Tertiary Education for the Knowledge Society

OECD Thematic Review of Tertiary Education: Synthesis Report

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Tertiary Education for the Knowledge Society

OECD Thematic Review of Tertiary Education: Synthesis Report

by

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Volume 2 of 3

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5. Assuring and Improving Quality

5.1 Introduction

With the move towards knowledge-driven economies and societies, education has never been more important for the future economic performance and relative economic standing of countries, but also to allow individuals to perform and fully participate in the economy and society (OECD, 2007a). In this context, broad participation in tertiary education is only one side of the coin. The quality of education delivered is equally important to ensure that tertiary graduates are effectively equipped to participate in the new economy and society at large, and that they are prepared to subsequently engage in lifelong learning activities to update their knowledge and skills as the knowledge frontiers moves further. As a result, the issue of quality provision has received growing interest from the various stakeholders over the past two decades.

In the meantime, tertiary education systems have faced dramatic overhauls with a trend towards mass participation and increasingly diversified and flexible types of provision (see Chapter 2). This explosion of systems which had been fairly stable since the 19th century has raised legitimate questions as to what tertiary education systems had become and has heightened the need for some form of quality assurance in tertiary education.

Although quality assurance is relevant to both the teaching and research missions of tertiary education, this chapter focuses on quality assurance systems that assess the quality of teaching and learning as opposed to the quality of research. This latter aspect is covered in Chapter 8 on 'Enhancing the role of tertiary education in research and innovation'.

5.1.1 What is quality assurance and why does it matter?

Growing interest in quality assurance

Several trends have triggered stakeholders' interest in tertiary education quality, and by extension the policies of quality assurance designed to enhance it. First of all, the transition from elite to mass participation in tertiary education since the 1980s has increased the burden on national budgets across OECD countries. This pressure has heightened governments' interest in the cost-effectiveness of tertiary education given the high level of public investment in the sector – at 1% of GDP on average in the OECD (OECD, 2007b). This motive has been especially pervasive in the context of disappointing economic growth and growing public deficits in many countries over the period (Vroeijenstijn, 1995a; El Khawas *et al.*, 1998).

In the meantime, many OECD governments have experienced structural shifts in conceptions of public service provision since the 1980s, including in tertiary education,

and have embraced the *New Public Management* (NPM) approach imported from the private sector. NPM puts emphasis on leadership principles, incentives and competition between public sector agencies and with private entities to enhance the outcomes and cost-efficiency of public services (Parker and Gould, 1999; Marginson and van der Wende, 2007). This move from a normative conception of the role of governments to a market state model has put the quality issue to the forefront (de Wit and Verhoeven, 2004). Quality assurance has become a necessity for policy makers to demonstrate that public funds are spent effectively and that the public purposes for financing tertiary education are actually fulfilled (Alderman and Brown, 2007).

The increase in scale of tertiary education systems has also made central management of tertiary education institutions (TEIs) increasingly inappropriate, especially in light of the rise of NPM. Governments have stepped back and agreed to provide more autonomy to TEIs to enhance the reactivity of the system, but in exchange for effective quality assurance procedures designed to demonstrate a wise use of public funds (see Chapter 3 and Cavalli, 2007). Quality control has been seen as a complement to the remote steering of the system (Goedegebuure *et al.*, 1994; Vroeijenstijn, 1995a; van der Wende, 1999; Woodhouse, 1999).

Another consequence of the massification of tertiary education and the trend towards deregulation has been the appearance and/or the expansion of private providers, and the emergence of a growing diversity of educational offerings, including distance learning. These new forms of provision and the development of private TEIs – some of which operating for profit – have called for better protection of consumers, notably through quality assurance (El Khawas *et al.*, 1998). From the perspective of TEIs, quality provision also matters as a way to attract students and secure revenues in increasingly competitive environments. Marginson (2004) distinguishes in this respect the situation of 'elite' TEIs – whose prestige and appeal to prospective students derives from outstanding research performance and reputation – and 'intermediate' or 'second choice' TEIs which have to court students in more conventional ways and put more emphasis on the quality of teaching services.

The issue of quality in tertiary education has also been put under scrutiny from the perspective of its contribution to economic growth. The rise of the new economy in the 1990s has made research and innovation key to countries' competitive edge in the global economy. For instance, this awareness has been central to the Lisbon strategy which explicitly stresses the importance of excellence in research and development to turn the European Union into the most competitive and dynamic knowledge-driven economy by 2010 (European Council, 2000). Given the unique position of tertiary education in training knowledge workers, quality assurance has a role to play, in the Lisbon perspective, in signalling excellence. And in fact both students and employers compete for elite TEIs' places and graduates at the top end of the tertiary education sector, given the strong signal of status and quality attached to these degrees (Morley *et al.*, 2006; Geiger, 2004).

At the same time, ensuring quality in tertiary education beyond the elite segment is equally important from the perspective of employment and social cohesion. The emergence of mass unemployment in the 1970s due to technological change associated with the 1990s' shift towards the new economy have progressively made tertiary qualifications the baseline standard to work in knowledge-intensive sectors. This general upgrading of skill requirements has lifted students and employers' expectations of tertiary education and raised questions as to the ability of TEIs to produce graduates with the

relevant knowledge and skills to meet labour market needs (Van Vught and Westerheijden, 1994). Quality assurance is therefore an important tool to provide signals to the labour market on the skills and competencies held by graduates, to guarantee that certain minimum standards are met and to ensure that the qualification awarded is fit for its intended purposes. This is especially important for intermediate and/or new TEIs that cannot rely exclusively on their reputation and status as a signal mechanism – unlike older/elite institutions (Alderman and Brown, 2007).

The need for quality assurance has also become more pressing in the context of the growing internationalisation of tertiary education. The dramatic growth in international student mobility over the past three decades (OECD, 2007b) and the more recent surge in various forms of cross-border provision of tertiary education (OECD, 2004a) have raised questions of quality standards, reputation of cross-border TEIs and called for a closer monitoring of cross-border education quality (Van der Wende, 1999; El Khawas *et al.*, 1998).

The impact of internationalisation is not limited to aspects of consumer-protection. Indeed, internationalisation also takes the form of a growing convergence of tertiary education systems and degree structures, *e.g.* through the Bologna Process. The convergence of tertiary education programmes is also driven by the globalisation of professions and the impetus of some professional organisations to set common standards through global accreditation activities (Peace Lenn and Campos, 1997). Irrespective of the drivers and rationales of convergence, the trend towards similar systems of tertiary education yields common concerns across countries regarding the performance of their TEIs (Woodhouse, 1999).

Definition

Quality assurance can be broadly defined as the "process of establishing stakeholder confidence that provision (input, process and outcomes) fulfils expectations and measures up to threshold minimum requirements" (Harvey, 2004-2007).

This definition underlines the various aspects of quality assurance, which relate to inputs, processes and outcomes of tertiary education. But the process nature of quality assurance also bears a dynamic dimension whereby quality assurance not only seeks to ensure that minimum quality thresholds are reached at a point in time, but also aims at improving the quality of tertiary education provision over time. In this respect, quality assurance can also be described as a "systematic, structured and continuous attention to quality in terms of quality maintenance and improvement" (Vroeijenstijn, 1995a) and in more concrete terms the "policies, attitudes, actions and procedures necessary to ensure that quality is being maintained and enhanced" (Woodhouse, 1999). The concept of quality assurance is therefore complex insofar as it encompasses the multiple dimensions of inputs, processes and outcomes as well as the way these dimensions change over time.

