. 6, No. 2, pp. 137-140.

Surf Foundation (2007), *Studychoice.nl* Web site, *www.studychoice123.nl*, accessed 25 July 2007.

Sussex Centre for Migration Research and Centre for Applied Population Research (2004), *International Student Mobility*, report commissioned by the HEFCE, SHEFC, HEFCW, DEL, DfES, UK Socrates Erasmus Council, HEURO, BUTEX and the British Council.

Swiss National Science Foundation (SNSF) (2007), SNSF professorships Web page, *www.snf.ch*, accessed 29 August 2007.

Tapper, T. and D. Palfreyman (2005), *Understanding Mass Higher Education: Comparative Perspectives on Access*, Routledge Falmer, London.

Times Higher Education Supplement (2007), *Times Higher World University Rankings 2006*, accessed 27 June 2007 from *www.thes.co.uk/worldrankings*

Tonkin, H. and J. Edwards (1981), *The World in the Curriculum: Curricular Strategies for the Twenty-First Century*, Council on Learning, New Rochelle.

Tremblay, K. (2002), "Student Mobility Between and Towards OECD Countries: A Comparative Analysis", in *Trends in International Migration – SOPEMI 2001*, Paris, OECD, pp. 93-117.

Tremblay, K. (2005), "Academic Mobility and Immigration", *Journal of Studies in International Education*, Vol. 9, No. 3, pp. 196-228.

UK Council for International Education (2006), *The Experiences of International Students in UK Further Education and Colleges: Report from the 2006 UKCOSA Survey*, Council for International Education, London.

Wächter, B. (2003), "An Introduction: Internationalisation at Home in Context", *Journal of Studies in International Education*, Vol. 7, No. 1, pp. 5-11.

Wende, M. van der (1999), "Quality Assurance of Internationalisation and Internationalisation of Quality Assurance", in H. de Wit and J. Knight (eds.), *Quality and Internationalisation in Higher Education*, OECD, Paris.

Wende, M. van der (2001), "Internationalisation Policies: About New Trends and Contrasting Paradigms", *Higher Education Policy*, 14, pp. 249-259.

Wiers-Jenssen, J. and S. Try (2005), "Labour Market Outcomes of Higher Education Undertaken Abroad", *Studies in Higher Education*, Vol. 30, No. 6, pp. 681-705.

Williams, T. (2005), "Exploring the Impact of Study Abroad on Students' Intercultural Communication Skills: Adaptability and Sensitivity", *Journal of Studies in International Education*, Vol. 9, No. 4, pp. 356-371.

11. What Next? The Challenges of Policy Implementation

11.1 Introduction

Education constitutes one area of public intervention in which reform is a recurrent theme. This is all the more true of tertiary education where in the past decades, structural changes in the external environment, participation patterns and growing demands from the sector have called for its modernisation and new models of governance, funding, quality assurance, relations with stakeholders *etc*.

The previous chapters have thus identified a number of policy directions for tertiary education authorities to consider in their national context to achieve their tertiary education goals. Some of these policy suggestions are already in place in a number of countries, while they may have less relevance for other countries because of different social, economic and educational structures and traditions. A key challenge ahead for policy makers is therefore to identify which policies would work best in their national context and circumstances, and in a second stage to move from knowing what changes are needed to implementing those changes successfully.

Chapter 3 examined the shaping of tertiary education policy and the process of policy development in different national contexts, with specific emphasis on evidence basis, peer-learning, tradeoffs, policy coordination and consultation processes with stakeholders. This last Chapter by contrast focuses on the challenges of policy implementation in tertiary education, with special emphasis upon issues of social acceptance and political feasibility. Indeed, educational reforms often entail costs for some groups while their benefits are less certain, more diffuse and in any case delayed in time. This feature makes implementation a complex task for policy makers, one in which political economy considerations are of key importance.

The analysis draws on lessons from national experiences as well as from the political economy literature, with a view to identify triggers to take reform agendas forward. The Chapter starts with a review of lessons from past experiences which suggest that a precondition for successful policy implementation is to reconcile the diverging interests of a wide range of stakeholders, and to convince them that the reform is the way forward. Along this course, policy makers need to carefully analyse policy alternatives and their likely impact and discuss them with stakeholders to aim towards consensus. The analysis then identifies some common impediments to reform, with a view to overcome them and develop the conditions conducive to successful policy adoption. But although supportive circumstances are a necessary condition for successful implementation, they are not always sufficient, especially when the situation of some stakeholder groups is likely to worsen – or perceived so – as a result of the reform. The Chapter therefore ends with a discussion of bargaining processes and costs of reforms, as well as incentive structures facilitating compliance with new policies, as a way to ensure policy implementation in the longer term.

11.2 The complexity of policy implementation

Tertiary education policy is relevant to – and impacts on – a number of different stakeholders who have an interest in tertiary education, but whose views on its roles and goals, and hence on the strategies and policies needed to achieve these goals, often diverge. Depending on where they stand in the tertiary education sector, stakeholders may jeopardise the implementation of tertiary education policy in different ways. As a result, a challenging task for policy makers is to find a balance between these diverse views and aims in developing and implementing tertiary education policy, so as to build consensus and ensure that no single group vetoes or jeopardises the implementation of tertiary education policies.

11.2.1 Wide range of stakeholders and views on tertiary education policy

Stakeholders can be defined as individuals or organisations that can either influence or be affected by an organisation's actions (Johnson and Scholes, 1999). Mitroff (1983) further suggests that one should distinguish between internal stakeholders – *i.e.* those individuals or groups who affect and impact change within the system from the inside such as students, academics and tertiary education institutions (TEIs) – and external stakeholders who exert their influence from the outside, such as national authorities, trade union confederations, trade and employer associations, large companies, lobbyists and educational researchers.

Stakeholders often have different motives and objectives with respect to tertiary education, and each group tends to privilege different aspects when it comes to reform and policy development (Vroeijenstijn, 1995; Jacobs and van der Ploeg, 2006). For instance, educational quality, teaching performance and career opportunities are what matters to students and graduates, along fulfilment of personal interests and individual development. Employers and industry representatives share this concern for tertiary education to transmit the right set of knowledge, skills and attributes to students and to prepare them for working life, but they are also interested in the capacity of tertiary education to contribute to research and innovation and regional development. By contrast, academics often show more interest in policies relating to knowledge transfer, learning environments, quality and motivation of students, research quality and the level of interaction between teaching and research, as well as tenure possibilities. Numbers of students, the prestige of TEIs, their ability to compete internationally in research and sufficient autonomy to fulfil their mission are the issues at stake from the perspective of TEI managers while government authorities – as significant funders of tertiary education – are concerned with the efficient allocation of scarce public resources and hence policies enhancing value for money and accountability towards taxpayers. In the context of growing participation in tertiary education and acute pressures on public budgets, government authorities show increasing interest in cost-sharing models while students and their parents tend to resist changes in that direction.

As illustrated above, the interests of all stakeholders in tertiary education are not necessarily aligned, and as a result of these different objectives, they usually do not share the same views about tertiary education problems and solutions (Mitroff, 1983). The situation is further complicated by the fact that within each stakeholder group, several views often prevail, *e.g.* between different students' or teachers' unions, different types of TEIs, different sectors of industry, quantitative and qualitative researchers, or between central or regional policy makers.

11.2.2 Difficult consensus-building over policy initiatives

This diversity of views makes the policy making exercise particularly challenging, especially so given that policy makers often represent one of the stakeholder groups – the government authorities – and therefore they need to reconcile different perspectives to avoid the perception that education policy is imposed to other groups in a top-down fashion. Indeed, some degree of consensus is necessary for policy to translate into effective change. As put by Gornitzka (1999), "for organisations to change as a result of government initiatives a normative match is necessary, *i.e.* congruence between the values and beliefs underlying a proposed programme or policy and the identity and traditions of the organisation."

Johnstone *et al.* (1998) distinguish however between popular and contentious policy initiatives – such as the introduction of student aid *vs.* tuition fees for instance – with consensus being obviously easier to achieve for the former than the latter type of policy initiatives. As a result, popular policy initiatives are more likely to be adopted and successfully implemented, whereas less consensual initiatives may be blocked or simply fail to deliver the desired objectives at several stages of the policy development and implementation process, depending on which stakeholder groups oppose the extent to which this opposition is translated into action.

Yet, on occasions policy makers may have to implement policy reforms in the absence of consensus because they believe it is the right thing to do and stakeholders' views are irreconcilable. In such conditions however, explanatory processes and compensatory measures are an important aspect of the ultimate success of implementation.

11.2.3 Diverse forms of policy failure

Throughout this Chapter, policy is defined as a public statement of an objective and the kind of instruments that will be used to achieve it, while the degree to which the predicted consequences take place is called implementation (Gornitzka, 1999). A distinction needs to be made, however, between policy initiatives of a more intentional nature – which are usually established through some form of statement of intention – and more coercible policy proposals which usually have to undergo some type of legal approval to be enforced. As a result, policy adoption takes place in many countries between the policy proposal and policy implementation stages.

Proposed policy initiatives may be unsuccessful at different points along the policy process, resulting in different forms of implementation failure. During the policy development or adoption process, some stakeholder groups may voice strong opposition to policy proposals, essentially by means of intense lobbying by external stakeholders, and demonstrations or strikes by their internal counterparts. The views of government authorities and society at large usually express themselves through the placement of proposals on the policy agenda for the former, and democratic adoption processes for the latter. Finally, policy initiatives may fail to deliver the expected results during the implementation stage either as a result of non compliance by various stakeholders, or partial implementation only.

There are indeed abundant examples of tertiary education reform failures. In addition to massive student or academics demonstrations or strikes – of which most countries have a memorable case in point – and policy initiatives rejected by Parliament, the two most common problems encountered during policy implementation relate to the so-called

"implementation gap" as well as the implementation of partial reforms only for fear of sparking stronger rebellion.

The implementation gap refers to the difference between the planned outcomes of policy and the outcomes of the implementation process (Newton, 2001). While the lack of preparedness of those deemed to implement reforms on the ground may explain this gap, a range of authors also stress the discretion exercised by "front-line" workers, or "street level" bureaucrats whereby the relative autonomy enjoyed by some actors within the system grants them the power to put into practice the policy initiative at the point of implementation (Lipsky, 1980; Prottas, 1978). In this logic, policy initiatives unpopular with academics and TEIs' leaders or perceived as unnecessary (or worse, ill-conceived) will be at best half-heartedly implemented, at worst actively resisted.

From a theoretical perspective, the implementation gap has been modelled by Reynolds and Saunders (1987) through the notion of the implementation staircase. They show how the location of individuals and stakeholder groups in the hierarchy of the policy process – from national policy makers to institutional leaders, department heads, frontline academics and student responses – can shape their interests and perceptions about the relevance of particular policies and explain the reasons for the development of an "implementation gap" as policy is refracted during its trajectory down, and up, the staircase. As put by Trowler (2002), "there is a loosely coupled relationship between policy initiatives at the upper level of the implementation staircase and outcomes on the ground." According to Theisens (2004), one of the most important reasons for the failure of top-down design and implementation of policies is the pervasive tradition of autonomy. Academic autonomy is highly valued at all levels of the tertiary education system: the TEI, the chair and the individual academic. In each relationship (government-TEI, TEI-chair and chair-individual academic) interventions are likely to be resisted as these are perceived as infringing on autonomy and therefore illegitimate. The implementation gap models highlight the importance of garnering support from the people on the ground as one of the most strategic approaches to encouraging active policy implementation.

Another common problem of tertiary education policy reform derives from partial implementation. As the analysis of Chapter 3 underlined, the policy development process is often characterised by difficult tradeoffs which call for sound reform packages where different policy initiatives aim at counterbalancing the side effects of other proposals in order to avoid perverse effects. If only some of the measures are adopted, the reform may then generate unintended and damaging consequences. For instance, partial reforms introducing tuition fees to finance expansion but without income-contingent loan schemes to warrant accessibility may have a disastrous effect on equity by limiting access of the less affluent students. Likewise, Perotti (2007) describes the unintended effect of a reform granting more autonomy to Spanish universities in setting their own academic programmes in the mid-1980s. In the absence of simultaneous reforms to strengthen a managerial type of institutional governance indeed, this autonomy reinforced internal actors, and the reform resulted in a proliferation rather than a streamlining of university qualifications, as the academic community pushed for more specialisation as a way to multiply professorial chairs.

Jacobs and van der Ploeg (2006) provide another illustration of the unintended effects of partial implementation, relating the "sorry tale" of Dutch mergers of TEIs in the 1980s and 1990s. These mergers aimed at reducing overhead costs relative to expenditures on teaching and research through economies of scale in order to compensate for the decline

in real terms of contributions per student. Yet, the reform yielded opposite outcomes with a massive increase in overhead costs and a fall in resources per student for teaching and research, which the authors attribute to the absence of parallel reforms to foster competition between TEIs. Indeed, they argue that in the absence of competition-enhancing measures, the increase in scale created oligopolistic market situations in tertiary education and produced adverse incentives on TEI management discipline. A 2007 study concludes that overhead costs in tertiary education are now – at about 25% – in par with those observed in other public and semi-public sectors (Huijben and van Rosmalen, 2007).

Partial reforms are often the result of insufficient resources to implement the full reform package or fear of resistance on the more contentious measures of the policy package. Yet, experience suggests that controversy over policy initiatives is not necessarily a definite barrier to policy implementation, and consensus can be reached for seemingly contentious reforms. Johnstone *et al.* (1998) report for instance how the rector of the University of Sonora in Mexico managed to build consensus with his staff and students to introduce student contributions to the costs of their education in 1993,[92] whereas any attempt to introduce cost-sharing had been fiercely resisted in other Mexican public universities – especially at the *National Autonomous University of Mexico* (UNAM, Rhoads and Mina, 2001). These examples highlight the need to explore lessons from experiences in greater depth to draw insight on obstacles to successful outcomes as well as conditions that facilitate policy implementation.

11.3 Lessons from success stories

There is abundant literature on educational reforms in an international comparative perspective and their outcomes in diverse national settings (Fiske, 1996; Johnstone *et al.*, 1998; Corrales, 1999; Kogan *et al.*, 2000; Harman and Harman, 2003; Jacobs and van der Ploeg, 2006). These studies permit to draw lessons from both success stories and policy flops, and to better understand the factors that help or hinder the successful implementation of policy initiatives in the educational area. With respect to success stories, most studies underline the importance of the context in which tertiary education policies are proposed, the clarity of their objectives and rationales to all stakeholders, and the value of consensus-building during the policy development stage.

11.3.1 Context for policy reform

International pressure and competitive environment

With respect to the context in which tertiary education policies are proposed, evidence suggests that international pressure and competitive environments are more likely to diffuse a sense of ineluctability of some reforms among the various stakeholders and the public at large. Finlay *et al.* (1998) note for instance that external stimuli such as a competitive threat or a common enemy (*e.g.* unemployment) often result in a joint recognition of the need for a change to take place that can lead to a united front of stakeholders.

92. In Sonora, students accepted the principle of a contribution to generate supplementary resources towards quality improvement initiatives. The corresponding funds are administered by a joint student-faculty committee and information on the use of the money is disseminated every year (Johnstone *et al.*, 1998).

In Europe for instance, Perotti (2007) highlights how supranational conventions such as the Bologna Process have triggered a restructuring of academic programmes to enhance comparability and mutual recognition of tertiary qualifications among countries – along the Bachelor-Master-Doctorate (BMD) degree structure and the European Credit Transfer System (ECTS) – which national actors would not otherwise have undertaken. As a result of this international pressure, most European systems have restructured their tertiary education delivery, or are in the process of doing so (see Chapter 10, Huisman and van der Wende, 2004; Bologna Secretariat, 2007).

Similarly, the implementation of wide-ranging "big-bang" tertiary education reforms in Japan in 2004 were reportedly facilitated – despite initial resistance within TEIs – by a widespread political and public sentiment that reform was overdue and that, in comparison with the systems of peer countries in North America, Australasia and Europe, Japanese universities were falling behind (Amano and Poole, 2005). In New Zealand, the implementation of wide ranging reforms in the tertiary education sector also benefited from widespread social acceptance of the reforms being the right way forward for the system.

While international benchmarking and competition may spur the acknowledgement of problems and the acceptance of changes within the public and stakeholders, Jacobs and van der Ploeg (2006) argue that competition and market forces within the domestic tertiary education system also have potential to facilitate policy implementation with respect to internal stakeholders. Indeed, they claim that insufficiently competitive tertiary education systems generate larger monopoly rents and exacerbate rent-seeking activities of insiders and their resistance to policy initiatives likely to trim down those rents.

Consensual nature of policy making

A number of authors also stress the assistance of consensual modes of policy making for successful adoption and implementation of policy initiatives (Fiske, 1996; Johnstone *et al.*, 1998; Finlay *et al.*, 1998; Corrales, 1999; Bleiklie, 2000; Lindell, 2004).

There is extensive evidence that consensus is almost a prerequisite for successful implementation of policy reforms. As noted by Fiske (1996) with respect to school decentralisation, researchers are almost unanimous in arguing that if school decentralisation is going to be successfully carried out and have a positive impact on the quality of teaching and learning, it must be built on a foundation of broad consensus among the various actors involved and the various interest groups affected by such a change. And in fact, he observes on a basis of a comparative analysis that countries where leaders sought to build consensus for reform happen to be those where decentralisation was most successful. Even in countries where early attempts failed – such as Chile and Mexico – decentralisation policies were eventually implemented successfully once a deal was struck with teachers, despite the fact that this group remained suspicious with school autonomy overall.

Systems where the nature of policy making is consensual therefore face brighter conditions for successful policy implementation. There are several reasons for this. Firstly, consensual policy making is characterised by iterative processes of proposals and feedback which allow legitimate concerns to be taken into account, and hence reduce the likelyhood of strong opposition by some stakeholder groups. There is evidence in Norway for instance that the continuous dialogue and consultations between TEIs and political authorities that characterised the preparation of the *Quality Reform* – including the use of

a Royal Commission representing the main stakeholders – facilitated its acceptance and implementation. Likewise, many policy developments in the United Kingdom would have been more difficult to implement without iterative amendments which have for the most part been introduced following consultations with academic staff.

In addition, consensual policy making forces different stakeholders to work together constructively rather than engage in fruitless opposition. Lindell (2004) notes for instance that in Sweden, "even though the stakeholders are opponents in appearance, the everyday work in parliamentary commissions and joint working groups is done by a small group of professional elites whose agenda is not always optimised for their members only, but for the interest of the nation."

Trust between stakeholders

But the main benefit of consensual policy making lies in its role in building trust between the various stakeholder groups and policy makers. The experience of countries participating in the Review suggests that mechanisms of regular and institutionalised consultation – which are inherent to consensual policy making – contribute to the development of trust among parties, and help them reach consensus. In the case of Norway, Trowler (2002) notes that top civil servants and university professors form an intimate and close community of individuals who know each other personally and share a common background. Being a very specialised group in society, these professionals know and trust each other very well, and hence develop a refined strategy where policy bargaining is common.

Building consensus and trust over time

While consensual policy making and trust between parties are critical assets to ensure successful implementation of tertiary education policies, it is not suggested that countries whose contextual conditions are less supportive have no chance of successfully reforming their tertiary education system. Indeed, Lindell (2004) shows how consensus can be built over time. His analysis of a reform of tertiary vocational education in Sweden illustrates how conflicting interests of stakeholders can be reconciled by having them work together towards a policy proposal: "the somewhat fierce ideological disagreements that had characterised the initial proposal from 1995 had radically changed during the years from 1996 to 1999 (…) There was a clear shift of rhetoric actions before and after the 3 years of the pilot project". According to Lindell, working together on a daily basis to get the pilot project running contributed to the emergence of a common view among stakeholders. Likewise, the introduction of the *Higher Education Contribution Scheme* (HECS) in Australia in 1988 was initially strongly opposed by all active student groups and the subject of much political agitation in opposition to it, though it has since achieved a significant level of acceptance.

11.3.2 Clear objectives/purposes of policy reform

Another factor which is often put forward by researchers when analysing the reasons for the success or otherwise of policy adoption and implementation relates to the communication of the objectives and purposes of reforms. Indeed, Olsen (1989) notes that policies are more likely to succeed if their intentions are focused and well defined rather than ambiguous. There are three main reasons for this.

Firstly, evidence suggests that reforms are more likely to be adopted and implemented if the pressure to reform comes from the citizens (Amano and Poole, 2005). In this perspective, communication on the objectives and purposes of reforms can help secure public support for new policy initiatives.

In addition, several studies claim that a clear vision on the goals of tertiary education, and how these goals can be reached, is also necessary to avoid tertiary education policy being *ad hoc* and mainly driven by special interests (Gornitzka, 1999; Jacobs and van der Ploeg, 2006). Indeed, policies formulated under pressures of contending parties with different interests and values tend to have multiple, conflicting and vague intentions, and the price one pays for accommodating them are policies with inherent tensions and contradictions (Bleiklie, 2000; Trowler, 2002).

The end result is a lack of clarity between conflicting signals for stakeholders within the system. These unclear rationales for policy initiatives undermine their acceptance by those who are ultimately to implement the policies, and make implementation and compliance a particularly challenging task for policy makers.

11.3.3 Process of policy development

Empirical evidence also pinpoint to a number of patterns of the policy development process that tend to be associated with successful implementation of tertiary education reforms. In light of the critical importance of consensus for the success of policies, a number of these patterns have a bearing on outcomes through their effect on consensus-building. However, the magnitude of tertiary education reforms and the role of policy entrepreneurs are other key dimensions.

Magnitude of tertiary education reform

Corrales (1999) observes – on the basis of a thorough review of education reforms implemented in the 1980s and 1990s worldwide – that incremental approaches to policy reform stand greater chances of acceptance than complete overhauls of education systems. Cerych and Sabatier (1986) observe similar patterns for tertiary education reforms implemented in Europe in the 1970s and conclude that the degree of success is highest in cases of policies aiming at mid-level change both in terms of breadth and depth.

According to Johnstone *et al.* (1998), this pattern derives from the widespread sentiment among academics that they have a role to play in defending TEIs as proper and necessary bastions of continuity and tradition, and in protecting the custom of academic freedom. But political feasibility considerations are also put forward to explain this feature. Haddad (1994) argues for instance that gradual reforms incur fewer political difficulties because a narrow scope allows policy makers to test the acceptance of reforms, avoids the national spotlight, keeps to a minimum the number of cost-bearers and is less likely to provoke their mobilisation.

At the same time, the experiences of some countries participating in the Review suggest that comprehensive and far-reaching "big bang" reforms are not necessarily doomed to fail. In particular, the implementation of wide ranging reforms in Australia, Japan and New Zealand illustrates how "big bang" types of tertiary education reforms can be achieved successfully, provided they benefit from wide support among stakeholders. This emphasises the importance of consensus-enhancing patterns of policy development.

Consensus-enhancing patterns of policy development

Involvement of stakeholders with combined top-down and bottom-up participation

There is broad agreement in the literature that the involvement of stakeholders in tertiary education policy development cultivates a sense of joint ownership over policies, and hence helps build consensus over both the need and the relevance of reforms (Finlay *et al.*, 1998; Harman and Harman, 2003; Lindell, 2004; OECD, 2007; Perotti, 2007). This engagement of stakeholders can take place at several points in the policy development process, at the initiation, development and implementation stages.

With respect to the initiation of new policies, the combination of top-down and bottom-up initiatives is generally believed to foster consensus (Finlay *et al.*, 1998). Indeed, policy proposals instigated in a bottom-up fashion – *e.g.* as a result of bottom-up campaigning for change on the part of parents, students and local communities – contribute to building ownership for policy initiatives by stakeholders and usually receive wide public support, making it more difficult for internal stakeholders to resist them (Amano and Poole, 2005). Likewise, there is increasing recognition of the potential of promoting initiatives by internal stakeholders to garner their support. For instance, a recent study of evidence-informed policy making underlines how the involvement of practitioners – teachers, other educational staff and their unions – in the production of research evidence and in its interpretation and translation into policy gives them a strong sense of ownership and strengthens their confidence in the reform process (OECD, 2007). Shared ownership of internal stakeholders over research results also encourages implementation in a way that something imposed externally by researchers on teachers does not (Slavin, 2006; OECD, 2007).

The process for the development of Mexico's 2001-2006 *National Education Programme* (*Programa Nacional de Educación*, PRONAE) illustrates the potential contributions of bottom-up initiatives. The programme was developed on the basis of extensive input from a range of stakeholders, including TEIs, researchers, students, alumni, employers' associations, education authorities, as well as the education commission of the legislative branch and other public and private agencies. Over 8 000 proposals were sent by interested parties through different channels (including an Internet Web site) or presented at the 32 forums carried out in Mexican states for that purpose. The information received was subsequently classified and analysed, and the Ministry validated about 30% of these initiatives. Many citizens and TEIs were thus parties in the Programme's design.

The involvement of stakeholders is also important during the policy development phase. Processes of regular and institutionalised consultations establish a policy making process that is strongly oriented towards consensus among parties. Another merit of structured consultations with stakeholders is that their regular involvement in policy design helps them build capacity over time, as evidence by Sweden where the regular involvement of stakeholder groups in commissions has led them to build large and well-staffed research departments over time (Lindell, 2004).

Among countries participating in the Review, consultation processes with stakeholders are common although the specific modalities and actors involved vary between countries. Consultations are institutionalised by law in the Czech Republic and Poland. In Estonia, Finland, Iceland, Norway, Sweden and Switzerland, they are part of cultural traditions with wide consultation and participation in decision making by all key

stakeholders being expected and accepted parts of the public policy process. Yet in other countries, consultations take place either regularly through consolidations of views and various committees (Korea, the Netherlands, New Zealand and Portugal) or on an *ad hoc* basis when developing specific reforms of tertiary education – as illustrated by the experiences in Australia and Spain (see Chapter 3).

In Estonia for instance, the usual procedures for preparing policy proposals include consultation with all stakeholders' representatives, usually in the form of discussions and official approval rounds. In the case of broad policy directions or special legislative reforms, the Minister usually assembles a special task force with a specific assignment, which is sometimes led by outside experts. The Rectors' Conferences, students' federation and other bodies are then asked to nominate their representatives. The conclusions of these working groups are taken as recommendations to the Minister, and although not legally binding, they are most often taken as a basis for decisions.

Other interesting models from a consensus-building perspective are systems where stakeholders are involved in prioritisation exercises which subsequently form the basis for policy implementation – *e.g.* in the allocation of resources. In Australia, Chile and Poland for instance, stakeholders are involved in the definition of national research priorities which then have implications for the allocation of research funds. In Poland, the first steps of a prioritisation exercise were taken in 2005 with the launching of the National Framework Programme. A wide consultation was launched – under the joint auspices of the Ministry of Education and Science and the Council for Science – to identify research priority areas. The process resulted in over 1 600 proposals from ministries, regional and local authorities, business organisations and research units within TEIs, from which nine strategic areas were identified. Similar prioritisation processes exist in Australia and Chile that involve the research and scientific community as well as the business community and the wider society.