Another complexity results from the diverse perceptions of quality itself. In abstract terms, quality can be defined as the distance between an objective and a result, with the implicit assumption that quality improves as this distance shrinks. Yet, this leaves scope for multiple interpretations depending on who sets the objectives and judges of their intrinsic value. In addition, the objectives themselves may vary depending on national needs – *e.g.* industrialised *vs.* developing economy – or types of TEIs being considered – *e.g.* elite research university or local TEI geared towards regional needs.

Watty (2003) identifies two schools of thought with respect to definitions of quality. The first attaches quality to a context, with references to the quality of assessment, student intake, academic programmes, teaching and learning, the student experience and programme designs (Baird, 1988; Fry, 1995; Nordvall and Braxton, 1996). The second way of thinking relates quality to a variety of stakeholders with an interest in tertiary education (Middlehurst, 1992; Harvey and Green, 1993). In this second approach, employers tend to see quality of tertiary education from the prism of the knowledge, skills and attributes obtained by tertiary graduates during the course of their studies. Students are more interested in the contribution of tertiary education to fulfilling their personal interests, fostering their individual development and preparing them for an effective participation in society. Academics see quality in relation to the effectiveness of knowledge transfer, the value of the learning environment and the level of interaction between teaching and research. Finally government authorities are more concerned with value for money and accountability towards taxpayers (Vroeijenstijn, 1995a).

These differences in perceptions of quality by different stakeholders are at the root of misunderstandings and conflicts between the different actors of quality assurance systems. Harvey and Green (1993) argue that the problem "is not a different perspective on the same things but different perspectives on different things with the same label". They have attempted to deconstruct the abstract concept of quality and to focus on its various dimensions in order to reconcile the different ways of thinking about quality. The result is a multi-dimensional matrix of quality focusing on five key aspects:

- *Exception*, where quality is defined in terms of excellence, passing a minimum set of standards;
- *Perfection*, with quality focusing on the process and aiming at zero-defect;
- *Fitness for purpose*, where quality relates to a purpose defined by the provider;
- *Value for money*, where quality focuses on efficiency and effectiveness by measuring outputs against inputs; and
- *Transformation*, where quality conveys the notion of a qualitative change that enhances and empowers the student.

In fact, Lomas (2001) finds on the basis of a small-scale survey that senior managers of TEIs tend to consider fitness for purpose and transformation as the two most appropriate definitions of quality whereas Gatfield *et al.* (1999) argue that the growing competition for fee-paying and international students in many countries has put more emphasis on consumers' perceptions of quality. In addition, Watty (2003) suggests removing the dimension of perfection on the grounds that higher education does not aim at producing defect-free graduates. Overall, Sachs (1994) condenses Harvey and Green's multiple views of quality into two broad types, namely:

- *Quality assurance for accountability*, characterised by external locus of control and associated with centralised administrative structures and external auditors measuring quantitative indicators of success; and
- *Quality improvement* characterised by an internal locus of control and associated with facilitative administrative structures which use peer review to assess more qualitative indicators of success.

5.1.2 Diversity of approaches to quality assurance

In practice, quality assurance activities take many forms and cover a wide spectrum of processes designed to monitor, maintain and enhance quality. These activities range from generic guidelines and guidance to internal processes of self-reviews and external reviews. Different approaches can be taken by quality assurance systems. These different approaches are not mutually exclusive, and quality assurance agencies/bodies can adopt one or more of these according to different educational systems and traditions (Woodhouse, 1999). Although terminologies used vary across countries, it can be considered that there are three main approaches to quality assurance besides the ongoing monitoring of the system.

Accreditation

An accreditation is the establishment of the status, legitimacy or appropriateness of an institution, programme or module of study. It is the result of an evaluation of whether a TEI, programme or module of study meets a threshold standard and qualifies for a certain status. The focus of accreditation is comprehensive, examining the mission, resources, and procedures of a TEI or programme (Dill, 2000). The output of an accreditation process is a yes/no decision, though graduations are also possible (Woodhouse, 1999). Obtaining accreditation may have implications for the TEI itself (*e.g.* permission to operate, access to public funding) and/or its students (*e.g.* eligibility for grants).

The subject of accreditation may include all existing TEIs and programmes, or be limited to new TEIs or programmes only[1].

Assessment (or evaluation)

An assessment is the process of evaluating the quality and appropriateness of the learning process, including teacher performance and pedagogic approach. It results in graded judgements about quality and in this respect goes beyond accreditation which only provides a binary judgement (Dill, 2000). Assessment asks 'how good are your outputs?' and the outcome is a quantitative evaluation, a grade (whether numeric, literal or descriptive with more qualitative insight) (Woodhouse, 1999).

This process of examining and passing a judgment on the appropriateness or level of quality is also often referred to as evaluation in some national contexts.

Audit (or review)

An audit, in the context of quality in tertiary education, is a process for checking that procedures are in place to assure quality, integrity or standards of provision and outcomes. A quality audit checks the extent to which an institution or programme is achieving its own explicit or implicit objectives, asking 'are your processes effective?' and the outcome is a description of the extent to which the claims of the TEI or programme are correct (Woodhouse, 1999). For instance, ISO (Standards New Zealand,

[1] In some countries, the process of creation of a new TEI and/or programme of study also involves a licensing process, *i.e.* a mandatory procedure resulting in the formal granting of permission to operate. Licensing usually takes place at the very initial stages of creation of the TEI or programme – before the first students graduate – and the process is intended to ensure quality control through compliance with minimum threshold standards, *e.g.* in terms of infrastructure and building facilities or staff qualifications.

1994) defines quality audit as a three-part process checking 1) the suitability of the planned quality procedures in relation to the stated objectives; 2) the conformity of the actual quality activities with the plans; and 3) the effectiveness of the activities in achieving the stated objectives.

Such explorations of quality that do not result in judgements or decisions are also referred to as reviews in some countries.

5.1.3 Ambivalence of purposes

To some extent, these different forms of quality assurance reflect different purposes. Indeed, Sachs (1994) has shown that broadly speaking, quality assurance procedures can serve two major purposes: accountability and improvement.

In the accountability perspective, a central aspect is that of 'rendering an account' about what one is doing in relation to goals that have been set or legitimate expectations that others may have of one's products, services or processes, in terms that can be understood by those who have a need or right to understand 'the account'. For this reason, accountability is usually linked to public information and to judgements about the fitness, the soundness or level of satisfaction achieved (Middlehurst and Woodhouse, 1995). This summative approach is the view prevailing from the perspective of governments, where quality assurance is seen as a way of providing an objective measurement of quality (*e.g.* through reaching a threshold on a selection of performance indicators) in order to demonstrate that public funds are spent effectively. Where the summative approach predominates, reports include explicit statements of outcomes and are published to inform the public of the performance of TEIs (Middlehurst and Woodhouse, 1995; Billing, 2004). Reflecting this emphasis, Stamoulas (2006) states that a basic objective of quality assurance is to safeguard the social interests in upholding the standards of higher education by publicly providing independently verified information – qualitative and quantitative – on programmes and TEIs.

In the improvement perspective, by contrast, a formative approach is privileged and the purpose of quality procedures is to promote future performance rather than make judgements on past achievements (Thune, 1996). Yet, definitions of what is regarded as improvement have changed and perspectives regarding the purpose and the focus of improvement can vary according to different stakeholders. But this approach prevails in the academic world, where quality assurance is seen as a means of improving the effectiveness of tertiary education delivery by allowing academic staff to revisit their approaches, methods and attitudes to teaching through an analysis of strengths and weaknesses and recommendations from peers. Where this approach is predominant, the reports are written for academic audience and the emphasis is on recommendations.

From the perspective of tertiary education systems as a whole, both purposes are essential. The difficulty lies in combining them in the design of the quality assurance framework and its implementation. A wide body of literature discusses the relationship between the accountability and improvement purposes of quality assurance and in particular whether they are compatible and whether a balance could be found between them and if so how this could be done. Vroeijenstijn (1995a) argues for instance that it is difficult for quality assurance to serve two or more masters, working on improvement for the faculty and on information supply and accountability for the outside world. The incompatibility between accountability and improvement is also often asserted on the ground that there is a conflict in terms of method between them (Thune, 1996). Several

authors argue by contrast that accountability and quality improvement may be combined in a balanced strategy. For instance Woodhouse (1999) claims that accountability and quality improvement are "so closely linked that it is more sensible to have the same agency sensitively attempting both than to try to separate them" and maintains that "accountability can always be re-phrased to focus on improvement".

And indeed, a deep conflict is embedded in current developments of quality assurance worldwide. On the one hand the emphasis is shifting in many countries from external control and regulation to greater responsibility by TEIs for their own quality monitoring, thereby leaving greater scope for internal mechanisms geared towards improvement. Meanwhile, changes in the governance of tertiary education and current trends towards remote steering of TEIs imply that effective accountability mechanisms be put in place (see Chapter 3). As a result, there is some ambivalence in the role and functions of quality assurance in addressing the two purposes of accountability and improvement.

The ambivalence of quality assurance also results from dual objectives of tertiary education systems themselves. On the one hand, the importance of tertiary education for employment and social cohesion implies to improve quality for all, in an improvement perspective. Meanwhile, the growing importance of innovation and technological advance for economic growth requires safeguarding the national competitive edge and entails to signal quality and identify champions. In Europe, the Bologna and Lisbon Processes reflect the co-existence of these dual objectives. While the Bologna Process emphasises comparability as a means towards the cross-recognition of qualifications and competences, in a democratisation and employability perspective, the Lisbon Strategy puts more emphasis on the search for excellence as a way to enhance the competitiveness of the *European Research Area* (European Council, 2000; Stamoulas, 2006). Quality assurance systems thus have to find ways of addressing both goals.

5.2 Current practices in tertiary quality assurance systems

All countries taking part in the Review have put in place quality assurance mechanisms in some form. However, the dual requirement of accountability and improvement and the ambivalence of purposes are tackled quite differently across countries. This section therefore describes current practices in terms of the approaches chosen, the key agencies and organisations of stakeholders involved, the methods and instruments used and the outcomes of quality assurance processes.

5.2.1 Approaches to quality assurance

The scope of quality assurance varies a great deal across countries. Not only have countries adopted different approaches to quality assurance, but these approaches also differ with respect to the institution or programme focus of the quality review, its territorial coverage and the types of TEIs encompassed, as well as the frequency and initiation of quality assurance procedures.

Typology of quality assurance systems

The dual requirement of accountability and improvement is tackled through the recourse to three main approaches to quality assurance, namely accreditation, assessment and/or audit. Table 5.1 summarises the key features of each approach in terms of the questions

being asked to the TEI, programme or module of study under scrutiny, the emphasis of the quality investigation and the type of outcomes it produces.

Table 5.1 Typology of quality assurance approaches

Activity	Question	Emphasis	Outcomes
Accreditation	Are you good enough to be approved?	Comprehensive (mission, resources, processes)	Yes/No or Pass/Fail decision
Assessment (Evaluation)	How good are your outputs?	Outputs	Grade (including Pass/Fail)
Audit (Review)	Are you achieving your own objectives? Are your processes effective?	Processes	Description, qualitative

Source: Based on Woodhouse (1999).

To some extent, accreditation mechanisms appear well-suited to serve accountability objectives due to their essentially external locus of control, the graded judgements they produce and the possibility they give to set a pass mark reflecting minimum quality standards to be met. By contrast, the more qualitative outcomes of audit procedures, their emphasis on processes rather than outcomes and their greater internal locus of control make this approach more compatible with improvement-driven objectives. Assessment mechanisms lie between these two approaches, with graded judgements and an emphasis on outcomes which make them suitable for quality signalling – in an accountability perspective – while at the same time leaving scope for improvement recommendations.

Although the reality is certainly not as clear-cut as these conceptual models suggest, the approaches chosen by the countries participating in the Review suggest that accountability-driven approaches dominate, even though a number of countries have adopted mixed systems in which audit mechanisms complement accreditation or assessment processes (Table 5.2).

The United Kingdom is the only tertiary education system where quality assurance follows a predominantly improvement-driven approach for all types of TEIs. It should be noted however that this approach has been developed after a series of external subject reviews over the period 1992-2000 and the quality assurance framework allows for *ad-hoc* subject reviews should the need arise. In addition, accountability is addressed indirectly through the granting of university title and corresponding degree-awarding powers as well as through the publication of standardised performance data to assist student choice (Box 5.4).

The improvement function is however present in other systems. Quality improvement approaches are often found in association with accountability-driven mechanisms, essentially in countries of the Asia-Pacific region (Australia, China, Japan and New Zealand), the Nordic European countries (Finland, Iceland, Norway and Sweden) and a few European systems (Czech Republic and in Portugal and a few Spanish regions where the arrangements are currently under discussion).