But the importance of bottom-up initiatives is not confined to the development of tertiary education policies. They can also be extremely important afterwards, to ensure the successful implementation of policies. For instance, Harman and Harman (2003) observe as regards institutional mergers that voluntary fusions are easier to organise and more successful, largely because it is possible to achieve a substantial degree of staff involvement in negotiations and implementation, leading usually to a strong sense of ownership. Consultations with stakeholders are also useful during policy implementation, through feedback and iterative improvement of tertiary education policies.

Rational debate

A number of authors also advocate the organisation of public discussions and nation-wide debates to identify challenges facing the tertiary education system and to provide consensual directions for its medium and long term strategy. It is argued that focusing on building consensus on the strategic direction for the system not only enhances stakeholders' understanding of resources constraints and tradeoffs and avoids a concentration of the debate on resourcing issues, but also improves the likelihood of their support for policies emerging from the jointly-agreed strategy.

Indeed, Fiske (1996) observes that "individuals and groups will be more likely to accept changes that are not necessarily in their own best interests if they understand the reasons for the changes, have a chance to participate in the debate, and believe that the process has been honest and transparent." Likewise, Jacobs and van der Ploeg (2006) note

that "politicians and policy makers are currently not capable of convincing the public of the benefits of certain reforms" and call for a rational debate with a stronger emphasis on the general interest to avoid *ad hoc* policies driven by special interests. Finlay *et al.* (1998) also emphasise the importance of reaching early agreement on important goals, and of making the process as transparent as possible so that those groups or individuals excluded from the debate can follow the policy process from the inside. Opening up the policy arena to all walks of society – including political opponents – generally proves an effective strategy (Arellano, 2001).

Several countries participating in the Review have established such debates as part of their tertiary education reform processes by way of national consultations or commissions, and these have generally proved effective in terms of implementation outcomes as they facilitated securing the support of public opinion and other stakeholders. In the case of Chile for instance, Arellano (2001) highlights that the composition of the *Commission for the Modernisation of Education* – which involved a number of eminent and distinguished members coming from a range of backgrounds and political affiliations – may help explain its ability to gain legitimacy and secure a fair degree of support and consensus for its proposals.

Dissemination of evidence underlying reforms and role of media

Such rational debates are more likely to be effective if all stakeholders have access to evidence underlying the policy proposals. This applies to both internal stakeholders who may want to see the external evidence on which a proposed innovation is based before approving a change in policy or practice at the institutional or classroom level, as well as external stakeholders to convince them of the merits of a specific policy reform. In this respect, two approaches may contribute to consensus-building.

Research or intermediary bodies have proved successful strategies to mediate the research evidence by providing a unique gate entry to publications and research on tertiary education. In doing so, they can play a crucial role in helping convince practitioners and society at large. They are indeed important contributions to raise awareness on problematic issues, to enhance national debate and disseminate evidence on the effectiveness and impact of different policy alternatives, and hence to find a consensus on tertiary education policy. In Sweden for instance, The *National Agency for Higher Education* publishes the results of the majority of enquiries undertaken on its Web site [www.hsv.se]. Similar dissemination takes place in Australia, the Netherlands, New Zealand and the United Kingdom (see Chapter 3).

With respect to public opinion, the media may also prove a useful dissemination tool. Emphasis on international comparisons in media reports may raise awareness for the need for a change to take place among the public. Likewise, ideas which are generally perceived as intuitively reasonable gain power and support of public opinion. This is especially the case where they are promoted by the media, who often play a major role in shaping, or stunting, the policy agenda. They can then be used as a basis for policy change and educational reform regardless of whether there has been any empirical testing (OECD, 2007). In the United States context for instance, Cohen-Vogel and Ingle (2007) show how the media were instrumental in introducing the idea of a merit-based grant aid to legislators across states.

Iterative process taking political factors into account

The empirical literature of education policy implementation also shows wide support for iterative policy development, as a way to facilitate the early identification of potential opponents to reform, and to address part of their concerns through adjustments in subsequent iterations of the policy proposals (Ball, 1994; Bleiklie, 2000; Trowler, 2002; Lindell, 2004). Indeed, it is argued that policy development is frequently far from the simple mechanical application of means to realise given ends by policy "architects" or "engineers", but rather consists of a process of negotiation and compromise with multiple influences and agendas. As put by Trowler, "at the institutional level, as at the national, policy making and policy implementation are more likely to be the result of negotiation, compromise and conflict than of rational decisions and technical solutions".

Recent reforms of tertiary education in Australia illustrate how iterative adjustment of policies can help secure the support of internal stakeholders. Indeed, the new accountability environment that was associated with the 2002-2003 reforms received complaints from the sector due to the increased reporting burden on universities. The then *Australian Vice-Chancellor Committee* (AVCC) (now *Universities Australia*) went as far as claiming that the autonomy of universities was under threat and commissioned independent research to investigate this assertion. As a result, the then *Department of Education Science and Training* reviewed reporting requirements with the AVCC in 2002-2003, and many requirements were dropped or reduced in scope, to the satisfaction of the AVCC.

In the same vein, Lindell (2004) describes how iterative processes in policy development reconciled diverging interests of stakeholders in the Swedish context. He depicts the different steps of a reform of higher vocational education and training that helped move from conflicting interests of the different stakeholders to collective consent. The reform process was initiated by a commissioned study which provided a diagnosis and suggested proposals for improvement. Stakeholder groups were invited to respond to these proposals, on the basis of which a pilot project was launched for a three-year period that made concessions to several of their views. A parliamentary committee was established to monitor and evaluate the pilot reform, with the involvement of the stakeholders. After three years of trial, an independent evaluation of the pilot reform was carried out by a research team which no longer showed signs of dissent between stakeholders. The continuation of the reform beyond the pilot phase was unanimously supported. In Lindell's view, one explanation for this shift towards consensus is that the daily work of getting the pilot project running helped the stakeholders build trust and finally resulted in this common view.

Policy experimentation and pilots

And in fact, policy experimentation and the recourse to pilot schemes can prove powerful in testing out policy initiatives and – by virtue of their temporary nature and limited scope – overcoming fears and resistances by specific groups of stakeholders. In fact, Lindell (2004) attributes the success of the Swedish reform of higher vocational education and training to its step-by-step implementation in which the pilot project "*de facto* put stakeholders in 'quarantine' and gave them a common responsibility, which together with the work on a daily basis of getting the project running finally resulted in a common view". Policy experimentation is facilitated and common in Federal state structures where there is evidence of policy-borrowing and emulation across states and provinces (see Chapter 3 and McLendon *et al.*, 2005).

Role of policy entrepreneurs

A number of authors also underline the potential of "policy entrepreneurs" in moving policy agendas forward and promoting tertiary education reforms. Cohen-Vogel and Ingle (2007) define them as agents who "marshal indicators and invest considerable resources to bring their conceptions of problems to policy makers' attention, and try to convince them to see problems their way" and claim that in the United States they were instrumental in introducing the idea of a merit-based grant aid to legislators across states (Cohen-Vogel and Ingle, 2007). Likewise, the Polish Rector's Conference has reportedly been "lobbying the parliament to interpret the new constitution in a way that would legalise tuition" (Johnstone *et al.*, 1998).

However, research suggests that the influence of such policy advocates is most important at the initiation stage of policy development. Indeed, Cohen-Vogel and Ingle (2007) describe policy making as a sequential process – starting with the identification of a public problem, its placement in an agenda queue, the formulation of proposed courses of action to address it, and the adoption of these policy options – in which they show that policy entrepreneurs' influence is strongest during the agenda-setting.

11.4 Understanding failure and overcoming obstacles to tertiary education reform

In the same way as the analysis of success stories helps identify conditions conducive to successful policy implementation, less successful experiences pinpoint frequent obstacles to tertiary education reform, and can therefore assist policy makers in designing and implementing tertiary education policies in a way that minimises the risk of failure and improves the odds of successful outcomes. In this respect, a number of studies have explored the outcomes of education policy implementation from an internationally comparative perspective, and have underlined some common impediments to education reform (Fiske, 1996; Finlay *et al.*, 1998; Johnstone *et al.*, 1998; Corrales, 1999; Bleiklie, 2000; Kogan *et al.*, 2000; Harman and Harman, 2003; Jacobs and van der Ploeg, 2006). These common obstacles derive from resistances to reform by different stakeholders which have three main origins.

Indeed, a first range of obstacles stems from the resistance of some actors to new tertiary education policies – irrespective of their merit *per se* from a social perspective – in case these policies incur more costs than benefits to them at the individual or group level. For the sake of analysis, these obstacles may be labelled in terms of rational behaviour of actors in a political economy perspective. A second range of factors result from resistance to reform due to imperfect information of stakeholders – either on the nature of the proposed policy changes, their impact, and most importantly, information on whether or not they will be better or worse off at the individual or group level. Finally, a number of authors highlight the importance of factors of a more psychological nature, whereby tertiary education reforms may encounter opposition due to the lack of preparedness of the public opinion and insufficient social acceptance for the reforms.

11.4.1 Rational behaviour: political economy of reform

A first series of obstacles to tertiary education reform stems from the behaviour of the various stakeholders and their interactions through the political process. Whilst initially developed to explain the processes of economic reforms, a number of public choice models have been used to enlighten the implementation of reforms in tertiary education.

These models – which are often referred to through the broad formulation of "political economy of reform" – rely upon the basic assumption that all actors involved in the policy making process – *i.e.* policy makers, voters and stakeholders – are rational self-interested agents whose decisions and actions are guided by the maximisation of an individual or group "utility function" (Tullock, 1987; Buchanan, 2003). The interactions of these different agents each pursuing different objectives – *e.g.* re-election for politicians, rent-seeking for some groups, maximisation of benefits for others – result in strategic games, political coalitions, and often, in collective decisions that are not in society's best interest. Important to these models are the use of modern economic tools such as decision, game and median voter theories to explain the adoption or failure of policies. While it is not the purpose of this Chapter to review this broad literature, the main political economy mechanisms impairing tertiary education reform are summarised below.

Internationally comparative studies of tertiary education policy implementation suggest that political economy considerations are of critical importance when it comes to tertiary education reform (Fiske, 1996; Johnstone *et al.*, 1998; Corrales, 1999; Jacobs and van der Ploeg, 2006). While the adoption of consensual policies (*e.g.* expansion of participation) is generally fairly easy and straightforward, Cohen-Vogel and Ingle (2007) note that "contentious reforms or changes in policies where values are more evenly split among citizens move slowly through the political process, and as they do, are almost exclusively influenced by public opinion." And indeed, Corrales (1999) also notes – on the basis of a comprehensive review of education reforms implemented in developing and developed countries in the 1980s and 1990s – that meaningful education reforms often fail to get approved or implemented, mostly for political reasons. For her part, Gornitzka (1999) goes as far as seeing policy change as the result of new bargains struck between policy making actors when resources are redistributed, and views policy formation as strategic goal-directed behaviour and problem solving under conditions of conflicting interests.

Cost-benefit analysis of policy reforms by stakeholders: winners and losers

A common source of resistance to reforms derives from losses – real or feared – that some stakeholder groups are to bear as a result of the reform, giving them strong incentives to resist the adoption or implementation of policies perceived as unfavourable for them. In this respect, the literature and experiences of countries with education reforms show evidence of such "rational opposition" among various groups of stakeholders. From a theoretical perspective, a number of redistributive models show how policy reform is supported by winners and opposed by losers (Alesina, 1988). Empirical observations for their part suggest that different types of losses may spur resistance to reform. Indeed, policies affecting the balance of power and prestige often yield equal tension as those translating in monetary costs for some groups.

With respect to academic communities and their unions, there is for instance evidence of unease or resistance to decentralisation and autonomy policies, as the latter are often accompanied by a redistribution of power within TEIs towards increased institutional leadership and a relative weakening of collegial bodies (see Chapter 3 and Johnstone *et al.*, 1998). Likewise, Fiske (1996) notes that in centralised systems, unions tend to resist any devolving of responsibility for staff management to TEIs as unions seek to maintain a united front in negotiating salaries and working conditions. Quality assurance and accountability reforms also commonly face some degree of hostility from academic

communities – especially during the early steps of the development of quality assurance systems when trust between parties has not yet been built. This is evidenced by the situation in Greece where Stamoulas (2006) attributes the defiance of the academic community to a reform introducing quality assurance to an anxiety to lose from the reform. As noted by the author, the weighty tradition of centralist management in Greek tertiary education made university professors suspicious of the real motives behind the reform, and fuelled fears that quality assurance be used to tighten up administrative control over public TEIs further. Overall, academics were afraid that the "penetration of such terms as competition and evaluation in higher education, including the introduction of new procedures of appointment and dismissal, plus performance-based pay, will erode job security."

Prestige considerations may also fuel preferences for *status quo*. In Japan for instance, Amano and Poole (2005) report how "university professors feel a great sense of crisis when (…) as a result of the expansion of new interdisciplinary areas, their own academic field is threatened or it becomes clear that their own area of specialisation is markedly below international standards." Academic communities may also resist institutional merger reforms for fear of the consequences of restructuring departments and possible risks of staff redundancies (Harman and Harman, 2003).

Prestige and power considerations are also important impediments to reforms seeking a rationalisation of tertiary education provision. For instance, Harman and Harman (2003) report how TEIs and their leaders are more likely to resist full institutional mergers than looser types of cooperative arrangements since they demand participating TEIs giving up much more autonomy. This fear to lose from the reform incurs resistance even though the authors note that such mergers work better in the longer run in developing academic coherence and new institutional loyalty.

Policy makers themselves may deter the effective implementation of tertiary education reforms. Corrales (1999) suggests for instance that bureaucrats may resist decentralisation policies which compel them to give up decision-making authority. In addition decentralisation policies, by granting more autonomy to TEIs for their daily management, imply changing responsibilities at the central level, from micromanagement to steering and performance analysis (see Chapter 3). The new set of skills required in ministries may increase anxiety levels among staff for their job security, and spur their resistance to the initiation of decentralisation reforms.

Finally, students' strong hostility to funding reforms seeking greater levels of cost-sharing in tertiary education provides another illustration of rational opposition to reform due to their potential costs on this interest group. There is extensive evidence across diverse countries that attempts to introduce tuition fees in tertiary education often generate massive street demonstrations or strikes by students to oppose the loss of subsidies or free services (Corrales, 1999; Rhoads and Mina, 2001). According to Johnstone *et al.* (1998), student mobilisation is all the more powerful as this group is articulate, energetic, politically volatile and can easily be enlisted in the cause of opposing governments' efforts to radically alter their institution.

Distribution of costs and benefits and political mobilisation

While interest groups likely to lose from policy reforms generally vividly oppose them, Corrales (1999) notes that by contrast the beneficiaries of reforms often fail to organise themselves sufficiently to help them go forward. He argues that this feature of

education reform implementation results from unfavourable political conditions, mainly due to the fact that they produce concentrated costs and distributed benefits. When the costs of a particular policy fall directly and intensely on specific interest groups while the benefits are diffuse, negatively affected interest groups have a much stronger incentive to block education reforms than beneficiaries have to support them, thereby leading to the rise of strong and well-organised veto groups while the beneficiaries of reform tend to be less organised and motivated.

Another reason for the low mobilisation of beneficiaries from education reforms – aside the diffusion of benefits across a large number of beneficiaries – derives from the temporal disconnection between immediate cost-bearing and opposition of hit interest groups while the benefits of education reforms are often only perceptible in the long term (Corrales, 1999).

In addition to the concentration of costs and benefits, the institutional features of tertiary education governance have also been advanced as possible obstacles to reform. This argument builds upon insider-outsider models and suggests – with respect to students for instance – that many TEIs have a governance structure that entrenches the rights of current students at the expense of future students and other parties, and this makes them difficult to reform (Duflo, 2005). At the system level, the involvement of student or academic representatives in policy consultations is also common. While highly commendable from a consensus-building perspective, such institutional features may complicate the development of tertiary education reforms affecting these stakeholder groups negatively, unless compensatory schemes are built into the policy proposals.

Satisfaction of median voters towards re-election: policy makers' agenda

Finally, a range of obstacles to reform in tertiary education result from the rational behaviour of politicians and policy makers themselves whose agenda and "utility functions" prominently feature the prospect of re-election. This strand of arguments is based on the assumption of a self-interested behaviour of politicians whose actions and decisions would be geared to the satisfaction of the majority of electors so as to maximise the odds of their re-election.

In this respect, the satisfaction of median voters[93] is of key importance in systems operating under majority-voting rule (Buchanan, 2003). And there is evidence indeed of tertiary education policies geared at middle-classes whose political swings may have a strong bearing on election outcomes. For instance, Cohen-Vogel and Ingle (2007) show how the adoption of loosely granted merit aid for tertiary studies in several states in the United States was driven by a desire of policy makers to relieve the middle class – even though merit aid is far from the panacea from an equity angle and would therefore not qualify as best choice from the societal perspective (see Chapter 6). Indeed, "opening up eligibility for programmes that substantially reduce the cost of college to almost everyone is sure to pay off in the ballot box."

93. The median voter theory was first formalised by Black (1948). Intuitively, the median voter can be defined as the person splitting the electorate in 2 groups of equal size in a two-candidate majority voting election. If voters cast their vote for the party or candidate closest to their most preferred feasible policy, it turns out that the candidate who is closest to the median voter always wins the election and is given the power to make public policies until the next election. As a result, the strategic behaviour of politicians is to develop strategies that satisfy the demands of the median voter (Congleton, 2003).

If one accepts the assumption of self-interested politicians concerned with their re-election as much as with the long term improvement of tertiary education contribution to society, then another series of obstacles to reform can be envisaged. Indeed, Corrales (1999) points to several conditions that impede the long term commitment of policy makers to education reforms.

First and foremost, the external pressures for reform are weak in tertiary education. Different from unsound macroeconomic policies which may quickly trigger capital outflow and force governments to greater discipline, tertiary education does not face similar sanctions for failing to deliver services of the highest quality. The advent of the knowledge economy and acceleration of the pace of technological progress are now increasing the costs of inaction, but the imperfect international competition in tertiary education still hinder the long-term commitment of policy makers to tertiary education improvement.

This problem is exacerbated by the lack of congruence between the timings of reforms and the more immediate electoral processes. As pointed by Corrales (1999), the benefits of education reform are only perceptible in the long term while the costs are borne immediately. Such reforms are therefore unlikely to bring about immediate and tangible political gains to governments and this feature tends to undermine their commitment to implementation, especially if facing strong opposition by interest groups.

And indeed, another obstacle results from the high turnover rate of Ministers in charge of tertiary education, which gives them incentives to avoid conflict and impairs their commitment to policy reform (Corrales, 1999). And in fact, experience suggests that political stability can assist the successful implementation of reforms. It has been argued that the success of reforms in Chile resides in the continued existence of the coalition government, the building of consensuses in respect of the reform proposals, and the continuity of the high-level staff at the Ministry of Education (Arellano, 2001). Likewise, the wide-ranging reforms implemented in Australia over the past decade have undoubtedly benefited from the stability of the government coalition.

11.4.2 Information imperfection and asymetries

Information failures are another explanation for the difficulty in implementing tertiary education reforms. In this respect, three main types of information failures may impede policy adoption and implementation.

Firstly, it has been argued that potential beneficiaries of tertiary education reforms are often insufficiently aware of benefits and as a result do not exert sufficient pressure on policy makers and stakeholders to implement reforms. With respect to cost-sharing of tertiary education for instance, Gollier (2005) notes that pressure to reform must come from the citizens, but suggests that this is possibly missing in Europe due to two types of information shortages. Not only do citizens and students undervalue the returns to education – and the private benefits to be derived – but they are also unaware that the education they receive could be of higher quality with additional funding.

A second range of information shortages relate to the imperfect information of stakeholders on the nature of proposed policy changes and their impact, leading them to question those changes and resist them. In Croatia for instance, there is evidence that the implementation of new rules for the improved operation of universities faces barriers and resistance from the academic community, mostly due to the lack of information and the fear of change. Likewise, the awareness of the Bologna Process is reportedly limited

among students and teaching staff in Norway, and these information shortcomings prevent a more pro-active role of TEIs and of the academic community, including students, in building the *European Higher Education Area*.

Finally, a number of political economy models build upon information imperfections and asymmetries to explain resistance to reforms (Fernandez and Rodrik, 1991). In this game theory logic, it is argued that uncertainty of agents and stakeholders over the outcomes of a specific reform for their own situation – *i.e.* whether they will win or lose – may lead them to oppose the policy change and favour *status quo* even though at societal level, cooperation and reform would be a preferred solution. And indeed, reluctance to change is quite common, especially when policy departs significantly from the existing behaviour (Gornitzka, 1999).

11.4.3 Psychological factors: insufficient ownership and social acceptance

Finally, a range of authors stress the importance of resistances to reform of a more psychological nature, deriving from the lack of ownership of reforms by agents excluded from the policy development process, or the insufficient social acceptance of some policies by internal stakeholders or the public at large.

Insufficient ownership and social acceptance

While the above analysis has underlined the importance of including stakeholders in the policy development process to build consensus and secure successful policy adoption and implementation, conversely, Perotti (2007) notes that actors are often hostile to innovations which they themselves have not promoted.

Another problem frequently encountered by policy makers stems from the insufficient preparedness of the public opinion for some reforms, and the resulting lack of social acceptance for policy innovations. Tertiary education authorities often have a difficult task convincing public opinion, parliaments and all the sectors involved over the necessity of reforms.

In Poland for instance, Wojcicka (2004) reports that the *licenciate* degree (equivalent to a bachelor's degree) which was recently introduced as part of the Bologna reforms is still struggling to attain social legitimacy given the high value of university education and master's degrees within the public. As a result, over 80% of students enrolled in *licenciate* programmes declare their willingness to continue their education, thereby impairing the impact of the degree structure diversification reform. A number of other European systems face similar difficulties during the transition period to the new degree structures as employers and the public are not yet familiar with the shorter qualifications and their social acceptance needs to build up over time. In Finland for instance, while the Bologna degree structure and the European Credit Transfer System (ECTS) have been implemented thoughtfully and swiftly since the 2005 reform, few university students take advantage of this new flexibility as employers are reportedly un-keen to hire students with only a bachelor's degree – including the Finnish government which has been unwilling to accept the bachelor's degree as an entry-level qualification for public sector workers.

Funding – and in particular the diversification of sources through tuition fees – constitutes another area of tertiary education policy where social acceptance is often the key obstacle to reform. While the detailed analysis provided in Chapter 4 highlighted the

merits of introducing tuition fees in some circumstances and provided these are accompanied by adequate student support schemes to avoid adverse effects on equity, public opinions in a number of countries – and especially in Europe – remain opposed to student contributions to the cost of their studies as tertiary education is seen and perceived as a service to be provided free of charge by the State.

Reportedly, a number of systems also face difficulties with the implementation of quality assurance reforms due to underdeveloped cultures of self- or external evaluations and the fears they yield among academic communities (Stamoulas, 2006).

Highlighting benefits of reforms to convince stakeholders

In light of these difficulties, a number of authors emphasise the importance of convincing stakeholders of the benefits of certain reforms that lack social acceptance. Jacobs and van der Ploeg (2006) argue that structural reforms in particular generally require much more transparency.

With respect to public opinions, Wojcicka (2004) stresses the importance of information and media campaigns to build the social legitimacy of policies.

Convincing internal stakeholders of the benefits of certain reforms is also a challenge in some instances, especially when it comes to accountability requirements. However, there is evidence in Australia that TEIs derive benefits from quality assessments, and find their academic departments' analyses useful for their own performance measurement and planning thanks to the presentation of time series and comparisons to peer TEIs and the sector as a whole.

11.4.4 Overcoming obstacles to maximise impact

Yet, empirical experience provides reasons for optimism. Indeed, Corrales (1999) observes that a number of countries have managed to successfully implement reforms in their tertiary education sector despite the numerous political, informational and psychological obstacles mentioned above. Moreover, experience provides another reason for cheerfulness as unpopular tertiary education policies tend to be irreversible once adopted regardless of the political difficulties encountered initially and even in the event of a change in political coalitions. Johnstone *et al.* (1998) report for instance that the introduction of means-tested tuition fees in the United Kingdom in the late 1990s was initially proposed by a Tory commission but implemented by a Labour government – which had historically been opposed to any form of tuition. Similarly, the system of school vouchers introduced in Chile in the early 1980s under the dictatorship remains in effect nowadays, despite a radical change in political coalitions (Arrelano, 2001).

How then do policy makers manage to overcome resistances to reform and surmount political obstacles? The costs of inaction are high, and as a result there is a strong rationale for cooperation between policy makers and opponents to reform to reach acceptable compromises. In this respect, the experiences of countries participating in the Review suggest several avenues to enhance the outcomes of policy adoption and implementation, essentially through bargaining processes with opponents to tertiary education reforms and the adoption of a number of side policies to support policy implementation.

Rationale for compromise: cost of reform vs. cost of inaction

The main rationale for governments and stakeholders to seek compromise over tertiary education reforms despite their different views and antagonisms results from the high costs of inaction. At a time when global competition is more significant than ever and the pace of change has accelerated, failure to adjust tertiary education systems to the new demands placed on them bears high potential costs in terms of missed opportunities. Friedman (2005) argues, the acceleration of technological progress has flattened the world, and in this context, countries that are unable to keep their tertiary education system in pace with global changes will be trampled. At national level, the new context of increased internationalisation and competition in the tertiary education sector has also heightened awareness among all stakeholder groups of the challenges at stake, thereby increasing their willingness to make concessions in search for an acceptable compromise.

Indeed, the costs of inaction are varied and high. Failure to address funding issues in tertiary education may result in inadequate levels of funding to meet international quality standards and thus hamper the long-term competitiveness of the economy, while at the same time being detrimental to the motivation of academic staff. Inadequate student support schemes may also deter participation of students from lower socio-economic backgrounds, and failure to tackle the equity challenge and to provide opportunities for upward social mobility to members of disadvantaged communities may incur significant social costs in terms of unemployment and possibly social unrest. Quality assurance reforms are equally important to ensure that the value of domestic graduates and research keeps up with international standards in a context where knowledge has become critical to a nation's competitive edge. Finally, the growing need for flexibility and responsiveness to societal needs in contemporary tertiary education desperately cries for reforms of system and institutional governance to maximise the impact of tertiary education for the economy and society.

In this context, all stakeholders have incentives to cooperate towards acceptable compromises. As noted by Lindell (2004), the stakeholders' agendas are not always optimised for their members only, but also for the interest of the nation. Likewise, Cohen-Vogel and Ingle (2007) note that the adoption of a policy involves give and take, and that bargaining, compromise and persuasion between policy makers and stakeholders characterise this process, so as to reach a solution that is acceptable by all, even if preferred by none. And indeed, the policy reforms adopted are usually the result of a series of bargains and concessions by different parties, and constitute an acceptable compromise. In this respect, Harman and Harman (2003) note that the outcomes of these negotiations critically depend on whether they succeed in securing some wins for all parties involved so that negotiators will be willing to search for compromises likely to be acceptable to all parties.