Table 5.2 **Quality assurance of teaching and learning, 2007**

	Approaches used in quality assurance	Initiation of the quality assurance procedure	Entity carrying out the quality assurance activities	Rationale for having more than one quality assurance agency (whenever this is the case)	Differentiation of monitoring criteria according to the type of provision	Actors involved in external monitoring panels	Publication of the report from the quality assurance procedure	Formal follow-up process by the quality assurance agency after the initial procedure	Link between assessment results and public funding decisions
Australia[1]	**Accreditation** (TEIs and programmes)	Mandatory (when new TEI is established for universities); Mandatory periodic (for new and existing private TEIs and programmes[2])	Government authorities (9); Intermediate agency (1)	Separate accreditation agencies for different jurisdictions (State, Territory and Federal Government); approaches; types of TEIs	No differentiation	Domestic and foreign academics, employers' representatives	No (private TEIs); Yes (all cases for universities)	Yes (some cases: conditions attached to the accreditation)	*a*
	Audit (TEIs)	Mandatory periodic (every 5 years)					Yes (all cases)	Yes (some cases: recommendations for improvement)	
Belgium (Flemish Community)	**Accreditation**[3] (programmes)	Mandatory periodic (every 8 years)	Intermediate agencies (3)	Separate agencies for different types of TEIs; pyramidal structure[4]	Type of study programme (professional *vs.* academic)	Domestic and foreign academics, students, employers' representatives, stakeholders from professional bodies	Yes (all cases)	No	*a*
Chile	**Accreditation** (TEIs and programmes)	Voluntary; Mandatory non periodic (for medicine and teachers' education)	Intermediate agencies (more than 4)	Separate agencies for different disciplines, level of study, pyramidal structure[5]	Type of TEI (university *vs.* non university)	Domestic and foreign academics, stakeholders from productive sector, professional societies and associations of Deans	Yes (all cases)	Yes (all cases)	*a*
China	**Accreditation** (TEIs and programmes)	Mandatory periodic (every 5 years)	Government authorities (*m*); Intermediate agencies (*m*)	Separate agencies for different approaches; disciplines	No differentiation	Domestic academics, graduates	Yes (all cases)	No	Direct link (*m*)
	Assessment (programmes)	Mandatory periodic (every 5 years)					Yes (all cases)	Yes (some cases: negative evaluations)	
	Audit (TEIs)	Mandatory non periodic					Yes (positive results only)	No	
Croatia	**Accreditation** (TEIs and programmes)	Mandatory periodic (every 4-5 years)	Intermediate agency (1)	*a*	No differentiation	Domestic and foreign academics, students, employers' representatives, accreditation agency representative	Yes (all cases)	Yes (all cases)	*a*
Czech Republic	**Accreditation** (programmes[6])	Mandatory periodic (at least twice the standard length of programme, at least every ten years for PhD programmes)	Intermediate agencies (2)	Separate agencies for different types of TEIs	Type of TEI, discipline	Domestic and foreign academics (in some cases: employers' representatives, students, regional authorities)	Yes (all cases)	Yes (all cases)	*a*
	Audit (TEIs)	Initiative of the intermediate agency (for higher education institutions); Voluntary (for tertiary professional schools)					Yes (all cases)	Yes (some cases: depending on findings)	
Estonia	**Accreditation** (TEIs and programmes)	Voluntary[7]	Intermediate agency (1)	*a*	Type of programme (professional *vs.* academic)	Foreign academics, students (in some cases: employers' representatives)	Yes (all cases)	No	*a*
Finland	**Assessment** (TEIs, the output is a development target rather than a grade)	Mandatory non periodic	Intermediate agency (1)	*a*	No differentiation	Domestic and foreign academics, students, graduates (in some cases: employers' representatives)	Yes (all cases)	Yes (all cases)	No direct link
	Audit (TEIs and programmes)	Voluntary[8]					Yes (all cases)	Yes (some cases: negative evaluations)	
Greece[9]	**Accreditation** (TEIs and programmes)	Mandatory periodic (at least every 4 years)	Intermediate agency (1)	*a*	No differentiation	Domestic academics, researchers, students, stakeholders from a professional or scientific organisation	Yes (all cases)	No	*a*
Iceland	**Accreditation** (TEIs and disciplines)	Mandatory (when new TEI or discipline[10] is established)	Independent agent (assigned by the Ministry of Education)	*a*	No differentiation	Domestic and foreign academics, students, employers' representatives	Yes (all cases)	Yes (all cases)	*a*
	Audit (faculties)	Mandatory periodic (every 3 years)					Yes (all cases)	Yes (all cases)	
Japan	**Accreditation** (TEIs)	Mandatory periodic (every 7 years[11])	Government authorities (1); Intermediate agencies (7)	Separate agencies for different approaches, types of TEIs, disciplines, pyramidal structure	Type of TEI, discipline	Domestic and foreign academics, stakeholders from industrial world	Yes (all cases)	No	*a*
	Audit (TEIs, only national university corporations)	Mandatory periodic (every 6 years for teaching and learning, every year for management)					Yes (all cases)	Yes (all cases)	
Korea	**Accreditation** (TEIs and programmes)	Voluntary	Government authorities (1); Professional agencies for some programmes (8)	Separate agencies for different types of TEIs (2 years *vs.* 4 years), disciplines	Type of TEI, discipline	Domestic academics and employers' representatives	Yes (but not all detailed information)	No	No direct link
Mexico	**Accreditation** (private TEIs and programmes)	Voluntary (for private TEIs and programmes); As a result of a complaint (for programmes)	Intermediate agencies (33)	Separate agencies for public and private TEIs, disciplines	Type of TEI, discipline, level of study	Domestic academics	Yes (positive results only for TEIs); No (for programmes)	No	Direct link (10%, public state universities only)
	Assessment (programmes)	Voluntary					No	No	
Netherlands	**Accreditation** (programmes)	Mandatory periodic (every 6 years)	Government authority (1); Intermediate agencies[12] (3)	Separate agencies for different types of TEIs, pyramidal structure, stages of accreditation procedure	At the discretion of quality assurance agencies in accordance with the accreditation framework	Domestic and foreign academics, student, employers' representatives	Yes (all cases)	Yes (some cases: negative evaluations)	No direct link
New Zealand	**Accreditation** (programmes)	Mandatory (when new TEI or programme is established)	Government authorities (2); Intermediate agencies (3)	Separate agencies for different types of TEIs[14]	No differentiation	Domestic and foreign academics, employer/professional's representatives[15]	Yes (positive results only)	Yes (all cases)	*a*
	Audit (TEIs)	Mandatory periodic[13]					No (results made public but not necessarily the reports)	Yes (all cases)	
Norway	**Accreditation** (TEIs and programmes)	Mandatory (when new TEI is established or changes of category; when new programme is established for non university TEIs)[16]	Intermediate agency (1)	*a*	No differentiation[17]	Domestic and foreign academics (in most cases: from another Nordic country for linguistic reasons), students	Yes (all cases)	Yes (some cases: negative evaluations)	No direct link
	Assessment (programmes and disciplines, results are expressed in general terms rather than in a grade)	Mandatory non periodic					Yes (all cases)	Yes (some cases: negative evaluations)	
	Audit (TEIs)	Mandatory periodic (every 6 years)					Yes (all cases)	Yes (some cases: negative evaluations)	

Table 5.2 **Quality assurance of teaching and learning, 2007** (continued)

	Approaches used in quality assurance	Initiation of the quality assurance procedure	Entity carrying out the quality assurance activities	Rationale for having more than one quality assurance agency (whenever this is the case)	Differentiation of monitoring criteria according to the type of provision	Actors involved in external monitoring panels	Publication of the report from the quality assurance procedure	Formal follow-up process by the quality assurance agency after the initial procedure	Link between assessment results and public funding decisions
Poland	**Accreditation** (programmes)	Mandatory (when new TEI or programme[18] is established)	Intermediate agency (1); Sectoral agencies (6)	Separate agencies for different types of TEIs (sectoral agencies)	No differentiation	Domestic academics, students (in some cases: foreign academics and employers' representatives)	Yes (all cases)	No	No direct link
	Assessment (programmes)	Mandatory periodic (every 5 years); Voluntary (carried out by sectoral agencies); As a result of a complaint					Yes (all cases)	Yes (some cases: negative evaluations)	
Portugal[19]	**Accreditation** (*TEIs and programmes*)	Mandatory (when new TEI or programme is established)	Intermediate agency (1)	*a*	No differentiation	Until 2006: Domestic academics (in some cases: foreign academics and employers' representatives); From 2007: Foreign academics and stakeholders	(*m*)	*a*	Direct link (*m*)
	Assessment (programmes)	Mandatory non periodic					Yes (all cases)	No	
	Audit (*m*)	(*m*)					(*m*)	(*m*)	
Russian Federation	**Accreditation** (TEIs and programmes)	Mandatory periodic (every 5 years)	Government authorities (1); Intermediate agencies (1)	Separate agencies for different types and stages of accreditation procedure	Type of TEI	Domestic and foreign academics, students, employers' representatives, stakeholders from the Ministry and Rectors	Yes (positive results only)	Yes (all cases)	*a*
Spain[1]	**Accreditation** (programmes, not started yet)	Mandatory periodic (every 6 years)	Intermediate agencies (*m*)	Separate agencies for different jurisdictions (regions)	No differentiation	Domestic and foreign academics, employers' representatives	Yes (all cases)	*m*	No direct link
	Assessment (*m*)	Voluntary					Yes (all cases)	Yes (all cases)	
	Audit (*m*, in some regions, not started yet)	Voluntary					Yes (all cases)	*m*	
Sweden	**Accreditation** (programmes and disciplines)	Mandatory (when new programme is established[20])	Intermediate agency (1)	*a*	No differentiation	Domestic and foreign academics, students (in some cases: employers' representatives)	Yes (all cases)	Yes (all cases)	No direct link
	Assessment (programmes)	Mandatory periodic (every 6 years)					Yes (all cases)	Yes (all cases)	
	Audit (TEIs)	Mandatory periodic (every 6 years)					Yes (all cases)	Yes (all cases)	
Switzerland	**Accreditation** (TEIs and programmes)	Voluntary (for universities); Mandatory periodic (7 years for universities of applied sciences); Mandatory non periodic (when new college of higher VET is established)	Government authorities (2); Intermediate agencies (*m*)	Separate agencies for different types of TEIs	Type of TEI	Domestic and foreign academics, students and employers' representatives	Yes (positive results only)	Yes (some cases: negative evaluations)	No direct link
United Kingdom	**Audit** (TEIs)[21]	Mandatory periodic (every 6 years for Eng.,Wal. and N.Irl.); Mandatory periodic (every 4 years for Scot.)	Intermediate agency (1)	*a*	No differentiation	Domestic academics (for Eng.,Wal. and N.Irl.) Domestic academics, students (for Scot.)	Yes (all cases)	Yes (all cases)	*a*