At the same time, tertiary education reforms incur costs too. These include the costs of the reform itself as well as the costs involved in "selling" the reform to stakeholders to secure their support. For instance, direct costs of reforms include the costs of setting up income-contingent loan schemes on a large scale in the initial years as loans disbursement are not immediately balanced by repayments of loans, or in the case of institutional mergers, the costs of planning, restructuring departments, integrating library and information systems, enhancing infrastructure, levelling staff salary scales and staff redundancy packages where job cuts are involved (Harman and Harman, 2003). With respect to the "political" costs of reforms, they derive from the bargaining processes that

usually take place between governments and stakeholders as part of the search for an acceptable compromise.

Bargaining processes in tertiary education reform

Indeed, the above analysis has shown that a key component of political defiance of reforms lies in the costs borne by different interest groups. It naturally follows that the compensation of these costs significantly improves the chances of reaching an acceptable compromise and securing the support of stakeholders for reforms which are not necessarily in their best interest. Compensatory measures are therefore important to secure the support of potential losers of reforms, and generally involve bargaining processes between policy makers and stakeholders. In Greece for instance, Stamoulas (2006) indicates that the academic community made the introduction of quality assurance mechanisms and evaluation conditional on the State providing further investment in universities.

And in fact, the experiences of countries participating in the Review illustrate how some contentious reforms have been successfully adopted and implemented thanks to compensation mechanisms to secure the support of negatively-affected interest groups.

With respect to academia and teacher unions for instance, Australia introduced a *Workplace Reform Programme* in 1999 – which aimed at strengthening bargaining processes at the institutional level for workplace conditions. The agreement of teacher unions was negotiated through a 2% salary increase for university staff if certain criteria were met within the TEI workplace practices. These criteria included aspects such as performance management, cost savings, discretionary revenue generation, productivity measures, flexible working arrangements and management/administration issues.

Similarly, tuition fees have been introduced in Australia in conjunction with an extensive loan scheme in order not to deter access and participation of less affluent students. Although strongly opposed initially, the HECS has since achieved a significant level of acceptance. Likewise, the success of Chile in implementing education reforms resides in the fact that "when families have been required to help pay for the education of their children, systems of scholarships and (in the case of higher education) loans have been established in order to prevent this requirement from becoming a factor of exclusion" (Arellano, 2001).

Side policies to support implementation

But addressing and overcoming political obstacles to policy adoption are only one aspect of the ultimate success of implementation. Ensuring compliance of various stakeholders in the longer term and supporting them toward effective change are equally important. In this respect, Kogan *et al.* (2000) point out that policy makers rarely take into account the need to support policy implementation, thinking that once the hard job of policy making is done, they can send out the finished documents and wait for results. Yet, a number of side policies may be used to enhance compliance and the effective implementation of tertiary education policies on the ground. In this respect, Gornitzka (1999) distinguishes the neo-institutional perspective – which typically focuses on the presence of legal coercion and legal sanctioning or alternatively on the voluntary diffusion of "institutionalised" norms to secure compliance – from the resource dependence perspective – where TEIs' adaptation to external demands is seen as a strategic response that is dependent upon the sanctioning or reward capacity of environmental actors in control of scarce resources.

Trowler (2002) suggests that the resource-dependance perspective has gained ground in recent years. Indeed, he argues that incentives tools – *i.e.* the giving or withholding of resources to ensure compliance with policy intentions by those on the ground – have become much more significant in a climate of resource constraint and progressive withdrawal of the State from underwriting the cost of tertiary education worldwide. In the same fashion, Jacobs and van der Ploeg (2005) propose to take advantage of the new context of increased internationalisation and competition in the tertiary education sector to steer reforms, and advocate the portability of financial support to foster competition between TEIs at home or abroad and hence encourage TEIs to reform and become more attractive to students.

Another finding that is fairly consistent in the study of implementation is the importance of making sure that there is some kind of organisational arrangements buffering policy implementation against short term fluctuations in attention, such as political or organisational leadership giving top priority to the implementation of new policies and bypassing ordinary routines (Gornitzka, 1999). The importance of having "fixers"[94] – *i.e.* key persons who are able to hold an implementation process together and exercise governance – is also underlined by Cerych and Sabatier (1986).

In addition to policy fixers, a number of authors emphasise the key role of financial tools to ensure compliance and steer TEIs' behaviour. The rationale for financial incentives or performance budgeting relies on the assumption that institutional management (principally rectors, presidents, and deans) are rational actors, and that they maximise whatever is rewarded (Johnstone *et al.*, 1998). In this logic, financial penalties for non compliance and financial incentives can considerably facilitate implementation.

With respect to the use of financial coercion to ensure compliance, Harman and Harman (2003) describe how a wave of extensive institutional mergers was successfully imposed by the Australian government in the late 1980s despite angry institutional criticisms over the direction of reforms. The reform established minimum size criteria for TEIs to be eligible to public funding, as a result of which most TEIs quickly complied and started searching for merger partners. Likewise, the Australian *Higher Education Support Act* of 2003 allows for financial penalties if the targets for student enrolments at the national, state, institutional, campus and discipline cluster levels have not been met.

But the most common use of financial tools to support policy implementation is in the form of incentives. This steering mechanism has been successfully used in Australia for nearly two decades already. In the late 1980s, Harman and Harman (2003) attribute the success of the merger restructuring process to the provision of additional funds to assist with merger expenses. Prior to 2008, the implementation of the *National Governance Protocols* in Australian TEIs had been pushed by making incremental funding increases in the *Commonwealth Grant Scheme* conditional on universities providing evidence of compliance with the protocols. The implementation by TEIs of the *Higher Education Workplace Relations Requirements* (HEWRRs) from 2005 had been promoted in the same way, through incremental funding of 5 to 7.5% for complying TEIs.[95]

94. A fixer is an actor from outside the implementing organisation who is committed to policy objectives, who has the capacity to monitor implementation and the political resources to intervene.

95. However reforms are currently underway in this respect. Subject to changes to legislation, compliance will no longer be a condition for funding from 2008.

Finally, Fiske (1996) underlines the importance of training policies for effective and successful implementation, as a means to ensure that all stakeholders are equipped and prepared to take on the new roles and responsibilities that are required from them as a result of tertiary education reforms. This aspect is particularly important with respect to reforms of institutional governance given the longstanding tradition of collegial governance in many tertiary education systems and the current drive towards greater institutional leadership (see Chapter 3).

11.5 Implications for policy implementation

The national experiences with tertiary education reform described in this Chapter and the insight from the literature on policy implementation and the political economy of reform point to a number of conditions and features of policy making that are likely to assist governments build consensus over tertiary education reforms and overcome the most common obstacles, so as to reform their tertiary education systems in ways that allow them to meet national goals. The policy suggestions that follow are drawn from the experiences reported in the Country Background Reports, the analyses of external review teams, and the wider research literature. Not all of the policy implications apply equally to the reviewed countries. The implications also need to be treated cautiously because in some instances there is not a strong enough evidence basis across a sufficient number of countries to draw inference with full confidence. Rather, the discussion attempts to distil potentially useful ideas and lessons from the experiences of countries that have been searching for better ways to reform their tertiary education systems and maximise the impact of their tertiary education strategies. Implications are grouped under several headings relating to the development of tertiary education policy and reforms, the imperative need for compromise and consensus over policy, and options to enhance compliance and support effective implementation of policies.

Development of tertiary education policy and reform

Establish ad-hoc independent committees to initiate tertiary education reforms and involve stakeholders

Whenever a reform of the tertiary education system is sought, it is important that policy proposals do not reflect the views of a single interest group. The policy development process is more likely to yield consensus and compromise among parties if policies are developed through cooperation of different stakeholders towards a common goal. Indeed, regular interactions contribute, over time, to building trust among different stakeholders and raising awareness for the major concerns of others, thereby enhancing the inclination of the different parties for compromise.

One effective way of reconciling the diverging interests of various stakeholder groups and forcing them to work together towards the development of acceptable compromises may be to establish *ad-hoc* independent committees including the various stakeholder groups, and to give these committees the mandate of diagnosing problems faced by tertiary education in the national context and to propose reforms.

Stakeholders' commitment to these committees critically depends on the credibility of the consultation process. The effective engagement of all interest groups in the policy development process and their active contribution to consensus-building can be enhanced

by strong signals from government authorities on the value they give to the work of the committee.

The legitimacy of these committees can be further strengthened by involving international experts, whose role could be defined as providing an international perspective on problems faced by tertiary education and share ideas with the committees on how these problems have been addressed in different national settings for consideration in the national context.

Allow for bottom-up policy initiatives to be developed into proposals by independent committees

The potential of bottom-up policy initiatives to achieve a substantial degree of stakeholder involvement in policy design and to develop a sense of ownership for proposals emerging from this process needs to be recognised. Bottom-up initiatives may exert a strong impetus towards consensus-building for tertiary education reforms. Therefore, the working operations of independent committees responsible for policy proposals would benefit from allowing bottom-up input, *e.g.* through wide national consultations or Internet-based public discussion groups.

Recognise the different views of stakeholders through iterative policy development

The diversity of views and perspectives over tertiary education prevailing among different groups of stakeholders is an asset for the policy making process and needs to be recognised as such. Indeed, the confrontation of these various views during policy design allows the identification of the full range of side effects and drawbacks of policy proposals well ahead of their implementation. Therefore, tertiary education policy has much more to gain from the cross-fertilisation of these distinct perspectives into consensual compromises than from their antagonism and the imposition of one's views over other stakeholder groups.

The development of consensus is a continuous process of actions, discussion, and corrective actions based on feedback from various stakeholders. Policy design is best achieved through iterative development processes allowing the major and legitimate concerns of the various stakeholders to be taken into consideration. Experience suggests that iterative approaches to policy development yield better results and stand greater chances of building consensus.

Search for consensus or compromise over tertiary education policy and reform

Use pilots and policy experimentation when needed

Policy experimentation and the use of pilots may prove effective strategies to overcome blockages and foster consensus whenever stakeholders' interactions in the policy development process reach an impasse. Indeed, the limited scale and duration of pilot policy implementation allow the testing of new approaches without unduly raising levels of anxiety among their opponents. There are also political advantages to policy experimentation, as the possibility of assessing the effectiveness of policy innovations before generalising them makes it more difficult for opponents to contest policy experimentations. Pilot experimentations may thus prove useful in alleviating less legitimate resistances to tertiary education reform.

Favour incremental reforms over comprehensive overhauls unless there is wide public support for change

A related issue relates to the content of policy reforms, which are less likely to spur strong opposition if they consist in gradual adjustments than complete overhauls of existing practices. Indeed, research suggests that uncertainty about the consequence of a policy for one's situation – *i.e.* whether it will improve or worsen – increases the preference of individuals and stakeholder groups for *status quo*. In this respect, gradual reforms are less likely to blur stakeholders' vision of the future than "big bang" reforms, and are thus more likely to secure their support and consensus.

At the same time, experience shows that more comprehensive reforms are possible when there is a widespread recognition of the need for a change to take place – *e.g.* in case of external pressure, competitive threat or common enemy – thereby suggesting that overhaul reforms are to be avoided unless wide public support for change can be obtained.

Avoid reforms with concentrated costs and diffused benefits

Experience also suggests that reforms whose costs are concentrated over a limited numbers of stakeholders while gains are too widespread to generate strong support by beneficiaries incur a high risk of veto and failure as they prompt massive mobilisation of cost-bearers without succeeding in rallying beneficiaries from the reform. One way to address this problem is to combine "costly" reforms with other measures designed to provide some form of compensation to negatively-affected stakeholders and hence secure their support.

Identify potential losers from tertiary education reform and build in compensatory mechanisms

An important aspect of policy development and implementation relates to the identification of the stakeholders affected by a specific policy proposal and of what each one is likely to gain or lose from the reform. Indeed, individuals and groups whose situation is likely to worsen as a result of a policy change have strong incentives to resist its adoption, and one way to foster consensus and reach a compromise is to build in compensatory mechanisms in the reform packages to garner the support of key actors.

For instance, supplementing contentious measures with elements increasing the resources available to key stakeholders are politically much easier to adopt, by addressing the issue of concentrated costs. Compensatory mechanisms include for instance salary increases or more flexible salary scales for academics, increased budgets for TEIs, or support schemes and tax incentives for students.

Create conditions for the successful implementation of reforms

In order to build consensus, it is important that all stakeholders see proposed tertiary education policies within the broader policy framework and strategy. Indeed, individuals and groups are more likely to accept changes that are not necessarily in their own best interests if they understand the reasons for these changes and can see the role they should play within the broad national strategy. There is therefore much scope for government authorities to foster the chances of successful policy implementation, by improving

communication on the long-term vision of what is to be accomplished for tertiary education as the rationale for proposed reform packages.

There is also evidence that reforms which are sustained by external pressures (*e.g.* limitations of public funding, international competition, or the existence of a threat such as unemployment) stand better chances of successful implementation. This is because the recognition of a common problem has potential to lead stakeholders to respond with a united front. Some of these external pressures are largely exogenous in which case government authorities may want to raise awareness among the public and stakeholders to spur the acknowledgement of problems, while others are more endogenous, giving governments more leeway to create supportive conditions for policy implementation.

Improve communication on the benefits of reforms and the costs of inaction

Finally, there is also a case for improving and strengthening communication on tertiary education problems as well as reform proposals to address them. This includes dissemination of the evidence basis underlying the policy diagnosis, research findings on alternative policy options and their likely impact, as well as information on the costs of reform *vs.* inaction.

Such communication and dissemination is critical to gain the support of society at large for tertiary education reforms, not just the stakeholders with a direct interest – *i.e.* TEIs, students or academics. Such dissemination may be enhanced through national public discussions as well as media communication strategies. Indeed, evidence suggests that individuals and groups are more likely to accept changes that are not necessarily in their own best interests if they have a chance to participate in the debate and believe that the process has been transparent.

Implementing tertiary education policy and reform successfully

Implement the full package of policy proposals

Tertiary education reform packages often comprise a set of different policy measures, each of which has a specific role and aim in the overall strategy. In particular, it is common to propose complementary measures to address tradeoffs and counterbalance the side effects that some measures would have if taken individually. Therefore the partial implementation of tertiary reform packages incurs significant risks of the overall reform losing coherence or yielding unintended and damaging consequences. Policy makers should therefore resist the temptation to postpone the most contentious measures of the policy package, despite the convenience of partial implementation from the perspective of political feasibility.

Support effective policy implementation

There is also a danger in implementing tertiary education policies without adequate support to ensure effective compliance of the various stakeholders in the long term. Indeed, TEI leaders, frontline academics and students' cooperation is critical to ensure that policies translate into effective change. In this respect, a number of side policies have potential to enhance compliance with tertiary education reforms and improve the effectiveness of tertiary education practices. These include coercive measures such as the

giving or withholding of resources pending on policy implementation, incentive structures to encourage internal actors to adopt new policies, intermediary bodies to bypass ordinary routines and implement new policies, as well as training policies to ensure that all actors are prepared and equipped to take on their new roles and responsibilities.

References

Alesina, A. (1988), "Macroeconomics and Politics", *NBER Macroeconomic Annual 1988*, Cambridge, MIT Press.

Amano, I. and G. Poole (2005), "The Japanese University in Crisis", *Higher Education*, Vol. 50, No. 4.

Arellano, J. (2001), "Educational Reform in Chile", *CEPAL Review*, No. 73.

Ball, S. (1994), *Education Reform: A Critical and Post-structural Approach*, Routledge, London.

Black, D. (1948), "On the Rationale of Group Decision-making", *Journal of Political Economy*, Vol. 56, No. 1.

Bleiklie, I. (2000), "Policy Regimes and Policymaking", in M. Kogan *et al.* (eds.), *Transforming Higher Education: A Comparative Study*, Jessica Kingsley, London.

Bologna Secretariat (2007), Bologna Process *Stocktaking – London 2007*, accessed 23 July 2007 from *www.dfes.gov.uk/londonbologna/uploads/documents/6909-BolognaProcessST.pdf*

Buchanan, J. (2003), *Public Choice: The Origins and Development of a Research Programme*, George Mason University, accessed 3 February 2008 from *www.gmu.edu/centers/publicchoice/pdf%20links/Booklet.pdf*

Cerych, L. and P. Sabatier (1986), *Great Expectations and Mixed Performance*, Trentham, London.

Cohen-Vogel, L. and W. Ingle (2007), "When Neighbours Matter Most: Innovation, Diffusion and State Policy Adoption in Tertiary Education", *Journal of Education Policy*, Vol. 22, No. 3.

Congleton, R. (2003), "The Median Voter Model", in C. Rowley and F. Schneider (eds.), *The Encyclopedia of Public Choice*, Kluwer Academic Press.

Corrales, J. (1999), "The Politics of Education Reform: Bolstering the Supply and Demand, Overcoming Institutional Blocks", *Education Reform and Management Series*, Vol. 2, No. 1.

Duflo, E. (2006), views described in B. Jacobs and F. van der Ploeg (2006), "Guide to Reform of Higher Education: A European Perspective", Economic Policy, Vol. 21, No. 47, pp. 535-592.

Fernandez, R., and D. Rodrik (1991), "Resistance to Reform: Status Quo Bias in the Presence of Individual-Specific Uncertainty", *American Economic Review*, Vol. 81, No. 5.

Finlay, I., S. Niven and S. Young (1998), "Stakeholders, Consensus, Participation and Democracy", in I. Finlay, S. Niven and S. Young (eds.), *Changing Vocational Education and Training: an International Comparative Perspective*, Routledge, London.

Fiske, E. (1996), *Decentralization of Education. Politics and Consensus*, World Bank, Washington, D.C.

Friedman, T. (2005), *The World is Flat – A Brief History of The Twenty-first Century*, Farrar, Strauss and Giroux, New York.

Gollier, C. (2006), views described in B. Jacobs and F. van der Ploeg (2006), "Guide to Reform of Higher Education: A European Perspective", Economic Policy, Vol. 21, No. 47, pp. 535-592.

Gornitzka, A. (1999), "Governmental Policies and Organisational Change in Higher Education", *Higher Education*, Vol. 38, No. 5.

Haddad, W. (1994), *The Dynamics of Education Policymaking: Case Studies of Burkina Faso, Jordan, Peru and Thailand*, IBRD/World Bank, Washington, D.C.

Harman, G. and K. Harman (2003), "Institutional Mergers in Higher Education: Lessons from International Experience", *Tertiary Education and Management*, Vol. 9, No. 1.

Huijben, M. and M. van Rosmalen (2007), *Rapportage Benchmark Overhead Universiteiten en Hogescholen* [Report on Overhead Benchmarks in Universities and *Hogescholen*], Berenschott, accessed 12 March 2008 from *www.minocw.nl/documenten/48085d.pdf*

Huisman, J. and M. van der Wende (2004), "The EU and Bologna: Are Supra- and International Initiatives Threatening Domestic Agendas?", *European Journal of Education*, Vol. 39, No. 3.

Jacobs, B. and F. van der Ploeg (2006), "Guide to Reform of Higher Education: A European Perspective", Economic Policy, Vol. 21, No. 47, pp. 535-592.

Johnson, G. and K. Scholes (1999), *Exploring Corporate Stategy, 5th Edition*, Prentice Hall, London.

Johnstone, B., A. Arora and W. Experton (1998), *The Financing and Management of Higher Education: A Status Report on Worldwide Reforms*, World Bank, Washington, D.C.

Kogan, M., M. Bauer, I. Bleiklie and M. Henkel (2000), *Transforming Higher Education: A Comparative Study*, Jessica Kingsley, London.

Lindell, M. (2004), "From Conflicting Interests to Collective Consent in Advanced Vocational Education: Policymaking and the Role of Stakeholders in Sweden", *Journal of Education and Work*, Vol. 17, No. 2.

Lipsky, M. (1980), *Street Level Bureaucracy: Dilemmas of the Individual in Public Services*, Sage, Beverly Hills.

McLendon, M., D. Heller and S. Young (2005), "State Post-secondary Education Policy Innovation: Politics, Competition, and the Interstate Migration of Policy Ideas", *Journal of Higher Education*, Vol. 76, No. 4.

Mitroff, I. (1983), *Stakeholders of the Organisational Mind: Towards a New View of Organisational Policymaking*, Jossey-Bass, San Francisco.

Newton, J. (2001), *Views From Below: Academics Coping with Quality*, Keynote presentation at the 6th QHE Seminar: *The End of Quality?* Birmingham, 25-26 May 2001.

OECD (2007), *Evidence in Education: Linking Research and Policy*, OECD, Paris.

Olsen, J.P. (1989), *Modernization Programs in Perspective – Institutional Analysis of Organizational Change*, Bergen: LOS-Senter, Notat 89/46.

Perotti, L. (2007), "Institutional Change in the Spanish Higher Education System", *European Journal of Education*, Vol. 42, No. 3.

Prottas, N. (1978), "The Power of the Street Level Bureaucrat", *Urban Affairs Quarterly*, Vol. 13, No. 3.

Reynolds, J. and M. Saunders (1987), "Teacher Responses to Curriculum Policy: Beyond the 'Delivery' Metaphor", in J. Calderhead (ed.), *Exploring Teachers' Thinking*, London, Cassel.

Rhoads, R. and L. Mina (2001), "The Student Strike at the National Autonomous University of Mexico: A Political Analysis", *Comparative Education Review*, Vol. 45, No. 3.

Slavin, R. (2006), "Translating Research Into Widespread Practice: The Case of Success for All", in M. Constas and R. Sternberg (eds.), *Translating Theory and Research Into Educational Practice – Developments in Content Domains, Large Scale Reform, and Intellectual Capacity*, Routledge, London.

Stamoulas, A. (2006), "Greece before the Bologna Process: Confronting or Embracing Quality Assurance in Higher Education?", *Higher Education Policy*, Vol. 19, No. 4.

Theisens, H. (2004), *The State of Change – Analysing Policy Change in Dutch and English Higher Education*, Ph.D. dissertation, Center for Higher Education Policy Studies, University of Twente, Enschede.

Trowler, P. (2002), *Higher Education Policy and Institutional Change: Intentions and Outcomes in Turbulent Environments*, London, Society for Research into Higher Education and Open University Press.

Tullock, G. (1987), "Public Choice", *New Palgrave: A Dictionary of Economics*, Vol. 3.

Vroeijenstijn, A. (1995), "Governments and University: Opponents or Allies in Quality Assurance?", *Higher Education Review*, Vol. 27, No. 3.

Wojcicka, M. (2004), "Reform in Polish Vocational Education", *European Journal: Vocational Training*, No. 33.

Appendix A – How the Review was Conducted

A.1 Background to the OECD Review

Over the past few decades tertiary education systems have experienced significant transformations. Globalisation and the development of knowledge-based economies have put new demands and pressures upon tertiary education institutions (TEIs). Tertiary education is increasingly expected to satisfy the needs of the economy and society, meet requirements for accountability and build closer links with a variety of stakeholders. During the past 20-30 years, the tertiary education landscape has changed a great deal, with increasingly diverse student populations and the emergence of new types of institutions and modes of study. Growing constraints on public funding, together with the expansion of tertiary education and the emergence of new demands, have encouraged the development of new patterns of financing and management.

Against this background, the OECD Education Committee launched the *Thematic Review of Tertiary Education* in October 2003, in response to the OECD Education Chief Executives' proposal of tertiary education as one of the five mid-term priorities for OECD work on education at their February 2003 meeting in Dublin. A meeting of National Representatives in April 2004 defined the guidelines for participation in the Review and the analytical work started in January 2005, when adequate Secretariat resources became available.

Tertiary education was also the focus of the meeting of OECD Education Ministers held in Athens in June 2006 with the theme *Higher Education – Quality, Equity and Efficiency*. Ministers noted that "Higher Education plays a vital role in driving economic growth and social cohesion" (Giannakou, 2006).

A.2 Purposes of the OECD Review

The OECD Review was designed to respond to the strong interest in tertiary education policy issues evident at national and international levels. The principal objective of the Review was to assist countries to understand how the organisation, management and delivery of tertiary education can help them achieve their economic and social objectives. The focus of the Review was upon tertiary education policies and systems, rather than upon the detailed management and operation of institutions, although clearly the effectiveness of the latter is influenced by the former. The Review's purposes, analytical framework and methodology are detailed in OECD (2004a). The main objectives were to:

- Synthesise research-based evidence on the impact of tertiary education policies and disseminate this knowledge among participating countries;

- Identify innovative and successful policy initiatives and practices;
- Facilitate exchanges of lessons and experiences among countries; and
- Identify policy options for policy makers to consider.

The scope of the Review included the funding and policy steering of tertiary systems; the regional role and labour market connections of tertiary education; the role of tertiary education in research and innovation; the academic career; equity in tertiary education; quality assurance and enhancement; and internationalisation.

The Review was intended to extend and add value to the existing body of international work on tertiary education. The importance of tertiary education is reflected in a wide variety of other OECD activities including an earlier review of tertiary education *Redefining Tertiary Education* (OECD, 1998), work by the Department of Economics on the policy determinants of investment in tertiary education (Oliveira Martins *et al.*, 2007), work on disability in higher education (OECD, 2003), work in the areas of science and technology (OECD, 2006; 2007a; 2008a), work by the Programme on Institutional Management of Higher Education (IMHE) on the contribution of higher education institutions to regional development (OECD, 2007b), work by the Centre for Educational Research and Innovation (CERI) on the *Future of Higher Education* (OECD, 2008b), e-learning in tertiary education (OECD, 2005), and internationalisation (OECD, 2004b; 2004c; 2007c) which included the publication of the OECD/UNESCO Guidelines for Quality Provision in Cross-border Higher Education (OECD and UNESCO, 2005). In addition, the OECD continues to strengthen the international comparative data base on tertiary education, including with the annual publication *Education at a Glance*: *OECD Indicators*.

The growing attention being paid to tertiary education policy is also evident in the work of other international organisations. The OECD Review has therefore been conducted in close co-operation with a wide range of international organisations to reduce duplication and develop synergies, in particular: the European Association for Quality Assurance in Higher Education, the European Commission, the European Investment Bank, the European Students' Union, the European University Association, Eurydice, the International Association of Universities, the International Network of Quality Assurance Agencies in Higher Education, UNESCO, UNESCO-CEPES (European Centre for Higher Education), UNESCO's International Institute for Educational Planning and the World Bank. Social partners have also been involved through the contribution of TUAC (Trade Union Advisory Committee to the OECD) and BIAC (Business and Industry Advisory Committee to the OECD).

A.3 Methodology and country participation

Cross-country collaboration

The Review was based on participating countries working collaboratively with each other and with the Secretariat. It involved examining country-specific issues and policy responses in tertiary education policy, and placing these experiences within a broader framework to generate insights and findings relevant to OECD countries as a whole. The collaborative approach provided countries with an opportunity to learn more about themselves by examining their experiences against those of other countries. It was also

intended to add to the broader knowledge base by accumulating international evidence on the impact of policy reforms, and the circumstances under which they work best.

Two complementary strands

The Review involved two complementary approaches: an *Analytical Review strand*; and a *Country Review strand*. The Analytical Review strand used several means – country background reports, literature reviews, data analyses and commissioned papers – to analyse the factors that shape tertiary education and possible policy responses. All 24 participating countries were involved in this strand. In addition, fourteen countries chose to host a Country Review, which involved external review teams undertaking an intensive case study visit whose conclusions were then reflected in a Country Review report (the Country Note).

Participating countries

The countries taking part in the Review were:

- *Analytical Review strand* (24 countries): Australia, Belgium (Flemish Community), Chile, China, Croatia, the Czech Republic, Estonia, Finland, France, Greece, Iceland, Japan, Korea, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Russian Federation, Spain, Sweden, Switzerland and the United Kingdom.
- *Country Review strand* (14 countries): China, Croatia, the Czech Republic, Estonia, Finland, Iceland, Japan, Korea, Mexico, the Netherlands, New Zealand, Norway, Poland and Spain.

National co-ordinator

Each participating country appointed a National Co-ordinator. The Co-ordinator was responsible for: communications with the OECD Secretariat about the Review; communications within the country about the Review; ensuring that the Country Background Report was completed on schedule; liaising with the OECD Secretariat about the organisation of the review team visit for those countries which participated in the country review strand; attending international meetings and workshops associated with the Review; co-ordinating country feedback on draft materials; and assisting with dissemination activities. National Co-ordinators are listed in Table A.1.

National Steering Committee

Most participating countries appointed a National Steering Committee representing key stakeholder groups. Its role included supporting the work of the National Co-ordinator, overseeing the preparation of the Country Background Report, and assisting in the Review more generally. Where a country decided not to establish a National Steering Committee, it established processes for ensuring that the Country Background Report adequately reflected the views and perspectives of the different stakeholder groups concerned with tertiary education policy.

Table A.1. National co-ordinators in the participating countries

Country	National Co-ordinator
Australia	Ms. Karen Sandercock, Department of Education, Science and Training (until January 2005) Mr. Jeremy Hodes, Department of Education, Science and Training (until August 2006) Ms. Shane Samuelson, Department of Education, Science and Training (until December 2007) Ms. Katherine Vickers, Department of Education, Employment and Workplace Relations
Belgium (Flemish Community)	Mr. Noël Vercruysse, Ministry of Education of the Flemish Community
Chile	Ms. Pilar Armanet, Ministry of Education (until May 2006) Mr. Julio Castro, Ministry of Education
China	Mr. Li Zhang, National Centre for Education Development Research Mr. Fan Wenyao, National Centre for Education Development Research
Croatia	Mr. Željko Dujić, University of Split
Czech Republic	Ms. Helena Sebková, Centre for Higher Education Studies
Estonia	Ms. Heli Aru, Ministry of Education and Research
Finland	Mr. Osmo Lampinen, Ministry of Education
France	Mr. Elie Cohen, Ministry of Education Ms. Nadine Prost, Ministry of Education
Greece	Mr. Manolis Koutouzis, Greek Education Research Centre Ms. Sofia Georgiadou, Greek Education Research Centre
Iceland	Mr. Stefán Stefánsson, Ministry of Education, Science and Culture (until August 2006) Mr. Arnór Guðmundsson, Ministry of Education, Science and Culture (until August 2007) Mr. Stefán Baldursson, Ministry of Education, Science and Culture
Japan	Mr. Masahide Kuriyama, Ministry of Education, Culture, Sports, Science and Technology (until January 2006) Mr. Yoshinori Murata, Ministry of Education, Culture, Sports, Science and Technology (until March 2006) Mr. Takayoshi Seiki, Ministry of Education, Culture, Sports, Science and Technology (until June 2006) Mr. Shinjiro Komatsu, Ministry of Education, Culture, Sports, Science and Technology (until July 2007) Mr. Makoto Fujiwara, Ministry of Education, Culture, Sports, Science and Technology
Korea	Mr. Jong-Gap Lee, Ministry of Education and Human Resources Development Mr. Byung-Shik Rhee, Ministry of Education and Human Resources Development Mr. Jhong Kyu Leeh, Ministry of Education and Human Resources Development Mr. Wha Jin Kim, Ministry of Education and Human Resources Development
Mexico	Ms. Felicia Knaul, Ministry of Public Education (until November 2006) Mr. Eugenio Cetina, Ministry of Public Education
Netherlands	Ms. Marlies Leegwater, Ministry of Education, Culture and Science
New Zealand	Mr. Roger Smyth, Ministry of Education (National co-ordinator) Mr. Jason McClelland, Ministry of Education (Project manager) (until May 2007)
Norway	Ms. Gro Beate Vige, Ministry of Education and Research
Poland	Mr. Robert Pawlak, Ministry of National Education and Sports (until June 2006) Ms. Maria Klimkiewicz, Ministry of Science and Higher Education
Portugal	Ms. Teresa Patrício, Ministry of Science, Technology and Higher Education
The Russian Federation	Ms. Marina Larionova, Higher School of Economics Ms. Tatiana Meshkova, Higher School of Economics
Spain	Ms. Leonor Carracedo, Ministry of Education and Science (National co-ordinator) Mr. José-Ginés Mora Ruiz (Academic co-ordinator)
Sweden	Ms. Helena Mähler Lejon, Swedish National Agency of Higher Education Mr. Per Gunnar Rosengren, Swedish National Agency of Higher Education
Switzerland	Mr. Andri Gieré, Federal Office for Professional Education and Technology (until October 2007) Mr. Blaise Roulet, Federal Office for Professional Education and Technology
United Kingdom	Ms. Rachel Green, Department for Innovation, Universities and Skills Ms. Mary Gurteen, Department for Innovation, Universities and Skills

Country background report

Participating countries prepared a Country Background Report (CBR). These were prepared in response to a common set of issues and questions, and used a common framework to facilitate comparative analysis and to maximise the opportunities for countries to learn from each other. The background reports were a major source of material for this report. The guidelines for preparing the Country Background Reports are detailed in OECD (2004a).

The CBRs were intended to be about 100 pages in length and to be structured around the following main chapters:

i. *The national context of tertiary education*

ii. *Overall description of the tertiary education system*

iii. *The tertiary education system and the labour market*

iv. *The regional role of tertiary education*

v. *The role of tertiary education in research and innovation*

vi. *Achieving equity in and through tertiary education*

vii. *Resourcing the tertiary education system*

viii. *Planning, governing and regulating the system*

ix. *Assuring and improving the quality of tertiary education*

x. *Internationalisation and globalisation of tertiary education*

xi. *Conclusion*

The work on the CBRs took place mainly between the end of 2004 and the end of 2006. Countries differed somewhat in the time they joined the Review and time needed to complete and publish their CBR. Countries also differed in the extent to which they were able to include current data and policy developments in their reports. Therefore the CBRs do not all refer to the same period, although most encompass developments up to about 2006. In early 2008 some countries prepared updates on their CBR for publication on the Review Web site.

The CBR is intended for four main audiences: the OECD Secretariat and other countries participating in the Review as an aid to sharing experiences and providing material for this report; the team of external reviewers who visited the countries which took part in the Country Review strand; those interested in tertiary education policy issues within the country concerned; and those interested in tertiary education policy issues at the international level and in other countries. The CBRs are available from the Review Web site: *www.oecd.org/edu/tertiary/review*

Synthesis tables

In addition to the Country Background Reports, all countries supplied qualitative detailed information on features of their tertiary education systems through a questionnaire prepared by the OECD Secretariat. The data covered mechanisms to allocate public funds to TEIs, employment and career structure of academics, governing boards in TEIs, student entrance procedures, quality assurance mechanisms, student support schemes including measures targeted at under-represented groups, provisions for internationalisation and commercialisation of public research. The information supplied by countries was published in a set of tables in this report.

Country review visits

Another major source of material for this report was the set of Country Notes prepared by the external review teams that visited countries taking part in the Country Review Strand. By providing an external perspective on tertiary education policy issues in the countries concerned, the Country Notes were also intended to contribute to national discussions, as well as inform other countries about policy innovations underway. The Country Notes were also published as a publication series: *OECD Reviews of Tertiary Education*, in order to enhance the visibility of these country-specific outputs as part of the Review.

For each country visited, a team of up to six reviewers (including at least one OECD Secretariat member) analysed the Country Background Report and associated materials and subsequently undertook an intensive case study visit of about 10 days in length. The reviewers were selected in consultation with the country authorities to ensure that they had experience relevant to the main policy issues in the country concerned. The study visit aimed to provide the review team with a variety of perspectives on tertiary education policy and included meetings with a wide range of national, regional and local authorities; representatives of Ministries such as education, finance, labour, industry, research, science and technology; TEIs; student organisations; representatives of academic staff; employers; the business and industry community; agencies responsible for funding and quality assurance; and researchers with an interest in tertiary education policy. The objective was to accumulate sufficient information and understanding on which to base the analysis and policy recommendations.

The fourteen review visits involved 52 external reviewers from 22 countries and with a range of research and policy backgrounds. Overall, the external review teams visited about 150 TEIs and met with about 4 000 individuals to base their findings. Details on the country review visits are given in Table A.2.

Analytical strand visits

Countries participating in the Analytical strand of the Review only were offered the possibility of receiving a short visit by a member of the OECD Secretariat in order to deepen the Secretariat's understanding of key policy issues and awareness of innovative policies and/or practices at the national level. These 1-2 day visits sought to better reflect the experience of the concerned countries in this report, and involved meetings between one Secretariat member and key individuals and stakeholder groups. Four Analytical strand visits were organised: Belgium (Flemish Community, 13 November, 2006), the Russian Federation (12-13 April, 2007), Sweden (4-5 September, 2006) and the United Kingdom (8-9 November, 2006).

Table A.2. Thematic Country Reviews and Team Members

Country	Review team
Norway 7-16 March 2005	Mr. Richard Sweet, OECD Secretariat (co-ordinator) Mr. Tony Clark, formerly with Department of Education and Employment, United Kingdom (rapporteur) Mr. Karl Heinz Grüber, formerly with University of Vienna, Austria Mr. Pedro Lourtie, Technical University of Lisbon, Portugal Mr. Paulo Santiago, OECD Secretariat Ms. Åsa Sohlman, formerly with Ministry of Industry, Employment and Communications, Sweden
Iceland 26 September – 3 October 2005	Mr. Paulo Santiago, OECD Secretariat (co-ordinator) Mr. Guy Neave, University of Twente (the Netherlands) and IAU, United Kingdom (rapporteur) Ms. Susana Borrás, Roskilde University (Denmark), Spain Mr. Jørgen Gulddahl Rasmussen, Aalborg University, Denmark Mr. Roger Smyth, Ministry of Education, New Zealand Mr. Thomas Weko, OECD Secretariat
Korea 17-26 October 2005	Mr. Richard Sweet, Consultant to the OECD (co-ordinator) Mr. Norton Grubb, University of California – Berkeley, United States (rapporteur) Mr. Michael Gallagher, The Australian National University, Australia Mr. Ossi Tuomi, Finnish Higher Education Evaluation Council, Finland
Finland 12-20 December 2005	Mr. Thomas Weko, OECD Secretariat (co-ordinator) Mr. John L. Davies, Anglia Ruskin University, United Kingdom (rapporteur) Ms. Lillemor Kim, Swedish Institute for Studies in Education and Research, Sweden Mr. Erik Thulstrup, Roskilde University, Denmark
New Zealand 6-14 February 2006	Mr. Paulo Santiago, OECD Secretariat (co-ordinator) Mr. Leo Goedegebuure, University of New England (Australia), the Netherlands (rapporteur) Ms. Laara Fitznor, University of Manitoba, Canada Mr. Bjørn Stensaker, NIFU-STEP, Norway Ms. Marianne van der Steen, Delft University of Technology, the Netherlands
Mexico 13-23 March 2006	Mr. Paulo Santiago, OECD Secretariat (co-ordinator) Mr. José Joaquín Brunner, Universidad Adolfo Ibáñez, Chile (rapporteur) Ms. Carmen García Guadilla, Universidad Central de Venezuela, Venezuela Mr. Johann Gerlach, Freie Universität Berlin, Germany Ms. Léa Velho, Universidade Estadual de Campinas, Brazil
The Czech Republic 20-28 March 2006	Mr. Thomas Weko, OECD Secretariat (co-ordinator) Mr. Jon File, University of Twente (the Netherlands), United Kingdom (rapporteur) Mr. Arthur M. Hauptman, independent public policy consultant, United States Ms. Sabine Herlitschka, Austrian Research Promotion Agency, Austria Ms. Bente Kristensen, Copenhagen Business School, Denmark
The Netherlands 24 April - 2 May 2006	Mr. Thomas Weko, OECD Secretariat (co-ordinator) Mr. Simon Marginson, Monash University, Australia (rapporteur) Ms. Nicola Channon, Quality Assurance Agency for Higher Education, United Kingdom Ms. Terttu Luukkonen, Research Institute of the Finnish Economy, Finland Mr. Jon Oberg, formerly with the United States Department of Education, United States
Poland 7-16 May 2006	Mr. Paulo Santiago, OECD Secretariat (co-ordinator) Mr. Oliver Fulton, University of Lancaster, United Kingdom (rapporteur) Mr. Charles Edquist, Lund University, Sweden Ms. Elaine El-Khawas, George Washington University, United States Ms. Elsa Hackl, University of Vienna, Austria
Japan 14-24 May 2006	Mr. Thomas Weko, OECD Secretariat (co-ordinator) Mr. Howard Newby, University of West England, United Kingdom (rapporteur) Mr. David Breneman, University of Virginia, United States Mr. Thomas Johanneson, STFI-Packforsk AB, Sweden Mr. Peter Maassen, University of Oslo, Norway

Table A.2. Thematic Country Reviews and Team Members (continued)

Country	Review team
Croatia 9-16 June 2006	Mr. Abrar Hasan, OECD Secretariat (co-ordinator) Mr. Chris Duke, RMIT University, Australia (rapporteur) Mr. Paul Cappon, Canadian Council on Learning, Canada Mr. Werner Meissner, Goethe Universität, Germany Ms. Hilary Metcalf, National Institute of Economic and Social Research, United Kingdom Mr. Don Thornhill, National Competitiveness Council of Ireland, Ireland
Estonia 24 September – 3 October 2006	Mr. Paulo Santiago, OECD Secretariat (co-ordinator) Mr. Jeroen Huisman, University of Bath (United Kingdom), the Netherlands (rapporteur) Mr. Per Högselius, Lund University, Sweden Ms. Maria-José Lemaitre, The National Commission for Programme Accreditation, Chile Mr. William Thorn, Department of Education, Science and Training, Australia
China 5-16 March 2007	Mr. Abrar Hasan, OECD Secretariat (co-ordinator) Mr. Michael Gallagher, The Australian National University, Australia (rapporteur) Ms. Mary Canning, formerly with the World Bank, Ireland Mr. Howard Newby, University of West England, United Kingdom Ms. Lichia Saner-Yiu, Centre for Socio-Eco-Nomic Development, Switzerland Mr. Ian Whitman, OECD Secretariat
Spain 20-29 May 2007	Mr. Paulo Santiago, OECD Secretariat (co-ordinator and rapporteur) Mr. José Joaquín Brunner, Universidad Diego Portales, Chile Mr. Guy Haug, formerly with the European Commission, France Mr. Salvador Malo, Mexican Institute for Competitiveness, Mexico Ms. Paola di Pietrogiacomo, Institute for Prospective Technological Studies (IPTS) of the European Commission Joint Research Center (Spain), Italy

Note: The Country Notes prepared by the review teams are available from: *www.oecd.org/edu/tertiary/review*

Commissioned and background papers

The Review was also enriched through commissioned and background papers taking up particular issues in depth:

- *The Roles of Tertiary Colleges and Institutions: Trade-offs in Restructuring Postsecondary Education*, by W. Norton Grubb, University of California, Berkeley, 2003;
- *Quality Assurance in Tertiary Education: Current Practices in OECD Countries and a Literature Review on Potential Effects*, by Viktoria Kis, 2005; and
- *Tertiary Education Systems and Labour Markets*, by Stephen Machin and Sandra McNally, Centre for the Economics of Education, London School of Economics, 2007.

Workshops

In order to facilitate sharing of lessons and experiences among participating countries, workshops were periodically organised throughout the Review. In addition to the country representatives, international experts and key stakeholders were invited to contribute to the debate. Details on the workshops are provided in Table A.3.

Table A.3. Workshops of Participating Countries

Date and location	Hosts	Main Issues treated
Bern, Switzerland 6-7 June 2005	Swiss Federal Office for Professional Education and Technology (OPET)	– Discuss the organisation and timing of the various elements in the Review; – Exchange information among participating countries about launching and organising the work; – Learn of other relevant work by other international agencies and other OECD units; – Exchange ideas about emerging issues in tertiary education; and – Discuss issues particular to the Swiss tertiary education system.
Paris, France 26-27 January 2006	OECD	– Update national and international progress on the Review; – Update related work by the OECD and other international organisations; and – Organise moderated discussion sessions on leading topics encompassed by the Review, including human resources, funding, governance, and quality assurance.
Prague, the Czech Republic 30 November – 1st December 2006	Ministry of Education, Youth and Sports of the Czech Republic	– Update national and international progress on the Review; – Update related work by the OECD and other international organisations; – Initiate the preparation of the Final Synthesis Report: discussion of an "Extended Outline", the main issues and findings, and the process for completing the report; and – Discuss the project's commissioned paper on Labour Markets and Tertiary Education, by Stephen Machin and Sandra McNally from the London School of Economics.
Paris, France 27-28 September 2007	OECD	The main purpose of the Workshop was to discuss the first draft of Final Synthesis Report from the Review. The Workshop also included: – An update on national and international progress on the Review; – An update on related work by the OECD and other international organisations; and – A discussion of potential dissemination activities and possible future work on tertiary education policy.

Dissemination

The Review had a strong emphasis on dissemination from the outset. Participating countries were encouraged to consult widely with the tertiary education community in the preparation of Country Background Reports. A number of countries published their reports. When conducting the country review visits the review teams sought the views of large numbers of organisations and individuals.

To facilitate dissemination and encourage feedback, all project documents were placed on the Review's Web site *www.oecd.org/edu/tertiary/review*. Throughout the Review, the OECD Secretariat made a large number of presentations about the project to a wide range of meetings and to groups of visitors to the OECD.

The Ministry of Science, Technology and Higher Education of Portugal hosted an international conference in Lisbon on 3 and 4 April 2008 with the sponsorship of the Portuguese Foundation for Science and Technology to conclude the Review and launch this report. The conference was locally organized by the *Instituto Superior de Ciências do Trabalho e da Empresa* (ISCTE), a public university based in Lisbon. The conference, entitled *Tertiary Education for the Knowledge Society*, examined how tertiary education policy can help countries achieve their economic and social goals. Details are available on the Conference's Web site: *http://oecd-conference-teks.iscte.pt*. Over fifteen countries also organised national events to discuss both the international results from the Review and the conclusions of specific country reviews.

References

Giannakou, M. (2006), Chair's Summary, Meeting of OECD Education Ministers: *Higher Education – Quality, Equity and Efficiency*, Athens, Greece. *www.oecd.org/edumin2006*

OECD (1998), *Redefining Tertiary Education*, OECD, Paris.

OECD (2003), *Disability in higher education*, OECD, Paris.

OECD (2004a), *OECD Thematic review of tertiary education: Guidelines for country participation in the review*, OECD, Paris. *www.oecd.org/edu/tertiary/review*

OECD (2004b), *Internationalisation and Trade in Higher Education: Opportunities and Challenges,* OECD, Paris.

OECD (2004c), *Quality and Recognition in Higher Education: The Cross-border Challenge*, Centre for Educational Research and Innovation (CERI), OECD, Paris.

OECD (2005), *E-learning in Tertiary Education: Where do We Stand?*, Centre for Educational Research and Innovation (CERI), Paris.

OECD (2006), *Women in Scientific Careers: Unleashing the Potential*, OECD, Paris.

OECD (2007a), *Research Careers for the 21st Century*, OECD, Paris. *www.oecd.org/dataoecd/39/58/39946722.pdf*

OECD (2007b), *Higher Education and Regions: Globally Competitive, Locally Engaged,* OECD, Paris.

OECD (2007c), *Cross-Border Tertiary Education: A Way Towards Capacity Development*, OECD and IBRD/The World Bank.

OECD (2008a), *Adjusting to the Global Competition for Talent*, OECD, Paris (forthcoming).

OECD (2008b), *Higher Education 2030, volume 4: Scenarios*, Centre for Educational Research and Innovation (CERI), OECD, Paris (forthcoming).

OECD and UNESCO (2005), *Guidelines for Quality Provision in Cross-border Higher Education*, OECD, Paris.

Oliveira Martins, J., R. Boarini, H. Strauss, C. de la Maisonneuve and C. Saadi (2007), "The Policy Determinants of Investment in Higher Education", OECD Economics Department Working Papers, No. 576, Paris.

Appendix B – Structure of Tertiary Education Systems

AUSTRALIA

		Number of Institutions	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Universities	37[1]	954,595 (*m*)[2]	14% between 2001 and 2006[3]	ISCED 5A-5B-6	Education/ Humanities and arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing[4]	Aims and objectives: Australia's higher education system aims to achieve quality, diversity and equity of access, to contribute to the development of cultural and intellectual life in Australia, and to meet Australia's social and economic needs for a highly educated and skilled population. Governance: Universities are established or recognised under State or Territory legislation. Public universities are subject to a wide range of State and Territory legislation in addition to their enabling legislation. Australia's universities have a reasonably high level of autonomy. The governing board is the Council, Senate or Board of Governors, presided over by a Chancellor elected by the members of the governing body. Members come from government, industry, the community, academic staff, graduates and students. The chief executive authority rests with the Vice-Chancellor. Programmes and qualifications: Australian universities are comprehensive institutions that offer a wide range of programmes to students, including undergraduate and postgraduate awards and sub-degree qualifications such as Associate Degrees. Higher education qualifications are accredited through the Australian Qualifications Framework (AQF). Internationalisation: Over the last decade, Australian universities have built a successful higher education export industry and overseas students now represent a substantial percentage of the student body in many institutions. Between 1992 and 2005, the overseas student load as a percentage of total student load increased from 7% to 26%. In 2002, Australia had the highest such percentage of all OECD countries.
	Technical and Further Education (TAFE) Institutes	69	1,325,072	1.6% between 2001 and 2006[3]	ISCED 2C-3C-4C-5B	Arts Entertainment Sport and Recreation/ Automotive, Building and Construction/ Community Services Health and Education/ Finance Banking and Insurance/ Food Processing/ Textile, Clothing, Footware and Furnishings/ Engineering and Mining/ Primary Industry, Process Manufacturing, Sales and Personal Services/Tourism and Hospitality/ Transport and Storage/ Utilities, Business and Clerical/ Computing, Science Technical and Training/ General Education and Training	Technical and Further Education (TAFE) institutions are state and territory government institutions and are a key part of the National Training System for the delivery of Vocational Education and Training. Aims and objectives: Vocational education and training aims to provide skills and knowledge for work, enhance employability and assist learning throughout life. VET delivers high quality nationally consistent training outcomes for industry, employers and individuals. Governance: The Australian, state and territory Ministers work collaboratively to support the National Governance and Accountability Framework which establishes the decision making processes and bodies responsible for training, as well as planning and performance monitoring arrangements for the system. Features: A flexible system offering a range of training from short term non accredited courses to nationally recognised qualifications leading to employment or further education. The National Skills Framework sets out the system's requirements for quality and national consistency in terms of qualifications and the delivery of training. Accredited courses are part of the Australian Qualifications Framework (AQF). Quality assurance is provided through the Australian Quality Training Framework (AQTF). Consultation with Industry is a strong feature. Industry Skills Councils (ISCs) provide an accurate industry perspective and support the continuous development of quality nationally recognised training products and services. Training Packages based on competency standards are developed by ISCs.
	Self-accrediting higher education institutions	3[1]	2,034 (*m*)[2]	-29.4% between 2001 and 2006[3]	ISCED 5A-5B-6	Education/ Humanities and arts/ Social Sciences, Business and Law/ Engineering, Manufacturing and Construction[4]	Public self-accrediting higher education institutions in Australia comprise: the Australian Film, Television and Radio School; Australian Maritime College (which will amalgamate into the University of Tasmania, effective 1 January 2008); and Batchelor Institute of Indigenous Tertiary Education.
Private	Universities	2[1]	*m*[5]	*m*[5]	ISCED 5A-5B-6	Education/ Humanities and arts/ Social Sciences, Business and Law/ Services/ Health and Welfare/ Life Sciences/ Physical Sciences/ Computing[4]	There are two private universities in Australia: Bond University and the University of Notre Dame.
	Self-accrediting higher education institutions	1[1]	*m*[5]	*m*[5]	ISCED 5A-5B-6	Humanities and arts[4]	There is one private self-accrediting higher education institution in Australia: the Melbourne College of Divinity.
	Non-self accrediting higher education providers	More than 150 (including public providers)[1]	*m*[5]	*m*[5]	ISCED 5A-5B	Education/ Humanities and arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing[4]	Governance: Many private providers are established under corporations' law. Many of the private providers are accredited as both higher education providers and registered training organisations. There are a small number of public non-self accrediting higher education providers. Private providers must have a legally constituted governing body as stipulated under the National Protocols for Higher Education Approval Processes and accompanying Guidelines. The Guidelines make clear that the governing body must ensure all the institution's operations, including its governance, are systematically reviewed and that strategies are implemented to improve institutional performance. The governing body must also have access to the range of expertise required for effective governance of the institution, including financial expertise, through its membership and/or through external advisers.
	Private VET providers	Approx. 4,200	*m*[5]	*m*[5]	ISCED 2C-3C-4C-5B	Arts Entertainment Sport and Recreation/ Automotive, Building and Construction/ Community Services Health and Education/ Finance Banking and Insurance/ Food Processing, Textile, Clothing, Footware and Furnishings/ Engineering and Mining/ Primary Industry, Process Manufacturing, Sales and Personal Services/ Tourism and Hospitality/ Transport and Storage/ Utilities, Business and Clerical/ Computing, Science Technical and Training/ General Education and Training	Private VET providers are an important part of the National Training System for the delivery of Vocational Education and Training. They often complement the TAFE systems and have the ability to move flexibly to meet the changing demands of industry and employers. Aims and objectives: Vocational education and training aims to provide skills and knowledge for work, enhance employability and assist learning throughout life. VET delivers high quality nationally consistent training outcomes for industry, employers and individuals. Governance: The Australian, state and territory Ministers work collaboratively to support the National Governance and Accountability Framework which establishes the decision making processes and bodies responsible for training, as well as planning and performance monitoring arrangements for the system. Features: Private providers must be registered as part of the national training system to deliver national qualifications. The National Skills Framework sets out the system's requirements for quality and national consistency in terms of qualifications and the delivery of training. Accredited courses are part of the Australian Qualifications Framework (AQF). Quality assurance is provided through the Australian Quality Training Framework (AQTF). Consultation with Industry is a strong feature. Industry Skills Councils (ISCs) provide an accurate industry perspective and support the continuous development of quality nationally recognised training products and services. Training Packages based on competency standards are developed by ISCs.
Other	Australian branch of an overseas university	1[1]	*m*[5]	*m*[5]	ISCED 5A-5B	Humanities and arts/ Social Sciences, Business and Law[4]	There is one Australian branch of an overseas university: Carnegie Mellon University.