Definitions: This table deals with the formal external procedures used to assure the quality of teaching and learning in public and private tertiary education institutions at the under-graduate level (ISCED level 5). Quality assurance of research activities in tertiary education is excluded from this table.
Quality assurance refers to systematic, structured and continuous attention to quality. In this table, three main approaches of quality assurance are distinguished, namely: accreditation, assessment and audit.
Accreditation refers to a quality assurance procedure which monitors the quality of teaching and learning and results in a decision as to whether a tertiary education institution or programme meets a threshold standard. The output is a yes/no decision.
Assessment refers to a quality assurance procedure which monitors the quality of teaching and learning and results in a graded judgment about the quality of a tertiary education institution or programme. The output is a grade (*e.g.* 'poor – excellent', '1 – 5'). Assessment is also frequently called evaluation.
Audit refers to a quality assurance procedure that focuses more on the internal mechanisms adopted by a tertiary education institution to monitor and improve its teaching and learning quality, rather than the direct monitoring of this quality. It also checks the extent to which the institution is achieving its own explicit or implicit objectives.
Mandatory refers to a legal obligation to undertake the quality assurance procedure.
Periodic refers to a system where the procedure is repeated at regular intervals.
External monitoring panel refers to a group of people external to the programme or institution being reviewed (*i.e.* non staff members), invited by the quality assurance agency to undertake the quality monitoring.
Follow-up refers to a process that reviews the actions taken by the tertiary education institution or programme monitored in light of any recommendations contained in the report.
Direct link refers to systems where the results of the quality assessment are included in funding formulas. Where such link exists, the percentage of the annual budget of the institution or programme that typically depends on quality results is indicated in parentheses.
No direct link refers to cases where the results of the quality assessment are not directly connected to funding decisions. Situations where assessment results are used in project-based funding allocation, in negotiations of block grants, or where continuing poor performance leads to funding being stopped should be considered as no direct link.

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. Once established Australian universities are autonomous institutions with responsibility for the quality assurance of new programmes.
3. The quality assurance process consists of three major steps: internal quality assurance resulting in a self-evaluation report, an external quality review resulting in a public report and the accreditation.
4. There is only one accreditation intermediate agency and two quality assurance agencies which carry out the external quality reviews. The accreditation decision is based on the reports produced by the external quality review teams.
5. The central agency (*i.e.* National Accreditation Agency, CNA) carries out the accreditation activities for TEIs and some programmes (*i.e.* only for undergraduate medicine, teacher training and Ph.D. programmes). Private agencies validated by the central agency are responsible for the accreditation of other programmes.
6. Only for higher education institutions, programme accreditation is not fully implemented for tertiary professional schools .
7. The interval usually observed in practice is 7 years since accreditation is required to receive public funds and diploma recognition. The Ministry of Education and Research and the Higher Education Quality Assessment Council can initiate accreditation procedure when required.
8. In practice, all TEIs participate in the national audit activity conducted by the Higher Education Evaluation Council.
9. The new provisions for the quality assurance of teaching and learning adopted in July 2005 are not yet implemented due to ongoing debate about the legal reform of the present framework. Under the new framework, external evaluation is conducted by the External Evaluation Committee nominated by the Independent Administrative Agency (ADIP) which is funded and approved by the government. The Agency was to be set up in May 2005 and the legislation on its composition has already been approved.
10. However, all TEIs must apply before July 2008 to be accredited in each discipline.
11. Accreditation procedure is initiated by the government authority at the establishment of a new TEI and then certified evaluation is carried out every 7 years by intermediate agencies.
12. Accreditation by the independent supranational agency (government authority) is required at the establishment of a new programme. Existing programmes are accredited based on a 3-step procedure: 1) internal evaluation, 2) external peer-review by independent bodies 3) accreditation by supranational agency.
13. Audit cycles vary and can differ according to the sector, the length of time a TEI has been in operation, and the nature of its operation (including any significant changes made).
14. The New Zealand Vice-Chancellors' Committee has responsibility for universities while the New Zealand Qualifications Authority has responsibility for all other TEIs and delegates most quality assurance of polytechnics to the Institutes of Technology and Polytechnics Quality agency.
15. Students are typically consulted by panels.
16. Except disciplines for which the TEI has a right to award PhDs.
17. Accreditation is voluntary for private TEIs. A preference for accreditation by study programme is usually observed in practice.
18. Accreditation is mandatory at the establishment of new programmes for those public TEIs that are not authorised to confer the doctor degree in at least 4 disciplines.
19. Portugal has just established a new legal framework for quality assurance which has not been implemented yet.
20. Mandatory only at the establishment of new master programmes at university colleges or professional programmes at universities or university colleges. Accreditation is required to change the status of university colleges to full or partial university status.
21. Monitoring principally comprises peer-review based audits and reviews of TEIs, with the opportunity for subject-based review as the need arises.

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.

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.

By contrast, a number of countries have adopted essentially accountability-driven approaches to quality assurance – through the use of accreditation and assessment mechanisms. This is the case in Latin America (Chile and Mexico), Korea, Eastern European countries (Croatia, Estonia, Poland and the Russian Federation) and in the rest of mainland Europe (Belgium Fl. community, France, Greece, the Netherlands and Switzerland).

Countries with more accountability-driven approaches – either alone or associated with improvement-driven mechanisms – differ in the processes followed to assure that minimum standards are met.

Accreditation processes

The vast majority of countries use some form of accreditation process: this is the case of Australia, Belgium (Fl. community), Chile, China, Croatia, the Czech Republic, Estonia, France, Greece, Iceland, Japan, Korea, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Russian Federation, Spain, Sweden and Switzerland (Table 5.2).

But while accreditation applies uniformly to existing and new TEIs/programmes alike in some countries, it is limited to new TEIs and/or programmes in Australia[2], Iceland, New Zealand[3], Norway, Poland[4], Portugal, Sweden and Switzerland where it only applies to new colleges of higher vocational education and training.

A number of countries also have different accreditation requirements depending on the type of TEI delivering the programme considered. In some countries, certain TEIs are exempted from the obligation to get their courses and programmes accredited. In Norway for instance, a TEI accredited as a university is given the right to establish all types of study programmes including those at doctoral level. A similar situation is found in Australia and the United Kingdom for universities, in Mexico for autonomous TEIs and in Sweden for public TEIs. In other countries, accreditation of TEIs and/or their programmes is generally mandatory for all TEIs irrespective of their type/status. The only exceptions are Chile, Estonia[5], Korea, Mexico and Switzerland where accreditation is voluntary with the exception of vocational tertiary programmes in Switzerland, some disciplines in Chile (medicine and teacher training) or in the event of a complaint in Estonia and Mexico.