Notes: *m*: Information not available; TAFE: Technical and Further Education

1. Lists of all Australian universities and other self-accrediting higher education institutions, as well as lists of all private providers registered in States/Territories, are available at the Australian Qualifications Framework (AQF) website: www.aqf.edu.au
2. Year of reference, 2006. Department of Education, Employment and Workplace Relations, Higher Education Student Collection, from www.dest.gov.au.
3. Department of Education, Employment and Workplace Relations, Higher Education Student Collection, from www.dest.gov.au.
4. Higher education categories listed in OECD (2004), *Education at a Glance 2004, Table A4.1*, Paris, OECD.
5. There is no comprehensive data collection that captures all private higher education providers.

Source: References and information supplied by countries participating in the project.

BELGIUM (FLEMISH COMMUNITY)

	Number of Institutions	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Universities	6	36%	*m*	ISCED 5A-6	Health and Welfare/ Education/Humanities and Arts/ Engineering, Manufacturing, and Construction/ Social Sciences, Business and Law/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing/ Services/ Agriculture	Aims and objectives: a university is an institution that is active in the field of academic education, research and scientific services. Governance: Organic autonomy recognises the right of institutions of higher education to determine their own academic organisation, but the subjects offered by universities are often confined to the areas of study for which they have obtained validation, recognition or accreditation. Programmes' emphasis: Universities carry on research programmes. Their programmes are more theoretically oriented. 'Doctor' (PhD) is the highest level of specialisation in research. This degree is only awarded by universities. Research emphasis: they are the major actors in the Flemish scientific research system. They provide about 85% of the total Flemish scientific papers output. Cooperation: Co-operation between a university and one or more *hogescholen* known as 'association' exist within the system. Its purpose is to evolve into co-operating entities on education and research, and the development of fine arts. Other actions are to harmonise the fields of study as well as to create bridges between bachelor's and master's studies.
University Colleges (*Hogescholen*)	22	64%	*m*	ISCED 5A-5B	Health and Welfare/ Education/Humanities and Arts/ Engineering, Manufacturing, and Construction/ Social Sciences, Business and Law/ Services/ Agriculture/ Computing	Programmes' emphasis: *Hogescholen* provide a 'more professionally-orientated education'. Courses are therefore practice-oriented and include periods of work placement. Education at *hogescholen* has two forms: a short and a long one. One-cycle programs have been converted to the level of bachelor's degree. Professional bachelor's degrees give access to some master's programmes after a 'bridging course'. Since 1991, *hogescholen* provide academic bachelor's and master's courses in association with universities. The *hogescholen* / university board stipulates which master's degrees give access to these specialised and advanced master's programmes. Governance: The legislator establishes the general legal framework for *hogescholen*, which is stricter than for universities. There are three legal types of 'hogescholen'. One type is composed of former State *hogescholen*, which are now called autonomous hogescholen. The second are the provincial institutes, and the third type is composed of independent subsidised institutes, practically all of which are run by boards belonging to a catholic network. The structure of the State institutions is still fixed by decree, in contrast with that of the subsidised institutions, for which only the democratic representation of the students and the staff is regulated by decree. The non governmental tertiary education institutions have their own bye-laws, and their own requirements of commitment to a particular ethic when recruiting staff. The Flemish Ministry subsidises and recognises establishments set up by private interests or by local authorities (provinces), and assigns grants to the organising networks which have met the necessary prior conditions as set down in law. Such grants are for equipment, to offset running costs or in support of staff salaries. The higher education legislation of the early 1990s shaped a policy based on the principles of deregulation, autonomy, and accountability. Research emphasis: Hogescholen carry out applied scientific research.

Notes: *m*: Information not available

Source: Derived from the Country Background Report for Belgium (Flemish Community), which was prepared in 2006, and other documents providing country-specific information (*e.g.* Eurydice, 2005, *Focus on the Structure of Higher Education in Europe 2004/2005*).

CHILE

	Number of Institutions	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
State universities (part of the University Rectors' Council)	16	*m*	*m*	ISCED 5-6	Social Sciences, Business, and Law/ Engineering, Manufacturing and Construction/ Humanities and Arts/ Computing/ Services/ Health and Welfare/ Agriculture/ Sciences	Programmes' emphasis: Universities which can grant any kind of professional or technical qualification; they are the only institutions that can grant academic degrees and teach those professions regulated by law (for example, Medicine, Teacher training, Law, Engineering) with the prior requirement of an academic degree (*Licenciatura*). Although there is no difference between both types of university in terms of professions and programmes, universities that are part of the University Rectors' Council concentrate on research and post-graduate work.
Traditional private universities (part of the University Rectors' Council)	9	*m*	*m*	ISCED 5-6	Social Sciences, Business, and Law/ Engineering, Manufacturing and Construction/ Humanities and Arts/ Computing/ Services/ Health and Welfare/ Agriculture/ Sciences	Programmes' emphasis: Universities which can grant any kind of professional or technical qualification; they are the only institutions that can grant academic degrees and teach those professions regulated by law (for example, Medicine, Teacher training, Law, Engineering) with the prior requirement of an academic degree (*Licenciatura*). Although there is no difference between both types of university in terms of professions and programmes, universities that are part of the University Rectors' Council concentrate on research and postgraduate work.
Private universities	36	23%	*m*	ISCED 5-6	Social Sciences, Business, and Law/ Engineering, Manufacturing and Construction/ Humanities and Arts/ Computing/ Services/ Health and Welfare/ Agriculture/ Sciences	Programmes' emphasis: Although there is no difference between both types of university in terms of professions and programmes, private universities concentrate almost exclusively on under-graduate degrees. Funding: Private universities created after 1980 do not receive base funding from the State and are not eligible for some instruments such as the public student loan system and some scholarship programmes.
Professional institutes	42	17%	*m*	ISCED 5	Social Sciences, Business, and Law/ Engineering, Manufacturing and Construction/ Humanities and Arts/ Computing/ Services/ Health and Welfare/ Agriculture/ Sciences	Programmes' emphasis: Professional institutes unlike universities, cannot grant academic degrees. Typically the professional institutes offer four-year professional programmes at the 5A level; there are an important number of 5B programmes in these institutions. Funding: All are private, self financed and not-for-profit.
Technical training centres	105	12%	*m*	ISCED 5B	Social Sciences, Business, and Law/ Engineering, Manufacturing and Construction/ Humanities and Arts/ Computing/ Services/ Health and Welfare/ Agriculture/ Sciences	Programmes' emphasis: Technical training centres can only offer technical programmes (ISCED 5B) with a typical study duration of between 2 and 2.5 years. Funding: They are private institutions and can be for-profit or not-for-profit.

Notes: *m*: Information not available

Source: Derived from the Country Background Report for Chile, which was prepared in 2007, and other documents providing country-specific information (*e.g.* OECD (2004), *Reviews of national policies for education: Chile*, Paris, OECD).

CHINA

			Number of Institutions	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Publicly-run institutions	Regular Tertiary Education Institutions other than tertiary vocational - technical colleges (mostly universities)	886	18,493,100 (including tertiary vocational - technical colleges)	*m*	ISCED 5-6	Education/ Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing	Aims and objectives: colleges and universities place emphasis on research, and general formal education.
		Adult tertiary education institutions	444	5,248,800	*m*	ISCED 5	Education/ Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing	Aims and objectives: their role is to offer skill training and community service.
		Tertiary vocational - technical colleges	981	*m*	*m*	ISCED 5	Education/ Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing	Aims and objectives: their objectives are to teach and serve regional economic development.
		Research institutes	317	*m*	*m*	ISCED 6	Education/ Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing	*m*
	Privately-run institutions	Independently-established *minban* TEIs	278	1,337,900	*m*	ISCED 5-6	Education/ Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing	Governance: they are funded and operated by social forces. They consist of *minban* regular TEIs and two *minban* adult TEIs. 24 institutions are offering bachelor-degree granting programmes. Some *minban* universities have flexible management approaches which allow them to respond quickly to the changing demands of the socio-economic environment.
		Independent colleges	318	1,467,000	*m*	ISCED 5	Education/ Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing	Governance: they offer under-graduate education with the co-operation between public regular TEIs and social sectors. Without governmental financing, the funding is provided by co-operative partners or by collective forces. The tuition fees for independent colleges are set with reference to the related state regulations. The independent colleges, are well-known for their degree of autonomy (independent: legal entity; infrastructure and campus; teaching organisation and management; admission and degree-granting, financing and accounting).
		Non-state/private TEIs	994	939,000	*m*	ISCED 5	Economics/ Law/ Literature/ Engineering/ Agronomy/ Management	*m*
		Tertiary education agencies for self-taught learners	*m*	*m*	*m*	ISCED 5	Education/ Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing	Governance: *minban* TEIs for self-taught learners are approved by educational authorities, funded by various social forces, reviewed by and registered at self-taught examination organisations. Aims and objectives: they aim at providing relevant professional courses for self-taught individuals.

Notes: *m:* Information not available; TEI: Tertiary education institution

Source: Derived from the Country Background Report for China, which was prepared in 2007, and other documents providing country-specific information.

CROATIA

		Number of Institutions[1]	Size (share of the student population)[2]	Growth trends[3]	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Universities	7	116,065 (82,91%)	43% between 2001/02 and 2006/07[4]	ISCED 5A-5B-6	Education/ Humanities and Arts/ Social Sciences, business and law/ Services/ Engineering, manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing/ Other	Universities (*sveučilišta*) are higher education institutions which deliver university study programmes in at least two scientific and/or arts areas in a great number of fields. Exceptionally, universities may also deliver professional study programmes. Universities may have constituted higher education institutions which are legal entities and are called faculties (*fakulteti*) or arts academies (*umjetničke akademije*). Universities and their constituents deliver study programmes and conduct scientific research and other professional and arts activities. Public universities are established by a law.
	Polytechnics and Schools of professional higher education	15	17,507 (12.51%)	-36% between 2001/02 and 2006/07[4]	ISCED 5B	Social Sciences, business and law/ Services/ Engineering, manufacturing and Construction/ Agriculture/ Health and Welfare/Computing/ Other[5]	Polytechnics (*veleučilišta*) and schools of professional higher education (SPHE, *visoke škole*) are higher education institutions which deliver professional study programmes. The two institutions differ in scope: polytechnics are those schools of professional higher education which deliver professional study programmes in three or more scientific fields. Their mission is to offer application-oriented programmes which are professional in character, and which often include practical work experience in the general area of study. Polytechnics and SPHEs are expected to offer high-level professional education, and artistic and professional training according to the needs of their local communities. Public polytechnics and SPHEs are established by a decree of the Croatian Government.
Private	Polytechnics and Schools of professional higher education	20	6,424 (4.58%)	246% between 2001/02 and 2006/07	ISCED 5B	Humanities/ Social Sciences and business/ Services/ Engineering, manufacturing and Construction/Computing/ Other[5]	Private polytechnics and schools of professional higher education do not differ in character or mission from the equivalent public higher education institutions. Governance: Private universities, polytechnics and schools of professional higher education can be established by the founders in the manner prescribed by the provisions of the law and regulations relating to the establishment of institutions.

Notes: *m*: Information not available; SPHE: School of professional higher education

1. Year of reference, 2007. Ministry of Science, Education and Sports, 2007.
2. Year of reference, academic year 2006/2007. Central Bureau of Statistics, from www.dzs.hr.
3. Central Bureau of Statistics, from www.dzs.hr.
4. Over that period, the Polytechnic of Split was absorbed into the neighbouring university, while the Polytechnic of Dubrovnik was redesignated as a university. Several schools of professional higher education dedicated to teacher education were integrated into universities. Excluding these cases, public polytechnics and schools of professional higher education grew by 9% between 2001/02 and 2006/07 according to the Central Bureau of Statistics.
5. The information provided in this column describes the current offer of programmes at polytechnics and SPHEs. Apart from the necessary professional focus of the programmes, there is no legal limit on the areas that may be covered in the programmes offered by polytechnics and SPHEs.

Source: Derived from the Country Background Report for Croatia, which was prepared in 2006, and other sources as indicated above.

CZECH REPUBLIC

		Number of Institutions[1]	Size (share of the student population)[1]	Growth trends[2]	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Higher education institutions: universities	26 (24-public 2-state)	295,127 (82.99%)	39% between 1995/96 and 2000/01; 42.4% between 2001/02 and 2006/07	ISCED 5A-6	Education/ Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing/ Others	Aims and objectives: their aim is to foster scientific, research, development, artistic, or other creative activities. Research emphasis: Basic research predominates over applied research. Programmes' emphasis: university-type institutions offer all types of programmes (at least up to and including the master's level). Practical training is part of a large number of programmes. It predominates in programmes at bachelor's level. Governance: Public HEIs of university type are established by law, and are legal persons. They are highly autonomous, they decide about the number of students (numbers of students are limited only by public sources, in practice the numbers are negotiated jointly by the Ministry and institutions themselves). Students of public and state institutions do not pay tuition fees (the exception is the "penalty" fee for prolonged studies comparing the settled duration of a particular degree programme and studies in foreign languages). State HEIs are also established by law, and they are subordinated to the Ministry of Defence or the Ministry of the Interior.
	Higher education institutions: other than universities	2	1,104 (0.31%)	*m*[3]	ISCED 5A	Business/ Services/ Engineering, Manufacturing and Construction/ Computing	Research emphasis: it conducts more applied oriented research activities. Programmes' emphasis: non-university type institutions offer mostly bachelor's degree programmes, they can offer master's degree programmes but they are not allowed to offer doctoral degree programmes. Governance: the same as in the case of public HEIs of university type.
	Tertiary professional schools	126 (113-regional 12-church 1-state)	19,463 (5.47%)	-7.6% between 1995/96 and 2000/01; 3.6% between 2001/02 and 2006/07	ISCED 5B	Humanities and Art/ Social Sciences, Business, and Law/ Services/ Engineering, Manufacturing and construction/ Agriculture/ Health and Welfare/ Computing/ Others	Research emphasis: Public TPSs carry out very limited research activities. Programmes' emphasis: they offer vocational education programmes that do not lead to an academic degree. The practice-oriented studies they offer require more intensive cooperation with local communities.
Private	Higher education institutions: universities	2	6,579 (1.85%)	*m*[4]	ISCED 5A	Education/Social Sciences, Business and Law	Research emphasis: Private HEIs are expected to carry out research activities similar to those carried out by public HEIs of university type. Currently they conduct research only in limited areas in accordance with the degree programmes they offer. Programmes' emphasis: Similar to those offered by public HEIs of university type; the range of study areas is not as broad as in the case of public HEIs due to the short time of their existence (both established in the last two years). Governance: The possibility of establishing a private HEI was only introduced with the Act of 1998. They are established by a private entity following the State approval which is granted on the expert view of the Accreditation Commission which has the power to decide about the type of a HEI (university or non-university type). Internal governance depends on the type of the particular private entity, it is not stipulated by the Act on higher education institutions.
	Higher education institutions: other than universities	41	25,176 (7.08%)	-7.6% between 2001/02 and 2006/07	ISCED 5A	*m*	Research emphasis: Private HEIs carry out very limited research activities. Programmes' emphasis: Private HEIs are expected to meet the demand for study areas underprovided by the public sector. Governance: The possibility of establishing a private HEI was only introduced with the Act of 1998. They are established by a private entity following the State approval which is granted by the Ministry on the expert view of the Accreditation Commission. The term "private HEI" is currently practically synonymous with the term "HEI of the non-university type", since newly opened private HEIs were not able to show sufficient experience in the area of research and development, which is a necessary prerequisite for the accreditation of master's programmes. As a result, they mostly submitted bachelor's programmes for accreditation, and thus were classified as non-university type HEIs. At this point, private HEIs will be able to apply for a change in their status to that of a university-type institution and seek approval by the Accreditation Commission.
	Tertiary professional schools	48	8,184 (2.3%)	9.18% between 2001/02 and 2006/07	ISCED 5B	Humanities and Art/ Social Sciences, Business, and Law/ Services/ Engineering, Manufacturing and construction/ Agriculture/ Health and Welfare/ Computing/ Others	Research emphasis: Private HEIs carry out very limited research activities.

Notes: *m*: Information not available; HEI: Higher education institution; TPS: Tertiary professional school
1. Year of reference, 2006. Institute for Information on Education - IUV (2007), Statistical Yearbook on Education 2006-2007.
2. Institute for Information on Education - IUV (2007), Statistical Yearbook on Education 2006-2007.
3. Only established in 2004 and 2006.
4. Redesignated as universities in 2005 and 2006.

Source: Derived from the Country Background Report for the Czech Republic, which was prepared in 2006, and other sources as indicated above.

ESTONIA

		Number of Institutions	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Universities	6	63%	*m*	ISCED 5A-5B-6	Education/ Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing	Research emphasis: higher education and R&D activities are concentrated, with a few exceptions, in four public universities and related institutions. Aims and objectives: Universities are defined as institutions of research, development, study and culture with higher education levels in several fields of study. Governance: Universities are granted a broad institutional autonomy regarding the academic and economic/ financial policies that have to be in accordance with their missions and teaching and research goals. Each university has developed its own approach towards the regions, some of them have established a proactive regional policy. For accountability purposes and linking the university and society there is a special body created, called *kuratoorium* with limited powers. Universities are accountable to the State Audit Office for their financial matters.
	State professional higher education institutions	10	14%	*m*	ISCED 5B, in a few cases 5A	Education/ Humanities and Arts/Social Science/ Natural Sciences/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health	Aims and objectives: the main objective of institutions of professional higher education is teaching. Performing applied research is secondary. Research emphasis: these institutions conduct applied research activities. Programmes' emphasis: State professional higher education institutions (PHEIs) are highly specialised. They offer professional higher education programmes with a length of 4 years. For graduates it is possible to continue their studies at the master's level in the university sector. During the last few years some of them have been authorised to provide master's programmes (in co-operation with universities). Governance: State PHEIs depend to some extent on the Ministry of Education and Research on their academic policies (*i.e.* their statutes are established and development plans are approved by the Minister). On financial matters, also, they are accountable towards the Ministry of Education and Research.
	State VET schools providing higher education	2	1.5%	*m*	ISCED 5B	Social Sciences, Business and Law/Engineering, Manufacturing and Construction/ Computing	Based on the Higher Education Strategy for 2006-2015 higher education provision in Estonia is mostly limited to universities and PHEIs. Almost all VET schools that provided tertiary education programmes have been - following accreditation procedures - upgraded to PHEIs (during 2004-2007). Based on strategy documents there is an expectation that tertiary provision in VET schools will remain very limited in its size and only available in regions.
Private	Universities	5	9%	*m*	ISCED 5A-5B-6	Humanities and Arts/ Social Sciences, Business and Law/ Services, Computing	Aims and objectives: their main priority is to provide study at a specialist-level. The extent of doctoral study and R&D is very limited. Governance: Private higher education institutions have the right to award the State diploma only to the graduates who have completed an accredited study programme. They may have some of their study places subsidised by the State in fields of national priority. In addition, the institutions may accept students who pay for their own education. In that case, the tuition fee is fixed by the institutions with no limits imposed by the State. They must have an education licence that grants them the right to provide instruction. An education licence issued for a specified term is issued and revoked by a directive of the Minister of Education and Research.
	Private professional higher education institutions	11	12%	*m*	ISCED 5B, in few cases 5A	Humanities and Arts/ Social Sciences, Business and Law/ Services/Computing	Research emphasis: These institutions conduct applied research activities. Most of the private PHEIs have strong links with the employer community. Programmes are mostly of a length of three years. Governance: See above for Private universities.
	Private VET schools providing higher education	1	0.5%	*m*	ISCED 5B	Services	Programmes' emphasis: There is one private VET school offering professional higher education programmes, the Estonian School of Hotel and Tourism Management. Programmes are mostly of a length of three years. Governance: See above for Private universities.

Notes: *m*: Information not available; VET: Vocational education and training; PHEI: Professional higher education institution

Source: Derived from the Country Background Report for Estonia, which was prepared in 2006, and other documents providing country-specific information.

FINLAND

		Number of Institutions	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Universities	20	152,000 (54%)[1]	28% between 1996 and 2006	ISCED 5A-6	Health and Welfare/ Agriculture/ Humanities and Arts/ Engineering, manufacturing and construction/ Social Sciences, business and law/ Services/ Education/ Life sciences/ Physical Sciences/ Mathematics and statistics/ Computing[2]	Aims and objectives: Universities have four missions assigned by the Universities Act (1997): to promote free research; to promote scientific and artistic education; to provide higher education based on research; to educate students to serve their country and humanity, and to promote regional cooperation. The supply of programmes: In 2005 an act amending the Universities Act (556/2005) was passed. It defines the normative duration for lower (bachelor's) degree 180 ECTS credits/3 years and for the higher (master's) degree 120 ECTS credits/2 years. The development of the third-cycle degrees (doctoral education) is in process. Research emphasis: they conduct most of the theoretically oriented research activities, but they also work closely with business in research activities. Levels of autonomy: Universities are part of the State legal personality (State budgetary system). Amendment of the Universities Act which is currently under preparation will increase universities' financial and administrative autonomy. As of 2010, universities will form a new type of legal person under public law, which means their legal separation from the State legal personality and the endowment of a separate legal personality to universities. Links to regions and local communities: The societal service mission of universities alongside education and research was clarified in an amendment of the Universities Act (715/2004) which came into force on 1.8.2005. Universities' third function is to interact with society and promote the social impact of scientific and cultural activity. This new provision was taken into account by means such as determining different forms of interaction with society as part of strategic development/plans. Universities have also defined their priorities which, in regional terms, is evident in terms of targeting their R&D projects to their strong knowledge areas. Another new provision makes it compulsory to have at least one and at most one third of the board members who are not members of the university body *e.g.* representatives from business and industry.
Public or private	Polytechnics	26	130,000 (46%)[3]	193% between 1996 and 2006[4]	ISCED 5A- 5B	Humanities and Arts/ Social Sciences, Business, and Law (Journalism and Information, Business and Administration)/Science (Computing)/ Engineering, Manufacturing and Construction/ Agriculture (Agriculture, Forestry and Fishery)/ Health and Welfare/ Services	Aims and objectives: their mission is to provide education closely connected to the labour market, and to conduct applied research activities and to support regional development. The supply of programmes: Polytechnic bachelor's degree 210-240 ECTS credits/ 3,5-4 years full-time study, Polytechnic master's degree 60-90 ECTS credits/ 1,5-2 years. Polytechnics also offer professional specialisation and other adult education. Programmes' emphasis: All the bachelor's degree programmes include obligatory work practice. Research emphasis: The role of polytechnic R&D is to serve education and its development, as well as local business and industry and its development. The governance and levels of autonomy: Polytechnics are municipal or private institutions. The maintaining organisation decides on strategic development of the polytechnic and adopts the action and economic plan and the budget. Polytechnics have autonomy in their internal affairs. The internal administration of polytechnics is managed by the board and the rector. Institutional funding: The government and local authorities share the cost of polytechnic core funding.

Notes: *m:* Information not available
1. Year of reference 2006. Ministry of Education of Finland, KOTA-database.
2. OECD (2004), Education at a Glance 2004, Table A4.1, Paris, OECD.
3. Year of reference 2006. Ministry of Education of Finland, Amkota database.
4. Polytechnics only started to operate in 1991-1992.

Source: Derived from the Country Background Report for Finland, which was prepared in 2005, and other sources as indicated above.

FRANCE

		Number of Institutions	Size (share of the student population)[1]	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Universities[2]	60	1,421,719	22.57% between 1990/91 and 2005/06	ISCED 5-6	Education/ Services/ Life Sciences/ Physical Sciences/ Mathematics/ Humanities and Arts/ Social Sciences, Business and Law/ Engineering, Manufacturing and construction/ Agriculture/ Computing/Health and Welfare/ Others	Conditions of admission: Multidisciplinary universities are the most numerous ones. To be admitted, one needs to obtain the *baccalauréat,* an equivalent diploma, or the university studies access diploma. However, to be admitted to a university institute of technology, the candidate must go through a selection based on the candidate's former school results and an interview. Governance: They are composed of training and research units, and include institutes and internal schools, among which institutes of technology and vocational institutes. In institutes of technology, the director is the person responsible for income and expenditure, and he has authority over the staff. Unlike with others institutions, the Education Ministry can directly allocate resources to university-type institutions.
	University institutes of teacher training	*m*	82,000	-0.51% between 1991/92 and 2005/06	ISCED 5-6	Education	Primary or secondary level teacher training is provided at the university institutes of teacher training, which are public administrative institutes attached to one or more universities.
	Ecoles and *Grands Etablissement*[2]	23	*m*	*m*	ISCED 5-6	Education/ Services/ Life Sciences/ Physical Sciences/ Mathematics/ Humanities and Arts/ Social Sciences, Business and Law/ Engineering, Manufacturing and construction/ Agriculture/ Computing/Health and Welfare/ Others	These institutions, offering a wide variety of programmes, include national higher engineering institutes, university institutes of technology, paramedic and social schools, and engineering schools. Paramedic and social schools are placed under the control of the Ministry of Health. Some engineering schools that are independent of universities, university institutes of technology and national polytechnical institutes, are placed under the control of the Ministry for National Education or other ministries. Some other engineering programmes are offered in schools or attached to a university. Higher institutes of artistic studies (*e.g.* architecture and fine arts) are placed under the control of the Ministry of Culture and Communication.
	Post-*baccalauréat* training in *lycées*	454 (including private institutions)	*m*	*m*	ISCED 5	Education/ Services/ Life Sciences/ Physical Sciences/ Mathematics/ Humanities and Arts/ Social Sciences, Business and Law/ Engineering, Manufacturing and construction/ Agriculture/ Computing/Health and Welfare/ Others	*Lycées* offer post-*baccalauréat* training lasting 2 years. According to the law on decentralisation, regions are mainly responsible for the premises and buildings, and the State funds teachers' salaries and school expenses. Post-*baccalauréat* training includes preparatory classes for the *Grandes Ecoles* and superior technician sections. Preparatory classes for the *Grandes Ecoles* aim at preparing students to sit a competitive exam to enter engineering schools, business and management schools, and *Ecole normale supérieure*. Superior technician sections lead to the award of a higher technician's diploma (*i.e. brevet de technicien supérieur*), which gives access to the labour market.
Private	*Ecoles* and *Grands Etablissements*	147	*m*	*m*	ISCED 5-6	Education/ Services/ Life Sciences/ Physical Sciences/ Mathematics/ Humanities and Arts/ Social Sciences, Business and Law/ Engineering, Manufacturing and construction/ Agriculture/ Computing/Health and Welfare/ Others	These institutions, offering a wide variety of programmes, include engineering schools, business and management schools, and higher institutes. Most business and management schools are private or depend on chambers of commerce and industry. Higher institutes offer professionally-oriented programmes in a range of specialised disciplines (*e.g.* hotel and catering, design, and fashion). Most have a private status, but are placed under the administrative control of the ministry to which they are attached.
	Post-*baccalauréat* training in *lycées*	454 (including public institutions)	*m*	*m*	*m*	Education/ Services/ Life Sciences/ Physical Sciences/ Mathematics/ Humanities and Arts/ Social Sciences, Business and Law/ Engineering, Manufacturing and construction/ Agriculture/ Computing/Health and Welfare/ Others	*Lycées* offer post-*baccalauréat* training lasting 2 years. According to the law on decentralisation, regions are mainly responsible for the premises and buildings, and the State funds teachers' salaries and school expenses. Post-*baccalauréat* training includes two types of institutions. Preparatory classes for the *Grandes Ecoles* aim at preparing students to sit a competitive exam to enter engineering schools, business and management schools, and *Ecole normale supérieure*. Superior technician sections lead to the award of a higher technician's diploma (*i.e. brevet de technicien supérieur*), which gives access to the labour market. Governance: The programmes provided by these institutions, as well as the diplomas they award, are accredited by the State. The accreditation allows institutions to receive public funds. Students can also benefit from publicly-based scholarships in accredited institutions. In exchange, institutions allow the State's authorities to control them, and the nomination of the director and staff has to receive State's agreement.

Notes: *m*: Information not available
1. Year of reference, 2005-2006.
2. Includes university institutes of technology (IUTs, *Instituts Universitaires de Technologie*) and professional university institutes (IUPs, *Instituts Universitaires Professionnalisés*).

Source: Derived from supporting materials prepared by countries participating in the project and other documents providing country-specific information (e.g. Eurydice, 2005, Focus on the Structure of Higher Education in Europe 2004/2005).

GREECE

		Number of Institutions	Size (share of the student population)[1]	Growth trends[2]	Level of programmes offered	Fields of study covered[3]	Other distinctive features
Public and State	Universities	23 [4]	408,872 (63%) (including Higher Schools)	-2.11% between 2004/05 and 2005/06	ISCED 5-6	Education/Humanities and Arts/ Social Sciences, Business and Law/ Mathematics and Statistics/ Life Sciences/ Physical Sciences/ Health and Welfare/ Agriculture/ Engineering, Manufacturing and construction/ Computing	Aims and objectives: The general aim of universities is to provide students with high level theoretical knowledge, and to prepare them to the ever-changing cultural, scientific and technological demands of community life. The mission of the International University of Greece is to provide higher education to foreigners interested in studying in Greece. Governance: The University sector includes universities, the Higher School of Fine Arts, the Hellenic Open University (EAP) and the Higher Military Education Institutes. These institutions are, according to article 16 of the Greek Constitution and Greek legislation in general, self-administered legal entities. They are supervised and financed by the State. Internal regulations in each university determine their internal structure, the organisation and operation of the universities' administrative, financial and technical services, the determination of the teaching and research policies of the different departments, the planning, the procedures and requirements to employ staff, and the allocation of funds.
	Technological Institutes	16	244,776 (includes 650 students at the ISCED level 6) (37%) (provisional data from National Statistical Service of Greece)	6.93% between 2004/05 and 2005/06	ISCED 5-6	Humanities and Arts/ Social Sciences, Business and Law/ Mathematics and Statistics/ Life Sciences/ Physical Sciences/ Health and Welfare/ Agriculture/ Engineering, Manufacturing and construction/ Computing/Services	Aims and objectives: the aim of the Technological sector is its participation in the overall development of scientific, applied and technological knowledge by educating students who will acquire the necessary skills to succeed in their professional life. Governance: The Technological sector of higher education includes Technological Education Institutes and the Higher School for Teachers of Technological Education. The Technological Education Institutes are governed by Public Law and are supervised by the Ministry of Education and Religious Affairs. They are self-administered legal entities. They are supervised and subsidised by the state. The internal regulations in each institution determine the internal structure, the organisation, the operation of the Institutes' administrative, financial and technical services as well as the procedures and requirements for employing staff. Emphasis of curricula: Studies have a practical focus. However, background theoretical courses are always included to enable students to adapt to the ever-changing conditions in the labour market and in society.
	Higher Schools	*m*	Approx. 6,860 (1.5%) (number included in university student population)	*m*	ISCED 5	Humanities and Arts/ Services	Governance: Higher Schools education sector includes Higher Ecclesiastical Schools, Merchant Naval Academies, Higher Schools of Dance and Drama, Higher Schools of Tourist Professions, Higher Non-Commissioned Officers Schools and Higher Police Academies. The length of studies in these schools should not exceed three years. These Schools, with the exception of the Higher Ecclesiastical Schools which is supervised by the Ministry of Education, are under the supervision of their relevant ministries.

Notes : *m*: Information not available

1. Year of reference 2005/06. Ministry of Education and Religious Affairs, UOE data collection on education statistics.
2. Ministry of Education and Religious Affairs, UOE data collection on education statistics.
3. OECD (2004), Education at a Glance 2004, Table A4.1, Paris, OECD.
4. Includes the Hellenic Open University.

Source: Derived from supporting materials prepared by countries participating in the project and the sources indicated above.

ICELAND

		Number of Institutions	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Universities	5	86.50%	*m*	ISCED 5A-5B-6	Education/ Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and statistics/ Computing	Aims and objectives: A university aims at educating students, pursuing research and helping society in general, by disseminating knowledge and providing society with the needed services. Research emphasis: Universities conduct basic as well as applied research activities. Programmes' emphasis: Only the University of Iceland offers under-graduate and post-graduate programmes as well as research activities in a wide area of disciplines. The other are more specialised and do not have as extensive research activities. There are seven institutions that provide distance learning programmes and courses.
Private	Reykjavík University	1	8.50%	*m*	ISCED 5A-5B-6	Education/ Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and statistics/ Computing	Aims and objectives: Mainly focus on teaching. Governance: Private institutions charge students tuition fees, unlike public institutions. All institutions operate on a non-profit basis. The private institutions have more flexibility in recruiting academic staff. Privately-run institutions have representatives from the industrial sector on their board. Students are not represented on councils of private institutions.
	Bifröst School of Business/Iceland Academy of the Arts	2	5%	*m*	ISCED 5A-5B	Social Sciences, Business and Law/ Humanities and Arts	

Notes: *m*: Information not available

Source: Derived from the Country Background Report for Iceland, which was prepared in 2005, and other documents providing country-specific information (*e.g.* OECD, 2004, *Education at a Glance 2004*, Table A4.1, Paris, OECD and Eurydice, 2005, *Focus on the Structure of Higher Education in Europe 2004/2005*).

JAPAN

		Number of Institutions	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Universities	160	15.40%	*m*	ISCED 5-6	Humanities and Arts/ Social Sciences, Business and Law/ Sciences/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Education/ Others	Aims and objectives: They aim at conducting teaching and research in specialised academic subjects as well as at providing broad knowledge. Contribution to the local community is a fundamental mission for public universities. Links with the labour market: an internship programme between universities and the industrial sector has been created in 46.3% of universities to foster co-operation between these two actors. Co-operation with local industries has progressed in fields like research or internships. Research emphasis: 46.5% of the time of faculty members at universities was spent on research. The research at universities is almost entirely financed by public funds. Approximately 90% of national universities were engaged in non-inter-academic co-operative research or commissioned research.
	Graduate schools (universities with graduate schools)	149	5%	*m*	ISCED 5-6	Humanities and Arts/ Social Sciences, Business and Law/ Sciences/ Agriculture/ Engineering, Manufacturing and Construction/ Health and Welfare/ Education/ Others	*m*
	Junior colleges	31	0.40%	*m*	ISCED 5	Humanities and Arts/ Social Sciences, Business and Law/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Services/ Education/ Others	Aims and objectives: They aim at conducting teaching and research in specialised academic subjects and at cultivating such abilities as required by practical life.
	Colleges of technology	60	0.60%	*m*	ISCED 5-6	Engineering, Manufacturing and Construction/ Others	Aims and objectives: Their aim is to teach specialised academic subjects and to cultivate the abilities required for certain vocations.
	Professional training colleges	207	0.80%	*m*	ISCED 5	Humanities and Arts/ Social Sciences, business and law/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Education	Governance: The establishment of a professional training college is permitted under the authority of local governments, and has been covered by local governments' policies from the beginning. Professional training colleges are apt to concentrate in populated major cities. In order to establish public professional training colleges, certain establishment standards should be met and approval from the prefectural governor is required.
Private	Universities	556	52.60%	*m*	ISCED 5-6	Humanities and Arts/ Social Sciences, Business and Law/ Sciences/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Education/ Others	Local contribution is not a fundamental requirement for private universities. Governance: The curricula offered at private tertiary institutions are decided by the entities that run them, with permission sought from MEXT to establish universities. The pillar of education for private institutions is the autonomy of each institution.
	Graduate schools (universities with graduate schools)	409	2.40%	*m*	ISCED 5A-6	Humanities and Arts/ Social Sciences, Business and Law/ Sciences/ Agriculture/ Engineering, Manufacturing and Construction/ Health and Welfare/ Education/ Others	Aims and objectives: the purpose of professional graduate schools is to teach and research scientific theory and applications, and cultivate the scholarship and skills needed for jobs requiring high levels of expertise. The new graduate school system was established in 2003 as a means of providing flexible and practical education matching the specific features of various professional fields. Governance: See above for private universities.
	Junior colleges	384	5.30%	*m*	ISCED 5	Humanities and Arts/ Social Sciences, Business and Law/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Services/ Education/ Others	Governance: See above for private universities.
	Colleges of technology	3	0.03%	*m*	ISCED 5-6	Engineering, Manufacturing and Construction	Governance: See above for private universities.
	Professional training colleges	2766	18%	*m*	ISCED 5	Humanities and Arts/ Social Sciences, business and law/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Education/ Services	Governance: In order to establish private professional training colleges, certain establishment standards should be met and approval from the prefectural governor is required. Governance: See above for private universities.

Notes: *m:* Information not available; MEXT: Ministry of Education, Culture, Sports, Science and Technology

Source: Derived from the Country Background Report for Japan, which was prepared in 2006, and other documents providing country-specific information (e.g. OECD, 2004, Education at a Glance 2004, Table A4.1, Paris, OECD).

KOREA

		Number of Institutions	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	University	26	*m*	*m*	ISCED 5A-5B-6	Education/ Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing	Governance: The government decides the goals of the public tertiary education institutions, the distribution of resources and the establishment and expansion of the institution. The institutions choose the contents of educational programmes, the curriculum planning, the priorities for research, the employment of faculty and working conditions, and the conditions for degree completion.
	Open University	1	290,728	*m*	ISCED 5A-5B-6	Same as for university	Aims and objectives: Avail opportunities for higher education to the public through various forms of media provision and open learning, and contribute to lifelong learning. Governance: See above for university.
	Education University	11	23,335	*m*	ISCED 5A-5B-6	Same as for university	Aims and Objectives: Educate teachers for primary education. Governance: See above for university.
	Industrial University	8	*m*	*m*	ISCED 5A-5B-6	Same as for university	Governance: See above for university.
	Junior College	15	*m*	*m*	ISCED 5	Same as for university	Aims and objectives: Provide students with specialised knowledge and skills to foster talents able to fulfil specialised positions in society. Governance: See above for university.
Private	University	145	m	*m*	ISCED 5A-5B-6	Same as for university	
	Other University	5	1,153	*m*	ISCED 5A-5B-6	Same as for university	
	Industrial University	10	m	*m*	ISCED 5A-5B-6	Same as for university	
	Cyber University	17	39,450	*m*	ISCED 5A-5B-6	Same as for university	Governance: The government structures of private institutions are diverse, and generally respond to their size and guidelines established by their patrons. The goals of the private institutions are partially defined by the private institutions, which also decide over the distribution of resources and the establishment and expansion of the institution.
	Corporate University	1	62	*m*	ISCED 5A-5B-6	Same as for university	
	Graduate School University	28	276,918	*m*	ISCED 5A-5B-6	Same as for university	
	Junior College	143	*m*	No change	ISCED 5	Same as for university	
	Technical university	1	196	*m*	ISCED 5	Same as for university	Aims and objectives: Foster a workforce with specialised knowledge and applicable skills by providing the opportunity to continually learn and practice specialised vocational knowledge and theories for the workplace. Governance: The government structures of private institutions are diverse, and generally respond to their size and guidelines established by their patrons. The goals of the private institutions are partially defined by the private institutions, which also decide over the distribution of resources and the establishment and expansion of the institution.

Notes: *m*: Information not available

Source: Derived from the Country Background Report for Korea, which was prepared in 2006, and other documents providing country-specific information (e.g. OECD, 2004, Education at a Glance 2004, Table A4.1, Paris, OECD).

MEXICO

		Number of Institutions	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Federal public institutions	4 (including UNAM)	12.10%	*m*	ISCED 5A-6	Engineering, manufacturing and Construction/ Agriculture/ Health and Welfare/Sciences/ Social Sciences, manufacturing and Construction/ Education/ Humanities and Arts	Research emphasis: In addition to their teaching activities, these institutions develop a wide array of programmes and research projects aimed at generating and applying knowledge, and at expanding and promoting culture.
	State public universities	46	31%	*m*	ISCED 5A-5B-6	Engineering, manufacturing and Construction/ Agriculture/ Health and Welfare/Sciences/ Social Sciences, manufacturing and Construction/ Education/ Humanities and Arts	Governance: They are decentralised agencies of the government.
	Public technological institutes	211	12.80%	*m*	ISCED 5A-6	Engineering, manufacturing and Construction/ Agriculture/ Health and Welfare/Sciences/ Social Sciences, manufacturing and Construction/ Education/ Humanities and Arts	Research emphasis: In addition to teaching activities, they develop programmes and projects aimed at generating and applying knowledge, and at expanding and promoting culture.
	Public technological universities	60	2.50%	*m*	ISCED 5B	Engineering, manufacturing and Construction/ Agriculture/ Health and Welfare/Sciences/ Social Sciences, manufacturing and Construction/ Education/ Humanities and Arts	Programmes' emphasis: They offer exclusively 2-year study programmes leading to a certificate of university level technician. Their purpose is to ease the students' way into the labour market once they have concluded their studies; the academic programmes are based on 70% practical and 30% theoretical curriculum. Governance: These institutions are decentralised agencies of the state governments, which conduct teaching activities, carry out programmes and projects aimed at generating and applying knowledge, and at expanding and promoting technological services. Students' profile: 9 out of ten students represent the first generation in their families to have access to higher education.
	Public polytechnic universities	18	0.15%	*m*	ISCED 5A	Engineering, manufacturing and Construction/ Agriculture/ Health and Welfare/Sciences/ Social Sciences, manufacturing and Construction/ Education/ Humanities and Arts	Governance: They have been recently created. They are decentralised state government agencies. Programmes' emphasis: the study programmes are based upon professional skills and on a learner-centred approach.
	Intercultural public universities	4	0.05%	*m*	ISCED 5A	Engineering, manufacturing and Construction/ Agriculture/ Health and Welfare/Sciences/ Social Sciences, manufacturing and Construction/ Education/ Humanities and Arts	Governance: These universities are decentralised agencies of the state governments. They are located in regions with high densities of indigenous populations, albeit open to students of all origins. Programmes' emphasis: Under a cross-cultural concept, these institutions offer innovative higher education options aimed mainly at satisfying the needs and intensifying the development potential of the regions they serve. Knowledge generation activities focus on indigenous language and cultures, as well as on sustainable regional development.
	Public research centres	27	0.10%	*m*	ISCED 5A-6	Engineering, manufacturing and Construction/ Agriculture/ Health and Welfare/Sciences/ Social Sciences, manufacturing and Construction/ Education/ Humanities and Arts	Aims and objectives: Their aim is to generate and innovate application of knowledge in different areas. Governance: Coordination of these centres is under the responsibility of the National Council for Science and Technology.
	Other public institutions	94	4.90%	*m*	ISCED 5A-6	Engineering, manufacturing and Construction/ Agriculture/ Health and Welfare/Sciences/ Social Sciences, manufacturing and Construction/ Education/ Humanities and Arts	*m*
	Teacher education institutions	249	3.70%	No change	ISCED 5A-6	Education	Governance: They are de-concentrated agencies of the state governments.
Private	Teacher education institutions	184	2.10%	*m*	ISCED 5A-6	Education	*m*
	Private universities, institutes and centres	995	30.60%	*m*	ISCED 5A-5B-6	Health and Welfare/ Agriculture/ Sciences/ Social Sciences, Business and Law/ Education/ Humanities and Arts/ Engineering, Manufacturing and Construction	Programmes' emphasis: In most of these institutions, teaching is the primary activity. However, the most consolidated also carry out activities aimed at generating and applying knowledge, and at expanding and promoting culture.

Notes: *m:* Information not available; UNAM: *Universidad Nacional Autónoma de México*

Source: Derived from the Country Background Report for Mexico, which was prepared in 2006, and other documents providing country-specific information.

NETHERLANDS

		Number of Institutions (2007)	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Publicly-subsidised[1]	Universities (regular, 14 institutions)[2], Universities of Theology (6) and the Transnational University	21	30%	20% between 2000 and 2006, for the 14 "regular" universities	ISCED 5A-6	Health and Welfare/ Agriculture/ Social Sciences, Business and Law/ Education/ Humanities and Arts/ Services/ Engineering, manufacturing and Construction/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing	Research emphasis: Research activities are traditionally conducted in universities. Doctoral students are hired by universities. In recent years, some networks and partnerships between universities and *hogescholen* were established. All researchers are trained by universities.
	Hogescholen (*Hoger Beroeps Onderwijs*) (Universities of Applied Science)	40	55%	17.2% between 2000 and 2006	ISCED 5A-5B	Education/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Health and Welfare/ Computing/ Agriculture/ Humanities and Arts	Programmes' emphasis: They mainly provide professional higher education. *Hogescholen* focus on bachelor's degrees. In this sector, both the institutions and employers are concerned about the links between the content of the programmes and the demands of the labour market. *Hogescholen* students spend about 1/4 of their time in practical training. A new initiative is in favour of introducing short courses leading to associate degrees in h*ogescholen*. Research emphasis: There is a new trend for h*ogescholen* to conduct practice-based research. To this purpose, they have appointed *lectors*, whose main purpose is to create "knowledge circles" with relevant organisations like companies and organisations in the field.
	Academic medical centres	8	4%	Included in figure above for universities	ISCED 5A-6	Health and Welfare	Programmes' emphasis: They have the task of training a large number of doctors and specialists as well as renewing the system of higher education for health care.
Independent private	Universities	2	11% (including private *hogescholen*)	*m*	ISCED 5A-6	Business/Management/Economics	*m*
	Hogescholen (*Hoger Beroeps Onderwijs*) (Universities of Applied Science)	62	11% (including private universities)	*m*	ISCED 5A	Theology/Business/Management/Health and Welfare/Social Sciences/Education/Computing/Agriculture/Languages/Communication	*m*

Notes: *m:* Information not available
1. Privately or publicly governed.
2. Includes the Open University.

Source: Derived from the Country Background Report for the Netherlands, which was prepared in 2006, and other documents providing country-specific information. (*e.g.* OECD, 2004, *Education at a Glance 2004,* Table A4.1, Paris, OECD and Eurydice, 2005, *Focus on the Structure of Higher Education in Europe 2004/2005*). Complemented by information supplied by the Netherlands' Ministry of Education, Culture and Science.

NEW ZEALAND

		Number of Institutions	Size (share of the student population)[1]	Growth trends[2]	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Universities	8	46%	37% between 1996 and 2006[3]	ISCED 5A 5B-6	Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing/ Engineering, Manufacturing and Construction/ Humanities and Arts/ Agriculture/ Health and Welfare/ Education/ Social Sciences, Business and Law	Research emphasis: According to the Education Act 1989, universities have a major role as providers of research across a wide range of disciplines. They are responsible for about 63% of the country's output of research papers. In universities, the academic staff are expected to devote a much higher proportion of their time to research than at other tertiary education institutions.
	Institutes of technology and polytechnics (ITPs)	20	28%	13% between 1996 and 2006	ISCED 5B-6	Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing/ Engineering, Manufacturing and Construction/ Humanities and Arts/ Agriculture/ Health and Welfare/ Education/ Social Sciences, Business and Law/ Services	Aims and objectives: The institutes of technology and polytechnics (ITPs) focus on regional and local needs, with an emphasis on vocational programmes. Research emphasis: The collective research activity and output of TEIs other than universities is very small. Research programmes primarily focus in the area of applied research.
	Colleges of education (CoEs)	2[4]	1%	-55% between 1996 and 2006[3]	ISCED 5A-5B	Social Sciences, Business and Law/ Education/ Humanities and Arts	Colleges of education are primarily (but not exclusively) focussed on education and on teacher training.
	Wānanga	3	9%	1200% between 1996 and 2006	ISCED 5A-5B-6	Physical Sciences/ Life Sciences/ Mathematics and Statistics/ Computing/ Engineering, Manufacturing and Construction/ Humanities and Arts/ Health and Welfare/ Education/ Services/ Agriculture	Students' profile: Wānanga were created to provide more opportunities for Maoris to pursue their education at the tertiary level. More of the programmes at wānanga are also pitched at older students.
Private	Private training establishments (PTEs)	Approx. 900	15%	101% between 1996 and 2006 (including OTEPs)	ISCED 5A-5B-6[5]	Computing/ Engineering, Manufacturing and Construction/ Humanities and Arts/ Agriculture/ Health and Welfare/ Education/ Social Sciences, Business and Law/ Humanities and Arts/ Physical Sciences/ Life Sciences/ Mathematics and Statistics/ Services	Aims and objectives: Private training establishments (PTEs) complement public provision and generally focus on niches not addressed by the public sector. Research emphasis: The collective research activity and output of TEIs other than universities is very small. Research programmes primarily focus in the area of applied research.
	Industry training organisations (ITOs)	41	*m*[6]	149% between 1996 and 2006[7]	ISCED 5B	m	*m*
	Other tertiary education providers (OTEPs)	16	1%	*m*[8]	ISCED 5B	Agriculture/ Education/ Humanities and Arts/ Social Sciences, Business, and Law	*m*

Notes: *m*: Information not available; ITP: Institute of technology and polytechnic; CoE: College of education; PTE: Private training establishment; ITO: Industry training organisation; OTEP: Other tertiary education provider; TEI: Tertiary education institution

1. Year of reference 2006. Size is measured on the basis of full-time equivalent students.
2. Size is measured on the basis of full-time equivalent students, except for industry training organisations.
3. Over that period, the universities absorbed two colleges of education and one polytechnic, while another polytechnic was redesignated as a university.
4. The two remaining colleges of education were absorbed into neighbouring universities from 1 January 2007.
5. In fields not covered by public institutions.
6. Industry trainees represent about 25 percent of all those participating in formal tertiary education on a head-count basis - but many are also enrolled at polytechnics or private training establishments. Nearly all industry trainees are studying on a part-time basis.
7. Growth figure is based on a snapshot of head-count data.
8. OTEP growth is absorbed into PTE growth data.

Source: Derived from the Country Background Report for New Zealand, which was prepared in 2006, and other documents providing country-specific information.

NORWAY

		Number of Institutions	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Universities	7	40.0%	*m*	ISCED 5A-6	Humanities and Arts/ Sciences/ Social Sciences, Law/ Health and Welfare/ Education/Others	Governance: Universities can without external accreditation offer study programmes at all levels. Research emphasis: The universities are major actors in the Norwegian R&D system. There is close co-operation between universities and research centres and institutes in Norway. 50 % of academic staff's time at universities are to be spent on research activities. Governance: All higher education institutions are regulated by the 2005 Act on Higher Education.
	Specialised university institutions	5	2.6%	*m*	ISCED 5A-6	Business / Architecture/Physical Education and Sport/ Music/Veterinary Science	Governance: Since the 2002 amendment of the Universities and Colleges Act, specialised university institutions may apply to be accredited as universities. Research emphasis: Concentrated on their respective fields of responsibility. Governance: All higher education institutions are regulated by the 2005 Act on Higher Education.
	University colleges	24	44.0%	*m*	ISCED 5A-5B-6 (few)	Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Health and Welfare/ Computing/Teacher education	Governance: University colleges must apply for external accreditation for study programmes at master's and doctoral levels. Since the 2002 amendment of the Universities and Colleges Act, university colleges may apply to be accredited as universities. Research emphasis: In the fields where they award doctoral degrees; in addition, all staff are expected to do some R&D work. Governance: All higher education institutions are regulated by the 2005 Act on Higher Education.
	National academies of the arts	2	0.4%	*m*	ISCED 5A	Arts and crafts / design / fine arts / performing arts	Research emphasis: On artistic development work. Governance: See university colleges
	Other colleges (military colleges, and the National Police Academy)	*m*	1.0%	*m*	ISCED 5A- 5B	Services	Governance: All Higher Education Institutions are regulated by the 2005 Act on Higher Education.
Private	Private colleges	25	12.6%	*m*	ISCED 5A- 5B-6	Health and Welfare/ Teacher education/ Business/ Engineering and Computing/ Others	Governance: All Higher Education Institutions are regulated by the 2005 Act on Higher Education.
	Norwegian Lutheran School of Theology	1	0.4%	*m*	ISCED 5A-6	Humanities and Arts	Research emphasis: The school conducts research in theology-related fields.

Notes: *m:* Information not available

Source: Derived from the Country Background Report for Norway, which was prepared in 2005, and other documents providing country-specific information (e.g. OECD, 2004, Education at a Glance 2004, Table A4.1, Paris, OECD and Eurydice, 2005, Focus on the Structure of Higher Education in Europe 2004/2005).