Accreditation is typically required for TEIs to be allowed to operate and/or offer a programme. In Australia, Belgium (Fl. community), Iceland, Korea, New Zealand and the Russian Federation for instance, registers of approved TEIs and quality-assured

2 In Australia, accreditation is limited to new universities but applies periodically to new and existing private TEIs and their programmes. The revised national protocols will apply to both existing and new TEIs from 2008.

3 The approval process for new private TEIs and new programmes involves some follow-up reviews through a 'graduating year review' whereby the TEI must report to the quality assurance body on a number of indicators after the initial cohort of students has completed the programme. Once that review has been completed, however, there is no systematic subsequent external review.

4 Similar to New Zealand, new programmes undergo an evaluation after the first diplomas have been issued.

5 Although accreditation is voluntary, it is required for diploma recognition and to receive public funds.

qualifications are maintained. Permission to operate is also conditional upon accreditation of the TEI and/or programme in the Czech Republic, Estonia[6], the Netherlands and Poland. By contrast, the results of accreditation processes are dissociated from permission to operate in Mexico.

Accreditation is also a prerequisite for TEIs to receive public funds in most countries where it is mandatory, but also in Estonia where it is voluntary. By contrast, the results of accreditation processes are dissociated from funding in Korea and Mexico.

Assessment processes

Quality assessment approaches are used in China, Finland, France, Mexico, Norway, Poland, Portugal, Spain and Sweden – in association with accreditation mechanisms in all cases but Finland (Table 5.2).

In Norway, Poland, Portugal and Sweden, the recourse to assessments allows countries to meet the ongoing need for accountability despite the fact that accreditation is only required at the establishment of new TEIs and/or programmes. Subsequent quality assurance mechanisms therefore take the form of mandatory assessment, on an *ad-hoc* basis in Norway and Portugal (*e.g.* subject reviews) and on a periodic basis in Poland and Sweden.

Mandatory assessments also take place in China on a periodic basis and in Finland on an *ad-hoc* basis. In Mexico and Spain by contrast, quality assessments are carried out on a voluntary basis. In the case of Spain, ongoing accountability objectives are nevertheless met given that periodic accreditation of programmes is to become mandatory.

Audit processes

A number of countries have also adopted more improvement-driven processes in the form of quality audits. Australia, China, the Czech Republic, Finland, Iceland, New Zealand, Norway, Portugal, Sweden and the United Kingdom have such audit mechanisms in place, as well as Japan for national university corporations and Spain in some regions (Table 5.2).

Processes of internal self review and quality monitoring

Finally, the quality enhancement function is sometimes addressed through legislative provisions requiring TEIs to put in place internal quality assurance mechanisms and to engage in internal quality evaluations. This approach is followed by Belgium (Fl. community), the Czech Republic, Finland, Iceland, Japan, New Zealand and Poland. In the Czech Republic TEIs are requested to publish the results of these internal quality evaluations as an incentive for them to focus on quality enhancement.

In some cases, external audits of these internal quality assurance procedures take place. This is for instance the case in Australia, Norway and the United Kingdom where universities – as self-accrediting TEIs – are responsible for ensuring the quality of their own academic standards and external quality assurance mechanisms hence audit their procedures for doing so.

6 Accreditation is voluntary but once it is required, the TEI must cease operations and/or terminate the programme if accreditation is denied.

As the above typology illustrates, the two objectives of accountability and quality improvement are not necessarily mutually exclusive. There is indeed a degree of accountability in approaches relying primarily upon audit mechanisms – as illustrated by the United Kingdom – while by contrast the improvement function is generally covered in a way or another in countries operating accountability-driven processes. Not only do a number of countries implement dual approaches, but in Korea where the quality assurance approach is based on accreditation mechanisms only, the improvement function of quality assurance processes has long been achieved by limiting access to detailed evaluation results to the sole administrators of TEIs while the public was only told whether the TEI/department was accredited or not. The publication of evaluation results is also limited in Mexico. Such provisions allow evaluations to serve as a self-diagnosis and reference tool for TEIs.

Overall, countries participating in the Review display a wide range of approaches to quality assurance. Not only do arrangements differ across countries, but the approaches followed have also evolved over time. Several countries have recently seen the focus of their quality assurance arrangements evolve towards greater accountability. This is for instance the case in the Netherlands and Spain where quality assurance arrangements have moved towards a system of accreditation. Likewise, the focus of Australian quality assurance has moved over the past decade beyond self-monitoring by TEIs to include the improvement of efficiency and effectiveness with a heightened awareness of public accountability and benchmarking. In general, this shift has been justified by the significant level of taxpayer investment in tertiary education and the need to ensure that public funds are spent wisely in a new environment of partial deregulation and greater diversity of tertiary education providers.

In the meantime, a number of countries have also moved from inspection and control to strengthen the improvement function of their quality assurance systems. This is for instance the case of Portugal where audit mechanisms have been introduced in 2006/2007 or the Netherlands where the criteria for accreditation include an obligation for each programme to strive for constant improvement. In Sweden, the new cycle of evaluations that started in late 2007 is placing greater emphasis on internal systems of quality monitoring than in the past. A number of countries also require TEIs to establish internal quality assurance mechanisms by law with a view to reinforce the improvement function of quality assurance. Belgium (Fl. community) is an example of this approach.

Level of quality evaluation

The level of quality evaluations varies from one quality assurance system to another. In general, quality is addressed either at the institutional or at the discipline/programme level. Subject to wide debate is whether quality evaluations should focus on TEIs (horizontal focus) or instead on departments and academic programmes within TEIs. According to Vroeijenstijn (1995), institution-wide evaluations have the advantage of requiring fewer experts and being less time-consuming, hence less expensive. However, this comes at a cost since the limited involvement of experts at grass-roots level limits the scope for recommendations on curriculum improvement. Conversely, programme-wide approaches allow going into more depth and detail, involving more specialised experts and individual staff members and may yield more useful recommendations for improvement but they are more time-consuming and expensive.

Practices vary widely with respect to the level of quality appraisal among countries participating in the Review (Kis, 2005). The situation is further complicated by variations

within countries in the level of quality evaluation depending on the type of quality assurance approach used and the type of TEI being considered. It is therefore useful to develop a taxonomy of quality assurance approaches according to these variables in order to summarise the key features of the various quality assurance systems (Table 5.3).

Table 5.3 Taxonomy of quality assurance approaches

	EMPHASIS OF QUALITY ASSURANCE Accountability-driven ⟷ Improvement-driven		
	Accreditation mechanisms	**Assessment mechanisms**	**Audit mechanisms**
FOCUS OF QUALITY REVIEW **Comprehensive** **Both Institution and Discipline/Programme**	Australia (Priv) Chile China Croatia Estonia France Greece (not started yet) Iceland Korea Mexico (Priv) New Zealand (Priv) Norway (Voc, Priv) Portugal[1] (focus to be determined) Russian Federation Switzerland	Finland France	Australia (Voc) Finland
Discipline/Programme only	Australia (Voc) Belgium (Fl. community) Czech Republic (Uni, Priv) Netherlands New Zealand Poland Spain Sweden[2] (Voc, Priv)	China Mexico Norway Poland Portugal Sweden United Kingdom[3]	
Institution only	Japan		Australia (Uni) China Czech Republic Japan (Uni[4]) New Zealand Norway Sweden United Kingdom
Other **Specific**		Spain: staff, library facilities	Iceland: faculties Portugal (focus to be determined) Spain (some regions, not started yet)

Notes: Whenever an approach applies only to a specific type of TEIs, this is indicated in parentheses. Abbreviations are used in reference to universities (Uni), vocational TEIs (Voc) and private TEIs (Priv).