POLAND

			Number of Institutions	Size (share of the student population)[2]	Growth trends[3] (between 2002 and 2006)	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	University-type higher education institutions (HEIs)	Universities	17 [1]	530485 (27,3%)	4.10%	ISCED 5A-6	Humanities/ Social Sciences, Business and Law/ Sciences/ Education	Governance: A public university-type higher education institution shall be established and liquidated, change its name and merge with another public higher education institution by an Act of Parliament. A university-type institution is a higher education institution in which at least one organisational unit is authorised to confer the doctoral degree. The new Law of 2005 distinguishes universities, technical universities, academies and other types of TEIs based on the number of academic areas in which units are authorised to award the doctoral degree. The collective bodies of a public higher education institution shall be the senate and boards of basic organisational units. The single-person authorities of a higher education institution shall be the rector and heads of basic organisational units. Research's emphasis: Research efforts are mainly conducted by universities and university-type institutions. Funding: Public HEIs receive the government subsidy for teaching activities, financial support for students, research and specific purposes.
		Universities of technology	18 [1]	309799 (15,9%)	-7.30%	ISCED 5A-6	Social Sciences, Business and Law/ Science/ Engineering, Manufacturing and Construction/Services	
		Agricultural HEIs	8 [1]	90302 (4,6%)	-6.4%	ISCED 5A-6	Agriculture/Science	
		HEIs of economics	5 [1]	71773 (3,6%)	-5.50%	ISCED 5A-6	Social Sciences, Business and Law	
		Medical academies	9 [1a]	53060 (2,7%)	29.00%	ISCED 5A-6	Health and Welfare	
		HEIs for art studies	18 [1b]	14080 (0,7%)	8.40%	ISCED 5A-6	Humanities and Arts	
		Academies of theology	1 [1]	855 (0,04%)	-11.50%	ISCED 5A-6	Humanities	
		Academies of physical education	6 [1]	29048 (1,4%)	18.30%	ISCED 5A-6	Physical Education, Sport, Health, Services	
		Teacher education schools	5 [1]	77185 (3,9%)	-18.50%	ISCED 5A-6	Education/Social Sciences	
		Military HEIs	5 [2]	11665 (0,6%)	17%	ISCED 5A-6	Services/Engineering, Manufacturing and Construction/Education	
		Government service HEIs	2 [2]	2081 (0,1%)	11.30%	ISCED 5A-6	Services	
		HEIs for maritime studies	2 [2]	10500 (0,5%)	-15.30%	ISCED 5A-6	Services	
	Non-university HEIs	Higher vocational schools	35 [1]	100299 (5,1%)	37.50%	ISCED 5A	Humanities and Arts/ Social Sciences, Business and Law/ Science/ Engineering, Manufacturing and Construction/ Health and Welfare/ Education/ Services/ Agriculture	Governance: A non-university HEI can provide first- and second-cycle programmes, but none of its organisational units is authorised to award the doctoral degree. The state higher vocational schools are established and abolished by the Council of Ministers through a regulation upon a request by the relevant minister of higher education or a regional self-government upon the minister's approval. The request has to be evaluated by the State Accreditation Commission.
Non-public	University-type HEIs and non-university HEIs		321 [1]	640313 (32,9%)	20.60%	University-type HEIs: ISCED 5A-6 Non-university HEIs: ISCED 5A	University-type HEIs: Social Sciences, Business and Law/Science/Services/Education//Humanities and Arts/Health and Welfare/Physical Education Non-university HEIs: Social Sciences/ Business and Law, Services/ Humanities and Arts/Education/Engineering and Construction/Agriculture/Health and Welfare	Governance: The establishment of a non-public higher education institution and the authorisation to provide degree programmes in a given field and at a given level of study for that institution shall require a permit from the minister responsible for higher education. According to the 2005 Law on Higher Education, the collective bodies of a non-public higher education institution shall be specified in its statutes. The statutes of a non-public higher education institution may provide for another single-person authority in addition to the rector. To become the rector of a non-public TEI, the candidate should hold at least the doctoral degree. Statutes of non-public HEIs require ministerial approval. Funding: Non-public HEIs receive funding from private sources. They also have access to some public funding. They are allowed to obtain subsidies from the research section of the State-budget for their research activities and, as of 2001, for financial support for students.

Notes: *m:* Information not available; HEI: Higher education institution; TEI: Tertiary education institution
1. Ministry of Science and Higher Education: http://www.nauka.gov.pl/mn/index.jsp?place=Lead07&news_cat_id=948&news_id=3610&layout=2&page=text
1a. Ministry of Health: http://www.mz.gov.pl/wwwfiles/ma_struktura/docs/wykaz_kierunkow_w_uczelniach_medycznych.xls
1b Ministry of Culture and National Heritage: http://www.mkidn.gov.pl.
2. Publication of Central Statistical Office "Higher Education Institutions and their Finances in 2006".
3. Publication of the Ministry of National Education and Sport "Higher Education 2002" and Central Statistical Office "Higher Education Institutions and their Finances in 2006".

Source: Derived from the Country Background Report for Poland, which was prepared in 2006, and other sources as indicated above.

PORTUGAL

		Number of Institutions	Size (share of the student population) (2006-07)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Public	Universities and non-integrated university establishment	19	46%	15% between 1997 and 2007	ISCED 5A-5B-6	Education/ Humanites and Arts/ Social Sciences, Business, and Law/ Science/ Engineering, Manufacturing and Construction/Agriculture and Veterinary/ Health and Welfare/ Other	Research emphasis: Most research activities are carried out by public universities. Governance: The new Legal Regime of Higher Education Institutions, approved by Law in September 2007, establishes the organisational principles of the higher education system, the autonomy and accountability of institutions, setting up governing Boards with external participation, diversity of organisation and legal status of public institutions (namely as public foundations), establishment of consortia, recognition of research centres as part of the university management framework. This law applies to all higher education institutions and to the system of higher education as a whole. Thus, public and private institutions, universities and polytechnics are all brought together under the same law.
	Polytechnics and non-integrated polytechnic establishment	25	29%	62% between 1997 and 2007	ISCED 5A-5B (from 2007-2008 these institutions offer Bologna 2nd cycle programmes)	Education/ Arts/ Business and administration/ Engineering, Manufacturing and Construction/Agriculture and Veterinary/ Health and Welfare/ Services/ Other	Research emphasis: They are supposed to develop applied research activities. Programme emphasis: Polytechnic study courses provide both vocational and professional activities to their students. Governance: Polytechnics are regulated by the New Legal Regime of Higher Education Institutions. This law also created the title of 'specialist' to be conferred by polytechnics upon professionals with proven experience and seniority, whose participation in the teaching body is encouraged. The new law also provides the framework for the institutional consolidation and integration of polytechnics, which will cease to operate as federations of separate autonomous schools.
Private	Universities and non-integrated university establishment	47	17%	- 37% between 1997 and 2007	ISCED 5A-5B-6	Education/ Humanites and Arts/ Social Sciences, Business, and Law/ Science/ Engineering, Manufacturing and Construction/ Health and Welfare/ Other	Governance: The new Legal Regime of Higher Education Institutions regulates private higher education institutions. This law also reinforces the guarantee concerning assets and financial matters, and increased transparency as regards the identity of the owners of private higher education institutions.
	Polytechnics and non-integrated polytechnic establishment	58	8%	22% between 1997 and 2007	ISCED 5A-5B (from 2007-2008 these institutions offer Bologna 2nd cycle programmes)	Education/ Arts/ Business and administration/ Engineering, Manufacturing and Construction/ Health and Welfare/ Services/ Other	Programme's emphasis: Most of them are specialised and do not have post- graduate degrees.

Source: Derived from the Country Background Report for Portugal, which was prepared in 2006, and other documents providing country-specific information (e.g. Eurydice, 2005, Focus on the Structure of Higher Education in Europe 2004/2005).

RUSSIAN FEDERATION[1]

		Number of Institutions[2]	Size (share of the student population)[3]	Growth trends[3] (between 2002 and 2007)	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Universities	365	4,832,064 (64,4 %)	25%	ISCED 5A-6	Education/ Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and statistics/ Computing/ Other	TEIs which offer higher and post-graduate education programmes (ISCED 5A-6) in a wide range of fields of study (specialties); implement training, re-training and (or) qualification enhancement programmes for highly qualified employees, research and academic employees; conduct basic and applied research in a wide range of sciences; and are considered as leading scientific and methodological centres in different fields.[4] In 2006 under the framework of Priority national project "Education" two large-scale universities (Siberian federal university and South federal university) were created through the mergers of several TEIs based in Siberian and South federal districts. This process was initiated to promote state-private partnership in tertiary education, to enhance the role of TEIs in regional development and to consolidate financial and human resources of several regional TEIs in order to provide high-quality education.[5]
	Academies	185	878,548 (11,7%)	-2%	ISCED 5A-6	Same as above	TEIs which offer higher and post-graduate education programmes (ISCED 5A-6); implement training, re-training and (or) qualification enhancement programmes for highly qualified employees for a specific field of research or teaching activity; conduct basic and applied research, predominantly in one of the fields of science or culture; and are considered as leading scientific and methodological centres in the field of their specialisation. [4] An academy has a narrower range of specialities than a university. It usually specialises in one particular field .
	Institutes	202	491,232 (6,5%)	-3%	ISCED 5A-6	Same as above	TEIs which offer higher education programmes (ISCED 5A) and usually post-graduate education programmes (ISCED 6); implement training, re-training and (or) qualification enhancement programmes for employees for a specific field of professional activity; and conduct basic and applied research. [4] Institutes can also be established as departments of existing universities or academies.
Private	Universities	14	175,694 (2,3%)	62%	ISCED 5A-6	Same as above	Non-state educational institutes can be established institutionally and legally in the forms stipulated by the Russian Federation Laws for non-profit organizations. Private institutions have to undergo the process of assessment and accreditation only if they want to issue state-recognised diplomas. 280 out of 431 private institutions hold state accreditation and licences. Students have to pay fees during the entire duration of their studies. The type of private TEIs (university, academy, institute) is determined during the accreditation process on the basis of the same criteria used for public TEIs: 1. The spectrum of main educational programmes offered and fields of study covered; 2. The offer of post-graduate and additional education programmes; 3. R&D activity; 4. Innovation activity; 5. Qualifications of academic staff and the existence of training, re-training and qualification enhancement programmes.[4]
	Academies	23	370,549 (4,9%)	348%	ISCED 5A-6	Same as above	
	Institutes	634	766,331 (10,2%)	25%	ISCED 5A-6	Same as above	

Notes: *m:* Information not available; TEI: Tertiary education institution

1. Definition of higher education in the Russian educational framework only covers ISCED 5A (*i.e.* it does not include ISCED levels 5B and 6).
2. Year of reference 2007. National Accreditation Agency of Russia, Central State Accreditation Database, from www.nica.ru. Only host TEIs without their branches.
3. Year of reference 2007. National Accreditation Agency of Russia, Central State Accreditation Database, from www.nica.ru. Data consider total number of students, not full-time equivalent students. TEIs include their branches. The negative growth trend for state academies and institutes is caused by changes of status (type) of some TEIs and not by a decrease in total number of students. The significant growth trend for private academies is due to the expansion of branches of some TEIs.
4. Law of the Russian Federation "On Higher and Postgraduate Professional Education" of August 22, 1996, No. 125-FZ; Decree of the RF Ministry of Education "On approval of the list of index of state accreditation and criteria parameters to determine the type of higher educational institution" of 29 June, 2000, № 1965, from www.nica.ru.
5. Priority national project "Education", from www.rost.ru.

Source: Derived from the Country Background Report for the Russian Federation, which was prepared in 2006, and other sources as indicated above.

SPAIN

		Number of Institutions[1]	Size (share of the student population)[1]	Growth trends (between 1999-2000 and 2006-07)	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Universities	50	74.20%	-11.20%	ISCED 5-6	Education/ Humanities and Arts/ Social Sciences, Business, and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Computing/ Life Sciences/ Physical Sciences/ Mathematics and Statistics	Aims and objectives: Their activity focuses on scientific and technical research or artistic creation. Governance: University education is offered in university faculties, higher technical education centres and university centres for first-cycle studies. Public universities are created through an Act from the Legislative Assembly of the Autonomous Community, where the university is to be established, or through a Parliamentary Act in accordance with the Government Council of the corresponding Autonomous Community. Universities may have Research Institutes. Universities have a large autonomy as far as educational and training aspects are concerned. They have academic freedom, and autonomy to define any curricula leading to a degree.
	Higher Artistic Education Schools	833	1.50%	47.90%	ISCED 5	Humanities and Arts	Governance: All establishments providing Arts education must comply with a set of requirements concerning physical facilities and conditions, the potential enrolment of students and the number of specialities taught.
	Higher Vocational Education	4905	10.30%	53.50%	ISCED 5B	Education/ Humanities and Arts/ Social Sciences, Business, and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Computing	Governance: Higher Vocational Education can be offered in secondary schools, *Bachillerato* establishments or centres exclusively devoted to the provision of this type of education. Institutes of Advanced Specific Vocational Training are also established in some autonomous communities.
Private	Universities	23 [2]	10.90%	3.20%	ISCED 5-6	Education/ Humanities and Arts/ Social Sciences, Business, and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Computing/ Life Sciences/ Physical Sciences/ Mathematics and Statistics	Governance: Private universities are composed of secular universities and universities of the catholic Church. Universities may also have Research University Institutes. They focus on research or artistic creation. They may provide post-graduate courses, and award doctorates. Private universities abide by rules enacted by the State, the Autonomous Communities, by the law of their recognition and by their own rules of organisation and running, as well as by the rules corresponding to the type of legal entity taken. They have the liberty to establish their own organisation and running rules, like public universities. Students have to pay all the expenses of their studies. Enrolment and education fees are established by each university.
	Higher Artistic Education Schools	357	0.20%	119.80%	ISCED 5	Humanities and Arts	Governance: Private establishments for Arts studies may provide this type of education and award the corresponding official degrees, under the name of Authorised Establishments. They must comply with a set of requirements concerning facilities and conditions, concerning the potential enrolment of students and the number of specialities taught.
	Higher Vocational Education	751	2.90%	36.60%	ISCED 5B	Education/ Humanities and Arts/ Social Sciences, Business, and Law/ Services/ Engineering, Manufacturing and Construction/ Agriculture/ Health and Welfare/ Computing	Governance: Higher Vocational Education can be offered in secondary schools or centres exclusively devoted to the provision of this type of education. Private establishments may provide this type of education and award the corresponding official degrees, under the name of authorised establishments. They must comply with a set of requirements concerning facilities and conditions, concerning the potential enrolment of students and the number of specialities taught.

Notes: *m*: Information not available
1. Year of reference, academic year 2006/07. For universities, information derived from the '*datos y cifras del sistema universitario*'.
2. Seven universities are owned by the Catholic Church.

Source: Derived from the Country Background Report for Spain, which was prepared in 2007, and other sources as indicated above.

SWEDEN

		Number of Institutions	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Public and State	Universities	14	66%	*m*	ISCED 5A-5B-6	Agriculture/ Health and Welfare/ Social Sciences, Business and Law/ Engineering, Manufacturing and Construction/ Education/ Humanities and Arts/ Others	Research emphasis: In 2003, 50% of the academic staff time at the oldest universities was devoted to research, whereas 30% of activities at new universities focused on research. Governance: Swedish State Higher Education Institutions are government agencies. There is a special regulatory framework for them embedded in the Higher Education Act and the Higher Education Ordinance. They have to submit reports every four years, as well as annual reports, in order to safeguard transparency and to balance autonomy. They also have to conduct an internal audit. In its education directives, the government lays down specific objectives and required results for each individual institution.
	University colleges	21	28%	*m*	ISCED 5A (except master's degrees with a major subject) ISCED 5B- ISCED 6 (in specific fields)	Humanities and Arts (Fine arts and Performing arts)	Research emphasis: Some university colleges conduct research activities in specific fields. Governance: See above for universities.
Private	Universities	3	5%	*m*	ISCED 5A- 5B-6	Agriculture/ Health and Welfare/ Social Sciences, Business and Law/ Engineering, Manufacturing and Construction/ Education/ Humanities and Arts/ Others	Research emphasis: Some private universities conduct fundamental research activities in specific fields. Governance: There is a separate Act and Ordinance for the private institutions. They have a large autonomy, but they have to follow the principles in the first chapter of the Higher Education Act. They also have to comply with the quality requirements in order to retain their entitlement to award recognised higher education degrees and to receive state funding for their programmes. These institutions are governed through contracts with the Government which cover a specific period of time. The contracts state that fees for individual students are not allowed. In addition, the contracts may set up targets for the award of certain specific degrees and contain certain goals.
	Small private institutions	21	1%	*m*	ISCED 5A (few) ISCED 5B	Humanities and Arts (Religion and Theology)/Psychotherapy	Governance: See above for private universities.

Notes: *m*: Information not available

Source: Derived from the Country Background Report for Sweden, which was prepared in 2006, and other documents providing country-specific information (e.g. Eurydice, 2005, Focus on the Structure of Higher Education in Europe 2004/2005).

SWITZERLAND

		Number of Institutions	Size (share of the student population)[1]	Growth trends[2]	Level of programmes offered	Fields of study covered[3]	Other distinctive features
Public Higher Education Institutions	Federal Institutes of Technology	2	19,271 (9.2%)	14.4% between 2000 and 2006	ISCED 5A-6	Engineering, manufacturing and Construction/ Agriculture/ Physical Sciences/ Mathematics and Statistics/ Computing/ Health and Welfare/ Life Sciences/ Social Sciences, Business and Law/ Services/ Humanities and Arts/ Others[3]	Aims and objectives: They are engaged in research and play an active role in the country's economic and social life by acting as an intermediary in transferring knowledge and technologies. Programmes' emphasis: They offer bachelor's (3 years), master's (1.5-2 years) and doctoral degrees. Governance: The authority responsible for the Federal Institutes of Technology is the Confederation.
	Universities	10	95,690 (45.8 %)	19.9% between 2001 and 2006	ISCED 5A-6	Humanities and Arts/ Social Sciences, Business and Law/ Services/ Engineering, manufacturing and Construction/ Agriculture/ Health and Welfare/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing/ Others[3]	Research's emphasis: They conduct fundamental research. Programmes' emphasis: They offer bachelor's (3 years), master's (1.5-2 years) and doctoral degrees. Governance: Powers in the realm of higher education institutions are shared between the cantons and the Confederation. Under the Constitution, the Confederation plays a dual role in the administration of higher education institutions: first, it subsidies cantonal universities; and second, it is responsible for federal institutes of technology.
	Universities of Applied Sciences	7	40,172 (19.2%)	83.1% between 2000 and 2006	ISCED 5A	Engineering and IT/ Architecture, Building Engineering and Planning/ Chemistry and Life Sciences/ Agriculture and Forestry/ Business, Management and Services/ Design/ Health/ Social Work/ Music, Theatre and other arts/ Applied Psychology/ Applied Linguistics[4]	Aims and objectives: They conduct research and play an active role in the country's economic and social life by acting as an intermediary in transferring knowledge and technologies. Programmes' emphasis: They offer bachelor's (3 years) and master's (1.5-2 years) degrees. The scientific instruction they offer is closely tied with a corresponding profession and field of activity, enabling students to make a seamless transition to working life. Governance: see above for universities.
	Universities of Applied Sciences in Education	13	10,959 (5.3%)	881% between 2001 and 2006[5]	ISCED 5A	Teacher Education	Aims and objectives: Initial education of teachers for the pre-school, primary, lower secondary and partly upper secondary levels (*Matura* schools); applied research and development; services (counselling and other services). Programmes' emphasis: They offer 3-year degrees for pre-school and primary teaching (bachelor's degree) and five-year degrees for lower secondary level teaching (master's degree). The courses consist of academic training and practical training. Training for teachers at upper secondary level (*Matura* schools) represents a supplement to the master's degree the students acquire in their subjects of specialisation at a university or university of applied sciences. Governance: The universities of applied sciences in education are teaching institutes that are regulated and financed either by the cantons or inter-cantonally. For students from outside the respective cantons the fees are paid via the university agreements.
AVTS	Higher VET study programmes and courses	Approx. 150	42,383 (20.3%)	3.2% between 2000 and 2006	ISCED 5B	Engineering, Manufacturing and Construction/Hotel Management and Tourism/ Social Sciences, Business and Law/ Services/ Computing/ Agriculture and Forestry/ Health and Welfare	A good half of all tertiary level graduates in Switzerland undertake tertiary-type B programmes (ISCED 5B). Higher vocational education and training follows on directly from basic VET. Higher VET courses and study programmes lead to federal diplomas. To enter higher VET, students must have a secondary level II certificate (*i.e.* successful completion of secondary-level schooling) as well as practical professional experience and/or another tertiary education degree. Higher VET programmes and courses are steered by professional associations and therefore lead to labour market-oriented qualifications. The costs of higher VET study programmes are largely incurred by the students themselves and their employers. Nevertheless, such education investment offers outstanding returns for students and the State alike.
Private	Universities of Applied Sciences	1	486 (0.2%)	*m*	ISCED 5A	Business and Law/ Services/ Computing	Programmes' emphasis: It offers bachelor's (3 years) and master's (1.5-2 years) degrees in the fields of study covered. The scientific instruction offered is closely tied with a corresponding profession and field of activity, enabling students to make a seamless transition to working life.

Notes: *m*: Information not available; AVTS: Advanced Vocational Training School; VET: Vocational education training
1. Year of reference 2006. Federal Statistical Office.
2. Federal Statistical Office, 2006
3. OECD, 2004, *Handbook for Internationally Comparative Education Statistics 2004: Concepts, Standards, Definitions and Classifications*, OECD, Paris.
4. Decree of Universities of Applied Sciences
5. Universities of teachers education were only established in 2001.

Source: Derived from supporting materials prepared by countries participating in the project and other sources as indicated above.

UNITED KINGDOM

	Number of Institutions	Size (share of the student population)	Growth trends	Level of programmes offered	Fields of study covered	Other distinctive features
Universities and Higher Education colleges	116 universities 54 Higher Education colleges	92%[1]	29.4% between 1995/96 and 2005/06	ISCED 5A-5B- 6[2]	Health and Welfare/ Agriculture/ Education/ Humanities and Arts/ Social Sciences, Business, and Law/ Services/ Engineering, Manufacturing and Construction/ Life Sciences/ Physical Sciences/ Mathematics and Statistics/ Computing	Autonomy: All institutions have a high degree of autonomy over for example, institutional mission, appointments of staff, admission of students and curriculum offered. Mission: TEIs carry out the same core activities but to differing degrees. For example they may be research-intensive, or teaching-intensive. Research emphasis: Universities conduct fundamental as well as applied research activities. Higher education colleges may pursue applied research and consultancy.[3] Programmes' emphasis: One university, the Open University, is specialised in providing distance courses. Former polytechnics have retained a vocational emphasis in their academic programmes.[3] Governance: In 2005, the criteria have been changed to grant universities without research degrees awarding powers (except in Scotland and Northern Ireland).[3] Degrees and other qualifications offered by higher education colleges have to be validated by external bodies such as university or national accrediting body in most cases. Some of them have the power to award their own degrees and qualifications. These degree awarding powers are normally restricted to first degrees and taught (not research) master's degrees.[4]
Further education colleges	376 [5]	8%[3]	*m*	ISCED 3-4-5A-5B[4]	Social Sciences, Business, and Law/ Humanities and Arts/ Computing/ Education/ Engineering, Manufacturing and Construction, services [6]	Further education colleges have a high degree of autonomy over their missions, appointment of staff, the admission of students and for programmes at level 5B in the curriculum offered. Links with the labour market: Further education colleges offer a range of programmes some of which are short-cycle programmes, which enables them to have more flexibility and to respond better to labour market needs in the context of lifelong learning.[6] Students' profile: Further education colleges draw students from diverse backgrounds. Students are more likely to be over 25, and to come from areas with low participation in higher education than students in universities. 52% of them study part-time. They are also more likely to study foundation degrees, *HNCs* or *HNDs*.[6]
Non publicly-funded colleges	*m*	*m*	*m*	m	Mainly Health and Welfare/ Social Sciences, Business and Law/ Humanities and Arts (Theology)[3]	*m*

Notes: *m*: Information not available
1. Higher Education Statistics Agency.
2. Eurydice (2005), *Focus on the Structure of Higher Education in Europe 2004/2005*.
3. United Kingdom's Country Background Report.
4. Eurydice, Cedefop, European Training Foundation, 2003, *Structures of Education, Vocational Training and Adult Education Systems in Europe*.
5. Statutory or designated colleges under the Further and Higher Education Act 1992.
6. Higher Education Funding Council for England (HEFCE).

Source: Derived from the Country Background Report for the United Kingdom, which was prepared in 2006, and other sources as indicated above.

Appendix C – Improving the Knowledge Base

C.1 Major gaps in the information base

In the country-specific background reports and detailed analyses of external teams, the Review has identified several areas where data or research gaps impair policy diagnosis and informed policy making. These information gaps can be grouped along the broad areas of tertiary education supply and demand, access and participation, human and financial resources, and completion and outcomes. In some cases, it would be sufficient to address these gaps at the system level while information at institutional level would be desirable in other instances.

C.1.1 Tertiary education supply and demand

The first area where better information could help policy makers make informed diagnosis and decisions on the allocation of resources in tertiary education relates to the supply of and the demand for tertiary education, and possible mismatches between them. Indeed, identifying such mismatches is the first step to steer the system to better match supply and demand and thereby grasp the full benefits of public investment in tertiary education. In this respect, while the supply side of tertiary education provision is generally well-informed, especially in countries where tertiary education is supplied by public tertiary education institutions (TEIs), the demand for tertiary education and its underlying drivers are often less well known.

With respect to the supply of tertiary education, the Review has identified information gaps in relation to the coverage of non-traditional modes of tertiary education delivery. Data collections and analyses often devote inadequate attention to the provision of lifelong learning opportunities and flexible study options despite the relevance of these non-traditional modes of delivery from the perspective of the labour market with a view to upgrade workers' skills or address specific skill shortages.

In addition, some countries are currently unable to collect comprehensive data on all TEIs and thus cannot devise a full picture of the domestic supply of tertiary education. This gap usually results from the difficulty in gathering information from private providers.

Better data and analysis are equally necessary on the demand side. Background reports and external reviews of countries participating in the Review have widely recognised the insufficiency of data and analysis with respect to the labour market demand for tertiary education, a shortcoming that impairs student adaptation to labour market signals, the ability of TEIs to learn about and respond to labour markets and the capacity of public officials to adapt resource allocation to labour market needs in terms of fields of study, programmes and their regional distribution.

At the system level, information would be desirable on general labour market conditions – *e.g.* labour force participation, unemployment and vacancy rates as well as working hours – to identify skill shortages and monitor trends in demand for tertiary educated workers. In addition, research would also be needed to assess whether graduate over-supply is an issue, to estimate the frequency with which students take up the "wrong subjects", and gauge whether graduate over-education or mismatch is of concern. Providing informed responses to these questions would assist policy makers in steering the system in ways that enhance its effectiveness.

Such monitoring would ideally need to be carried out at the sectoral level. For instance, the demand for human resources in research and innovation is evolving in both the public and private sectors of many OECD countries, and an important policy challenge is to improve information on supply and demand mismatches in human resources in science and technology, so that TEIs can respond flexibly and rapidly. There would also be a need for some analysis of labour market demand at regional level, to help TEIs better respond to the needs of their communities.

In addition, up-to-date information on wages and employment of recent graduates by field of study and, ideally, at the institutional level would also assist prospective students form accurate expectations about the returns of tertiary programmes in various fields and TEIs. Research might also be carried out to examine the wage and employment expectations and the actual labour market outcomes of tertiary students and assess whether changes in expectations have an impact on prospective students' enrolment decisions. The large-scale analysis that has recently been carried out in several European countries is an interesting step in this direction (Brunello *et al.*, 2001).