1. Portugal has just established a new legal framework for quality assurance. Some aspects are still to be determined.

2. For master level and professional degrees.

3. Subject reviews as the need arises.

4. Only for national university corporations.

Sources: Derived from information supplied by countries in Table 5.2, country background reports, country notes and Kis (2005).

This analysis shows that disciplines and/or programmes tend to be the focus of quality assurance processes with greater emphasis on accountability objectives, with the notable exception of Japan where TEIs are the sole focus of attention. A number of countries also have accountability-driven mechanisms focused on TEIs as well as their disciplines/programmes. By contrast, quality assurance mechanisms that are more geared towards improvement tend to focus more on TEIs, with the exception of Australia (for vocational TEIs), Finland and Iceland. In general, institutional evaluations focus more on

administrative processes while department and programme evaluations put more emphasis on the educational quality of programmes in each field of study.

With respect to accreditation mechanisms, emphasis is placed on the sole disciplines and/or programmes in Australia (vocational programmes), Belgium (Fl. community), the Czech Republic (although not fully implemented for programmes offered by vocational TEIs), the Netherlands, New Zealand, Poland, Spain and Sweden (for programmes offered by vocational and private TEIs). The accreditation of programmes also takes place – in association with TEI accreditation – in Australia, Mexico and New Zealand for private providers and in Norway for vocational and private TEIs. A number of countries have adopted mixed approaches relying on the accreditation of TEIs as well as departments and/or programmes within them. For instance, Korea carries out quality evaluations of both departments – on a rolling basis with eight disciplines examined each year throughout the country – and comprehensive evaluations of TEIs. Chile, China, Croatia, Estonia, France, Greece[7], Iceland, Portugal, the Russian Federation and Switzerland have similar accreditation processes at both institutional and programme level.

The emphasis of assessment processes is also geared at disciplines and/or programmes in most countries where they exist. China, Mexico, Norway, Poland, Portugal and Sweden have such mechanisms in place, whereas Finland and France are the only countries to carry out assessments at both institutional and programme level.

By contrast, audit mechanisms tend to put more emphasis on TEIs, as illustrated by Australia, China, the Czech Republic, Japan (for national university corporations), New Zealand, Norway, Sweden and the United Kingdom. Quality audits are performed at both institutional and programme level in Australia (for vocational TEIs) and Finland.

With respect to trends, El Khawas *et al.* (1998) indicates that many countries have begun with institutional evaluations but have shifted the emphasis of their quality assurance systems towards programme-wide approaches as their systems experienced growth in professional fields of study. Such a trend is for instance taking place in Croatia, the Russian Federation and Spain. By contrast, Australia and the United Kingdom moved in the 1990s from a discipline to a whole-of-institution approach to quality evaluations. Some form of accreditation mechanisms at programme-level remains, however, as part of the licensing processes performed by the regulatory bodies of some professions (*e.g.* lawyers, medical practitioners, engineers *etc.*).

Scope of quality evaluation

The scope of quality assurance also varies considerably between and within countries. A first categorisation can be made according to the territorial level of organisation of the quality assurance system, *i.e.* territorial, national or even supranational in a few instances. In addition, a second categorisation relates to the differentiation of the quality assurance mechanisms according to the type of TEI considered, *i.e.* between universities and vocational TEIs as well as between public and private TEIs.

7 Although the provisions for accreditation have been adopted, they are not yet implemented.

Territorial scope

Quality assurance agencies may carry out evaluations of TEIs and/or their programmes in a determined territorial jurisdiction, as it is the case in some countries where responsibility for tertiary education lies with state/provincial entities. In other countries, by contrast, national quality assurance agencies operate over the entire national territory. Yet a few countries have adopted various mechanisms allowing international quality assurance bodies to operate on the national territory, thereby resulting in what could be called a supranational organisation of quality assurance.

In the large majority of countries participating in the Review, quality assurance agencies operate on a nation-wide basis. The national organisation of quality assurance usually follows the national organisation of the tertiary education system itself, and is often justified on the grounds that similar standards need to be met across the national territory. France, Iceland, Japan, Korea, Mexico, New Zealand, Norway, Poland, Portugal, Sweden and Switzerland can be said to have a national quality assurance framework.

The organisation of quality assurance is also essentially national in scope, but with some supranational elements in the Czech Republic, Estonia, Finland and the Netherlands. Indeed, some studies report on the feasibility of cross-border transfer of quality assurance systems (Billing and Thomas, 2000). In the Czech Republic, Estonia and Finland, TEIs are in principle authorised to use the services of any authorised international quality assurance agency for external evaluation – *e.g.* one included in the *European Quality Assurance Register of Higher Education*. There is evidence that a number of Czech TEIs' evaluations are carried out by the *European University Association* (EUA) or American accreditation agencies for faculties of medicine. In Estonia, however, Tornusk (1997) reports resistance by academic communities to implement imported quality assurance procedures. But the most accomplished expression of a supranational organisation of quality assurance is found in Belgium (Fl. community) and the Netherlands where a joint accreditation body shared between the two systems is responsible for the accreditation of all bachelors and masters programmes (Box 5.1). In Europe, the establishment of the *European Quality Assurance Register in Higher Education* (EQAR) as of March 2008 is likely to change this picture in the years to come, by providing greater scope for supranational quality assurance activities wherever national arrangements permit.

Lastly, a number of countries can be said to have a territorial organisation of their quality assurance system, even though some quality assurance activities and standards apply at national level. This is the case of Australia, Belgium (between communities), China, the Russian Federation, Spain and the United Kingdom. In Australia for instance, quality audits are performed by an agency that operates across the national territory while the establishment of universities and the accreditation of non-self-accrediting TEIs is essentially the responsibility of states and territories. In China, the distinction lies between universities – for which quality assurance is monitored at national level – and vocational TEIs where individual provinces are in charge of quality assurance activities. The situation of the United Kingdom is atypical to the extent that a single quality assurance agency operates different procedures in the different countries, albeit with a common understanding of principles, values and academic standards. Belgium is also peculiar as its tertiary quality assurance system organisational features are both territorial – with different quality assurance systems between the Flemish and French communities – and supranational as a result of the joint accreditation body with the Netherlands.

Box 5.1. The joint accreditation organisation of the Netherlands and Belgium (Fl. community)

The Accreditation Organisation of Belgium (Fl. community) and the Netherlands (NVAO) is a joint accrediting body with responsibility for the accreditation of all bachelors and masters programmes from publicly-funded and private TEIs wishing to offer degree programmes in the Netherlands and Belgium (Fl. community). The NVAO (www.nvao.net) is an independent body financed by the Netherlands and Belgium (Fl. community) in proportions of 60 and 40% respectively.

The idea was started in 2000 when the Netherlands and Belgium (Fl. community) expressed their intention to establish a joint accreditation organisation. Both parties were endeavouring to implement the Bologna Declaration and regarded a well-functioning and internationally acceptable accreditation system as a precondition for furthering international comparability of their tertiary education programmes. This bi-national accreditation organisation was formally established in 2003 by the Dutch and Flemish ministers and started its operations in 2005.

In the Netherlands, the NVAO accredits existing study programmes, validates new study programmes and advises on the possible lengthening of master's degree courses in university education. In Belgium (Fl. community), the operation of NVAO grants accreditation and carries out the validations of all new study programmes.

Type of TEI

A second categorisation relates to the quality assurance processes applicable to different categories of TEIs. In some countries all TEIs undergo the same quality assurance procedures. This model applies uniform standards, criteria and procedures throughout the system and is known as 'one-size-fits-all' approach. Its main advantage lies in the possibility of learning within the system as quality assurance agencies have more opportunities to identify and spread good practice and innovation across organisational borders. In a number of countries however, the monitoring criteria are differentiated across sectors – usually for universities and vocational TEIs – or disciplines. Some countries also have different quality assurance agencies/bodies responsible for different types of TEIs. In both cases a further distinction can be made between public and private TEIs (Van Damme *et al.*, 2004).