Another aspect of the demand for tertiary education that would require closer scrutiny in terms of empirical research and analysis relates to the factors driving international students' enrolment decisions. Indeed, the demand for tertiary education emanating from international students has been growing in the majority of countries taking part in the Review. Yet, surprisingly little is known on the factors and levers underlying this component of tertiary education demand. With the projected decrease in student populations in many OECD countries, international students are likely to become more and more important to the survival of TEIs and/or programmes, and research on the factors underlying their destinations is becoming increasingly relevant.

Lastly, research would also be desirable on the factors underlying enrolment decisions by disadvantaged students if countries are to tackle equity issues seriously. In a great number of participating countries indeed, there is a general lack of knowledge about the extent to which equity in tertiary education is a problem due to the lack of critical data such as the socio-economic or ethnic background of students in tertiary education. In these countries, equity issues are often largely unidentified because data by ethnicity, income, or parental education are not compiled on a systematic basis.

C.1.2 Access to and participation in tertiary education

Information and research are also needed to identify equity issues in terms of access to tertiary education by disadvantaged students, their choice of majors and the conditions of their participation in tertiary education relative to more privileged groups of students. Otherwise, this information gap hinders the development and monitoring of policies for inclusiveness.

A coherent and systematic approach to equity would in the first instance assess which groups are at a disadvantage when it comes to access and participation in tertiary education, *i.e.* whether equity issues are related to ethnic background, socio-economic factors, gender, disability *etc.* A secondary question relates to identifying where the equity problems arise, *i.e.* whether they result from inequity of opportunities at the school level, from a lack of knowledge about the benefits of tertiary education within specific groups, are linked to admissions issues or insufficient student support during studies, or result from financial constraints faced by families. Answering these questions would require the systematic collection of data such as the socioeconomic, ethnic or disability background of the tertiary student population, and more effective student tracking and cohort analyses to examine their progress over time. In addition, targeted research would need to gauge the impact of these background variables on enrolment decisions, the social and economic conditions of student life, the recourse to student loans to finance tertiary studies, completion rates *etc.* This would inform the development of appropriate policies to reduce inequalities in tertiary education.

Another area where more information and research would be sought for relates to non-traditional patterns of participation and attendance, *i.e.* whether there are any differences between full-time and part-time students, campus-based or distant students, as well as between those who pay for their studies and those who are entirely supported by the State. These questions are gaining in importance as more flexible offers are developing throughout the OECD, but little is known on their effectiveness relative to more traditional modes of full-time campus-based participation. In order to address these questions, a more elaborate collection of data would be required in some countries.

C.1.3 Human and financial resources invested in tertiary education

The Review has also identified some data and research gaps with respect to the resources invested in tertiary education.

In terms of human resources, some countries lack basic data at the system level allowing them to picture the characteristics of the academic staff working in TEIs. Yet, planning the replacement of retiring academics, organising programmes of training and professional development or improving gender balance in academia require such basic information as the distribution of academic staff by age, gender and qualifications. In addition, little is known on the proportion of international academics at the institutional level, despite the fact that this ratio would provide insight into the scope for internationalisation at home in different TEIs.

Another aspect of internationalisation which is little documented relates to the international mobility of academic staff. Stronger data instruments need to be developed in this area in the majority of countries taking part in the Review, especially to record short-term international mobility. Research would also be needed to assess the impact of international mobility on academics' career tracks and promotions.

In terms of financial resources, detailed data are usually available – at least for publicly-funded TEIs – but the Review has nevertheless identified some data gaps in some areas such as institutional revenues off-budget. Another area of tertiary education finance where data gaps ought to be addressed relates to the financial implications of incoming international student mobility, *i.e.* the costs or revenues generated at the institutional and system level depending on the tuition fee structure applicable to international students. Indeed, while it may be rational for the public sector of certain host

countries to subsidise the education of international students in acknowledgement of the externalities they yield, the costs ought to be transparent for the purpose of good public policy.

Research would also be needed to assess the impact of various funding approaches on the behaviour of TEIs, or students in case tuition fees are introduced. Indeed, the empirical evidence on the impact of funding approaches on institutional strategic behaviour is scarce, and research on students' responses to the introduction of fees in other countries might be useful to policy makers in countries contemplating this policy option, as a way to devise adequate support schemes and complementary policies.

On a related matter, research would also be useful in relation to the allocation of funding for R&D. Indeed, many countries are now moving towards funding in priority research projects reaching a critical mass, although the issue of identifying what critical mass means across different fields of research remains unresolved. Further research would therefore be required in this area to inform policy development.

C.1.4 Outcomes of and returns to tertiary education activities

Tertiary education policy diagnosis and development is also impaired to a significant extent by data and research gaps in relation with the outcomes of and returns to tertiary education activities. These information gaps relate in particular to progress and completion, the quality of outcomes and the comparative performance of different programmes and TEIs, information on non-cognitive outcomes of tertiary education, the labour market performance of tertiary graduates, and the returns to international activities of TEIs.

With respect to progress and completion of tertiary education programmes, a number of countries lack information on student retention, dropout, progress, completion and time needed for completion disaggregated according to the background of students to give insight into equity issues. Indeed, enhancing equity is as much about expanding access for disadvantaged students as well as ensuring that those who enrol in tertiary programmes are adequately supported to succeed. There is thus an evident need to develop stronger data instruments on participation and success by disadvantaged groups in countries where such information is not yet available. The knowledge gained from such information would allow the development of appropriate mechanisms to reduce inequalities in tertiary education.

As far as the quality of outcomes and the performance of tertiary education are concerned, there also seems to be a significant lack of relevant national and institutional data in several countries participating in the Review to assess the performance of the tertiary education system as a whole, as well as the performance of individual TEIs. In particular, there would be a need to develop baseline information on progress, completion and time needed for completion of tertiary programmes disaggregated by field of study and TEI. Currently, very limited data are available on such critical elements of information in a number of countries. Without precise statistical data for each individual TEI, it is very difficult to track student progress and to help TEIs benchmark their efficiency – in a quality improvement perspective – relative to other TEIs offering similar programmes. The *Unistats* Web site developed in the United Kingdom is an interesting model in this respect (*www.unistats.com*) (see Box 3.2).

But completion rates and time needed for completion are only rough measures of quality. Another area which is under-researched relates to the learning outcomes of students in different TEIs. Few countries collect such data at national level and there is no such endeavour at the international level (see Box 5.2; Stensaker, 2003; Nusche, 2008). The resulting asymmetries of information complicate students' enrolment decision-making and impede the use of students "voting with their feet" as a way to encourage TEIs to improve their teaching and learning. Instead, students tend to base their enrolment decisions on perceptions of reputation or imperfect proxies of quality such as the research performance of TEIs or rankings. This situation has the perverse effect of giving TEIs an incentive to focus efforts on research rather than teaching.

A number of countries and stakeholders also stress the importance of seeing tertiary education not only as a preparation for the skilled labour market, but also as an instrument for students' personal development and preparation for active citizenship. Yet, information and research on the impact of tertiary education participation on the development of these non-cognitive skills is scarce, and measuring this contribution of tertiary education would require the development of national assessments of graduate skills.

But the most visible information gaps with respect to tertiary education outcomes often relate to the labour market performance of tertiary graduates and the returns of different types of tertiary qualifications. In particular, there would be a need to develop baseline information on the destinations and employment rates of graduates in specific fields of study. Better data and analysis on the labour market outcomes of students would be especially important in systems that rely heavily upon central or regional authorities to allocate study places, by enabling them to accurately assess current labour market conditions. The *Higher Education Graduate Employment Observatory* in Chile and the *Labour Market Observatory* in Mexico are good models for the development of information systems on the labour market outcomes of tertiary education (see Box 9.1).

Ideally, information systems should also permit the tracking of long-term graduate labour market outcomes, so that TEIs and public officials can understand not only wages and unemployment spells immediately after graduation, but also the longer-term experiences of graduates, including career mobility, occupational change, and job mismatch and over-education. Such information about the link between different types of tertiary education and labour market experiences could then be used to shape policies with respect to the approval of new study programmes, accreditation procedures, and the engagement of labour market participants in institutional governance.

In relation to the employability of tertiary graduates, little is known on the ability of tertiary programmes and TEIs to prepare students for the labour market. Further research would therefore be needed to measure the employment skills of graduates. One way in which this might be done is through the development of a national assessment of graduate skills, as is currently being explored in Australia.

Also, better measures of rates of return of investment in tertiary education would be useful to inform prospective students on the value of tertiary education investments, and possibly encourage individuals from disadvantaged groups to enrol in tertiary education. Such measures exist at the aggregate level, but would be useful at the institutional level or disaggregated by fields of study. Addressing the data gaps mentioned above in terms of labour market returns by TEI and/or field of study would provide researchers with the necessary underlying data to disaggregate the rates of return indicators accordingly.

Lastly, further research and analysis would be needed to assess the outcomes of a number of international activities of tertiary education.

At the individual level, students are encouraged to take part in international mobility in many countries, yet little is known on the quantitative impact of study abroad on their linguistic and multicultural skills, learning outcomes, and future labour market performance, although a few surveys explore these issues in the EU context to assess the impact of EU mobility programmes (Bracht *et al.*, 2006). In most countries participating in the Review, tertiary education systems appear to have a limited capacity to identify individuals and their characteristics, and to trace the paths of those who took part in some form of internationalisation relative to those who did not. This information would however be important to assist government authorities make decisions regarding public support for internationalisation on the basis of hard data rather than hearsay or anecdotes. This calls for better information on the "international experience" of individuals in graduates or labour force surveys.

At the system level, there would also be a need for improving information on the migration outcomes of international student mobility. It is generally widely accepted that some students who study abroad subsequently settle in their country of study, but there seems to be a relatively weak information base to guide tertiary education policy development. Policy development would benefit from data evidencing brain drain and assessing the extent of the phenomenon. From the perspective of host countries of international students, information on their stay rates would be equally important to assess the outcomes of internationalisation activities.

C.2 The challenge of addressing information gaps

Identifying data and research gaps impairing evidence-based policy development is however only part of the challenge for policy makers. The real hurdle is to address and fill these evidence gaps.

The biggest difficulty probably lies in the difference in timeframes between policy makers and researchers, whereby policy makers often need swift answers to their questions while data development and analysis are time-intensive. The current development of the OECD *Programme for International Assessment of Adult Competencies* (PIAAC), which will eventually provide insight into adults' employment skills – including those of tertiary graduates – is illustrative in this respect. It is expected that it will take between seven and ten years for the programme to deliver results, *i.e.* an eternity at the scale of policy makers. Similar time constraints would apply to the development of assessments of cognitive outcomes at institutional level, due to the extensive and sequential work required on scoping the focus of the assessment, feasibility studies, development of instruments, field trials, refinements, final data collections and analysis of results. Moreover, research based on those rich datasets would take a few more months/years to be completed. Obviously, data collections at national or institutional level are faster to launch and implement than large scale international assessments, but these examples illustrate why it is important to initiate data development as early as possible once a policy issue is identified that lacks empirical evidence.

Similar differences in timeframes exist between policy makers and educational planners at national and institutional level on the one hand, and business and employers on the other hand. Indeed, the time horizon of many employers as regards recruitment planning is often of a few months to one year, whereas the time frame for the tertiary

education system to respond to expressed needs is much longer. For instance, it takes approximately one year's planning to develop a new course/programme and then three to five years for a fresh student to graduate. A challenge for educational planners and policy makers is therefore to anticipate expressed needs and engage in some prospective and forecasting of labour market demand.

Another common problem is that data development often requires coordination between different areas of public authority – *e.g.* labour market and education authorities in case the data needed to assist educational policy development requires amending labour force survey questionnaires, or immigration authorities if information on the previous "international student" status of recent immigrants is sought. Policy coordination towards data development is also increasingly required between different levels of public authority, and different geographic jurisdictions. Indeed, the trend towards decentralised decision-making in education in many OECD countries has given more responsibility and mandating to local authorities and TEIs themselves, but the drawback of this is that evidence-based education research may be seen as unaffordable in nations that do not have strong central planning of tertiary education. Even if particular regions or individual policy makers were convinced of the importance of evidence-based policy, the lack of generalised agreement on policy priorities coupled with possible regional rivalries and greater or lesser willingness to share information could very well lead to a situation where policy makers see the pooling of resources required to engage the national research community as a time-consuming and fruitless procedure (OECD, 2007).

Addressing data gaps may also face legal obstacles, as evidenced by the recent attempt of French authorities to collect information by ethnic background in order to monitor discrimination, which was prohibited by the French Constitutional Council.[96] In many countries indeed, statistical data collections are strictly supervised by legal provisions. In particular, the collection of information on the ethnic or racial background of individuals is forbidden in a number of European countries. Some of these countries have adopted exceptions to this principle in accordance with the *European Commission against Racism and Intolerance* (ECRI) recommendation to collect ethnic data[97] as a way to monitor disadvantage and promote equal opportunity (Simon, 2007). But overall, the example of ethnic data illustrates the difficulties faced by policy makers in improving their information base in some areas. Legal obstacles may also result from the inability by policy makers in some countries to force TEIs – in particular private ones – to respond to their data queries. In other countries by contrast, TEIs are required by law to submit quantitative information to educational authorities on a regular basis, in which case new data requests require a complex process to amend the official questionnaire that TEIs have to fill in. As a result, the collection of new data such as off-budget revenues, academic staff characteristics, completion rates or mode of attendance of students often relies upon the persuasion of respondents and, ultimately, the good will of TEIs' administrators in filling supplementary data questionnaires.

96. Since 1978, French law prohibits the noting down or taking into account of the ethnic or religious background of people surveyed for statistical purposes (France Diplomatie, 2007).

97. ECRI recommends ethnic data collections as an instrument for shaping sound policies against racism and racial discrimination and for promoting equal opportunities but asks governments to ensure that such data collection must be carried out "with due respect for the principles of confidentiality, informed consent and the voluntary self-identification of persons" (Simon, 2007).

Lastly, the effective use of research as evidence basis in the policy making process critically depends on the nature and depth of the research/policy interface. Indeed, research results that remain within the realm of academia will not be able to be understood or accessed when needed, greatly limiting their impact. Another intricacy also derives from the common contradictions of research results, making it difficult to infer a single course of action that could be reflected in policy. In this context, think tanks and brokerage institutions can play a critical role in bridging the divide between policy makers and researchers. Not only do they filter information so that only the best-available evidence is used for decision-making, but they are also important in bringing together the disparate communities of education researchers and disseminating research results to as wide an audience as possible. In doing so, they help promoting both top-down and bottom-up changes to the system through interactive dialogue between policy makers, researchers and practitioners. Brokerage agencies are most common in the Anglo-Saxon countries, but they are becoming more frequent in continental Europe (OECD, 2007).

References

Bracht, O., C. Engel, K. Janson, A. Over, H. Schomburg and U. Teichler (2006), *The Professional Value of Erasmus Mobility*, International Centre for Higher Education Research, Kassel, accessed 22 July 2007 from *http://ec.europa.eu/education/programmes/socrates/erasmus/evalcareer.pdf*

Brunello, G., C. Lucifora and R. Winter-Ebmer (2001), *The Wage Expectations of European College Students*, Economics Working Paper No. 108, Department of Economics, Johannes Kepler University, Linz, Austria.

France Diplomatie (2007), *For or Against Ethnic Statistics*, accessed 12 December 2007 from *www.diplomatie.gouv.fr/en/france_159/label-france_2554/label-france-issues_2555/label-france-no.-66_5559/feature.-france-politics-in-action_5589/arrangements-for-political-debate_5593/social-sciences-on-campaign_9010.html*

Nusche, D. (2008), "Approaches to Learning Outcomes Assessment in Higher Education: A Comparative Review of Selected Practices", *OECD Education Working Papers Series*, No. 15, OECD, Paris. *www.oecd.org/edu/workingpapers*

OECD (2007), *Evidence in Education: Linking Research and Policy*, OECD, Paris.

Simon, P. (2007), *'Ethnic' Statistics and Data Protection in the Council of Europe Countries*, Council of Europe, Strasbourg.

Stensaker, B. (2003), "Trance, Transparency and Transformation: The Impact of External Quality Monitoring on Higher Education", *Quality in Higher Education*, Vol. 9, No. 2.

Appendix D – Summary of Policy Directions

Table D.1. Policy directions for steering tertiary education

Steering tertiary education: setting the right course	
General Policy Directions	**Targeted Policy Directions**
Develop a coherent strategic vision for tertiary education	◦ Devise a statement of strategic aims for tertiary education ◦ Draw on a comprehensive advisory body to establish strategic aims for tertiary education
Establish sound instruments for steering tertiary education	◦ Ensure that the capabilities of tertiary education authorities keep pace with changing responsibilities ◦ Develop steering instruments to establish a balance between institutional autonomy and public accountability ◦ Use student choice as a means by which to improve quality and efficiency
Ensure the coherence of the tertiary education system with extensive diversification	◦ Grasp the benefits of wider and more flexible diversification among tertiary institutions ◦ Avoid the fragmentation of the tertiary education system ◦ In systems with vocationally-oriented sectors, ensure that mechanisms exist to discourage academic drift ◦ Limit barriers to entry and assess the contribution of individual institutions through quality assurance arrangements
Build system linkages	◦ Ensure appropriate co-ordination between secondary and tertiary education systems ◦ Review whether the tertiary education system is contributing effectively to lifelong learning ◦ Build linkages between different types of TEIs ◦ Foster the engagement of institutions with surrounding regions and communities
Strengthen the ability of institutions to align with the national tertiary education strategy	◦ Ensure the outward focus of institutions ◦ Require institutions to establish strategic plans ◦ Examine how best to widen the scope of institutional autonomy ◦ Create a national policy framework towards institutional governance that allows institutions to effectively manage their wider responsibilities
Build consensus over tertiary education policy	◦ Develop an evidence basis to inform policy making ◦ Widen consultation within government to ensure coherence across policies to support national tertiary goals ◦ Widen consultation with those outside government to ensure that voices other than those of "producers" are heard

Table D.2. Policy directions for matching funding strategies with national priorities

Matching funding strategies with national priorities	
General Policy Directions	**Targeted Policy Directions**
Develop a funding strategy that facilitates the contribution of the tertiary education system to society and the economy	◦ Make funding approach consistent with the goals of the tertiary education system ◦ Ensure that the funding approach embraces a number of desirable features ◦ Articulate a long-term strategy
Use cost-sharing between the State and students as the principle to shape the funding of tertiary education	◦ Provide public subsidies for tertiary education studies, regardless of sector of provision ◦ Charge tuition fees to students, especially if limited public funding either ration the number of students, jeopardise levels of spending per student, or restrict financial support for disadvantaged groups ◦ Tuition fees are less pressing when public funding levels do not ration the number of students, jeopardise levels of spending per student, and restrict financial support for disadvantaged groups ◦ Launch a public debate on the consequences of an heavy reliance on public money for funding tertiary education in countries with little tradition of tuition fees ◦ Consider tuition fee stabilisation policies to ensure cost containment and moderation ◦ Allow institutions to differentiate tuition fees across courses
Publicly subsidise tertiary programmes in relation to the benefits they bring to society	◦ Establish broad principles to differentiate levels of public subsidies across programmes ◦ Publicly subsidise tertiary education studies offered by private institutions
Make institutional funding for instruction formula-driven, related to both input and output indicators and including strategically targeted components	◦ Base institutional block grants on transparent formulas based on a balanced array of input and output indicators ◦ Consider a contractual relationship between institutions and the State ◦ Include targeted development programmes in institutional funding ◦ Adjust institutional funding to the particular mission of institutions ◦ Give institutions autonomy in the use of their block grants ◦ Provide stability in institutional funding to promote long-term development ◦ Allow institutions to diversify sources of funding ◦ Fund capital infrastructure with a number of different streams
Improve cost-effectiveness	
Back the overall funding approach with a comprehensive student support system	◦ Aim for a universal student support system with two major components: an income-contingent loan system complemented with a scheme of means-tested grants ◦ Design a universal loans system with income-contingent repayments and means-tested subsidies ◦ Base the grants scheme on an assessment of need ◦ Ensure that student aid entitlements cover living costs ◦ Warrant access to the student support system to students in the public and private sectors alike ◦ Consider the creation of an agency to manage the student support system

Table D.3. Policy directions for assuring and improving quality

Assuring and improving quality	
Domain	**Targeted Policy Directions**
Design of the quality assurance framework	◦ Design a quality assurance framework consistent with the goals of tertiary education ◦ Build consensus on clear goals and expectations of the quality assurance system ◦ Ensure that quality assurance serves both the improvement and accountability purposes ◦ Combine internal and external quality assurance mechanisms ◦ Build capacity and secure legitimacy ◦ Make stakeholders such as students, graduates and employers visible in the evaluation procedures ◦ Increase focus on student outcomes ◦ Enhance the international comparability of the quality assurance framework
Internal evaluation	◦ Develop a strong quality culture in the system ◦ Put more stress on internal quality assurance mechanisms ◦ Ensure that internal accountability is guided by some key principles ◦ Undertake the external validation of internal quality assurance systems
External evaluation	◦ Commit external quality assurance to an advisory role as the system gains maturity… ◦ … but retain strong external components in certain contexts ◦ Implement adequate follow-up procedures and view quality assurance as a continuous process ◦ Allow for selected assessments to be initiated by an external quality assurance agency ◦ Avoid direct links between assessment results and public funding decisions
Methods	◦ Align quality assurance processes to the particular profile of TEIs ◦ Improve co-ordination between the evaluation of teaching and research ◦ Engage in constant innovation ◦ Develop quality assurance expertise in new areas
Practical arrangements for the quality assurance system	◦ Avoid fragmentation of the quality assurance organisational structure ◦ Avoid excessive costs and burdens ◦ Improve quality information base ◦ Improve information dissemination

Table D.4. Policy directions for achieving equity

Achieving Equity
Targeted Policy Directions
◦ Assess the extent and origin of equity issues
◦ Making tertiary education more equitable requires policy to intervene much earlier
◦ Strengthen career guidance and counselling services at the school level
◦ Provide opportunities for tertiary education study from any track in upper secondary school
◦ Strengthen the integration of planning between secondary and tertiary education systems
◦ Diversify the supply of tertiary education to accommodate a more diverse set of learners
◦ Consider alternative types of provision to account for the cultural diversity of the population
◦ Improve the access to tertiary education in remote areas by expanding distance learning and regional learning centres
◦ Diversify criteria for admission and give a say to TEIs in entrance procedures
◦ Consider positive discrimination policies for particular groups whose prior educational disadvantage is well identified
◦ Consider alternative ways of acquiring eligibility for tertiary education
◦ Improve transfers between different types of TEIs within tertiary education
◦ Provide incentives for TEIs to widen participation and provide extra support for students from disadvantaged backgrounds
◦ Encourage TEIs to be more responsive to the needs of adult learners
◦ Sustain efforts to improve gender parity at all levels of tertiary education and address gender stereotyping in subject choice
◦ Grant special provisions for students with disabilities
◦ Place more emphasis on equity of outcomes

Table D.5. Policy directions for enhancing the role of tertiary education in research and innovation

Enhancing the role of tertiary education in research and innovation
Targeted Policy Directions
◦ Improve knowledge diffusion rather than strengthening commercialisation via stronger IPRs
◦ Improve and widen channels of interaction and encourage inter-institutional collaboration
◦ Foster mobility across the research and innovation system
◦ Develop policies for both international as well as intra-national mobility
◦ Improve research career prospects
◦ Monitor the supply and demand of human resources
◦ Ensure a variety of skills for innovation
◦ Maintain adequate research infrastructure
◦ Use the tertiary education sector to foster the internationalisation of R&D
◦ Improve methods for priority selection
◦ Broaden the criteria used in research assessments
◦ Ensure the shift towards project-based funding is monitored and provide a mix of funding mechanisms
◦ Provide a long-term perspective to research and innovation policies
◦ Evaluate and co-ordinate policy instruments across the research and innovation system

Table D.6. Policy directions for the academic career

Academic career: adapting to change
Targeted Policy Directions
◦ Give institutions ample autonomy over the management of human resources
◦ Manage the academic career in a flexible manner
◦ Reconcile academic freedom with institutions' contributions to society
◦ Enhance the attractiveness of the academic career
◦ Improve the entrance conditions of young academics
◦ Strengthen management processes and leadership
◦ Evaluate and reward the accomplishments of academics
◦ Integrate professional development throughout the career
◦ Develop mechanisms to support the work of academics
◦ Enhance the capacity for collaboration and encourage mobility
◦ Provide more flexible employment conditions for senior academics

Table D.7. Policy directions for strengthening ties with the labour market

Strengthening ties with the labour market
Targeted Policy Directions
◦ Coordinate labour market and education policies
◦ Improve data and analysis about graduate labour market outcomes
◦ Strengthen career services at secondary and tertiary educational levels
◦ Reinforce the capacity of institutions to respond to labour demand
◦ Enhance provision with a labour market orientation
◦ Include labour market perspectives and actors in policy development and institutional governance
◦ Encourage tertiary education institutions to play a greater role in lifelong learning
◦ Explore the potential of a National Qualifications Framework

Table D.8. Policy directions for shaping internationalisation strategies in the national context

Shaping internationalisation strategies in the national context	
Domain	**Targeted Policy Directions**
Overall strategy and steering of internationalisation policy	◦ Develop a national strategy and comprehensive policy framework for internationalisation ◦ Improve national policy coordination ◦ Encourage TEIs to become proactive actors of internationalisation ◦ Promote sustainable strategies of internationalisation ◦ Create structures to assist TEIs in their internationalisation strategies
Attractiveness and international competitiveness of the tertiary education system	◦ Create structures to promote the national tertiary education system ◦ Enhance the international comparability of tertiary education ◦ Develop alternatives to current global rankings ◦ Improve information to prospective international students ◦ Foster centres of excellence at post-graduate level… ◦ … but ensure quality provision in under-graduate cross-border education as well
Internal dimension of internationalisation	◦ Develop on-campus internationalisation ◦ Encourage the mobility of domestic academic staff and students
Optimisation of internationalisation strategy	◦ Inform policy-making in the area of internationalisation ◦ Take advantage of international complementarities ◦ Manage the migration impact of internationalisation

Table D.9. Implications for policy implementation

Implications for policy implementation	
Domain	**Targeted Directions**
Development of tertiary education policy and reform	◦ Establish ad-hoc independent committees to initiate tertiary education reforms and involve stakeholders ◦ Allow for bottom-up policy initiatives to be developed into proposals by independent committees ◦ Recognise the different views of stakeholders through iterative policy development
Search for consensus or compromise over tertiary education policy and reform	◦ Use pilots and policy experimentation when needed ◦ Favour incremental reforms over comprehensive overhauls unless there is wide public support for change ◦ Avoid reforms with concentrated costs and diffused benefits ◦ Identify potential losers from tertiary education reform and build in compensatory mechanisms ◦ Create conditions for the successful implementation of reforms ◦ Improve communication on the benefits of reforms and the costs of inaction
Implementing tertiary education policy and reform successfully	◦ Implement the full package of policy proposals ◦ Support effective policy implementation

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