A number of participants in the Review have different quality monitoring criteria for different categories of TEIs. This pattern is found in Australia (for accreditations), Chile, the Czech Republic, Japan, Korea, Mexico, the Netherlands[8], the Russian Federation and Switzerland. In Belgium (Fl. community) and Estonia, the quality monitoring criteria are also differentiated between academic and professional programmes. By contrast, there is no differentiation of monitoring criteria between different categories of TEIs – *i.e.* both universities and vocational TEIs – in China, Croatia, Finland, Greece, Iceland, New Zealand, Norway, Poland, Portugal (since 2007), Spain, Sweden and the United Kingdom for higher education provision (Table 5.2).

In some instances however, different quality assurance agencies/bodies are responsible for different subsectors and categories or TEIs even though they implement similar quality monitoring criteria (Table 5.2). This is the case in New Zealand and in Australia where universities are audited by the *Australian Universities Quality Agency* (AUQA) while vocational TEIs are audited by state and territories registering bodies. France also has a differentiated system, with the *National Agency for Evaluation of Research and Higher Education* (AERES) responsible for the accreditation and

8 One quality assurance agency, the accrediting organisation NVAO, accredits all programmes at all kinds of TEIs according to one set of criteria which incorporates a criterion for distinction between academically-oriented *vs.* vocationally-oriented programmes.

assessment of universities and BMD programmes whereas separate commissions have responsibility for the evaluation of engineering, business and some other specialised programmes. Different quality assurance agencies/bodies also cover different types of TEIs but with different quality monitoring criteria in Belgium (Fl. community), the Czech Republic, Japan, Korea, Mexico and Switzerland. In the Netherlands, different types of TEIs use different quality assessment agencies for the external peer reviews of programmes in practice, on the basis of which the NVAO decides on accreditation for all TEIs.

Lastly, countries also differ in the extent to which they impose differentiated quality assurance obligations to their public and private TEIs. On the one hand, New Zealand requires private TEIs to be accredited in addition to the accreditation of programmes which applies uniformly to public and private providers. Conversely, accreditation is voluntary for private TEIs in Mexico and in Norway for institutional accreditation, although non-accredited private TEIs in Norway need to apply for accreditation for each programme offered. By contrast, the same rules and quality assurance obligations apply for public and private TEIs alike in Croatia, the Czech Republic, Estonia, Iceland, the Netherlands, New Zealand, Spain, Switzerland and Sweden in the case of quality audits.

Initiation and frequency of quality evaluations

Quality assurance procedures can be carried out either on a compulsory (*i.e.* imposed on TEIs by public authorities) or on a voluntary basis (*i.e.* initiated at the request of the TEI). If the procedure is compulsory, it can be either repeated at regular intervals (cyclical) or initiated by the quality assurance agency on an *ad-hoc* or on demand basis.

Initiation: compulsory *vs.* voluntary monitoring

All countries participating in the Review impose some form of quality assurance process on a mandatory basis, with the sole exceptions of Chile (for programmes other than medicine and teacher education), Estonia, Korea, Mexico and Switzerland for universities (Table 5.2).

These mandatory quality assurance exercises consist in accreditation procedures in Australia, Belgium (Fl. community), China, Croatia, the Czech Republic, France, Greece, Iceland, Japan, the Netherlands, New Zealand, Norway, Poland, Portugal, the Russian Federation, Spain, Sweden and Switzerland for vocational TEIs (Table 5.2). In addition, mandatory quality assessments take place in China, Finland, France, Norway, Poland, Portugal and Sweden. Lastly, a number of countries also impose mandatory quality audits, as is the case in Australia, China, Iceland, Japan (for national university corporations), New Zealand, Norway, Sweden and the United Kingdom. The Dutch situation illustrates the compelling nature of some of these quality assurance systems. Indeed, an unsuccessful application for accreditation means that a TEI cannot offer a new programme or has to cease offering an existing programme. Moreover, the criteria for accreditation require TEIs to have an internal quality assurance process in place.

By contrast, some quality assurance processes may be carried out at the initiative – and discretion – of TEIs themselves. This situation is found in Chile, Estonia, Korea, Mexico and Switzerland as indicated above, but also in the Czech Republic, Finland, Poland and Spain for some specific quality assessments or audits.

Lastly, quality assurance procedures may in some instances be initiated by complaints from students, as is the case in Estonia, Mexico, the Netherlands, New Zealand and Poland (Table 5.2). In the Netherlands, an inspectorate which is part of the Ministry has responsibility to examine problems with particular programmes or TEIs identified through student or staff complaints and/or press reports. Similarly, an independent review authority investigates complaints against public-sector TEIs in New Zealand, while the quality assurance agency considers complaints against private TEIs.

Frequency: cyclical *vs.* non cyclical

Most countries participating in the Review have adopted provisions whereby at least some of their quality assurance procedures are repeated periodically, and cycles of quality assurance take place. For accreditation processes, this means that accreditation (or registration, licensing) is granted for a specified period and can be revoked if performance standards are not sustained over time. Processes of cyclical evaluations are usually justified on the ground that they give TEIs an incentive to strive for continued quality improvement. Their main disadvantage however lies in the administrative burden and costs of the process if it is carried out too often or yields insufficient quality improvement and progress. Chile, Estonia[9], Finland, Korea and Portugal are the only countries where no such provisions formally exist.

Yet, quality assurance systems vary in the frequency of their quality review cycles. Most systems operate on five to six years rolling cycles. This is the case in Australia, China, France (for engineering and business programmes), Japan (for evaluations of national university corporations), the Netherlands, Norway, Poland, the Russian Federation, Spain, Sweden and the United Kingdom. However quality reviews are less frequent in Belgium (Fl. community), the Czech Republic, Japan (for evaluations by certified organisations of all TEIs) and in Switzerland while they occur more often in Croatia, France (for universities), Greece, Iceland and Scotland where they are repeated every third or fourth year (Table 5.2).

Estonia, France, Poland and Switzerland have put in place an interesting approach, whereby the duration of the accreditation period which is granted to TEIs and/or their programmes is adjusted to reflect the confidence that the quality assurance agency has in their internal quality systems. Accreditation is granted for less than the regular period – three years instead of the usual seven years in Estonia and Switzerland – whenever the outcome of the application is a conditional approval. France also has provision allowing for accreditations of reduced duration in cases where rapid changes are needed whereas in Poland, positive and outstanding assessments result in a longer cycle of six years. New Zealand has a similar policy regarding the re-accreditation of its private providers.

5.2.2 Key agencies and stakeholders involved in quality assurance

Several stakeholder groups have an interest in quality assurance policies. From the supply side, Watty (2003) identifies four key groups in tertiary education, namely governments, quality assurance agencies, TEIs and individual academics. In addition, stakeholder groups reflecting the demand side of tertiary education include students,

9 In practice however, the interval usually observed is seven years since accreditation is required to receive public funds and diploma recognition.

employers, parents and society at large. The role of these various groups in quality assurance policies and practices differs across countries.

Overall responsibility for quality assurance

Educational authorities, government bodies and autonomous agencies

Government bodies often play an important role in the quality assurance of tertiary education. In some countries they are directly in charge of the coordination of quality assurance procedures, while in others this responsibility has been devolved to one or more separate quality assurance agencies/bodies with varying levels of autonomy from government authorities. In the latter case, government authorities sometimes make final decisions regarding accreditation or corrective action on the basis of recommendations of the quality assurance agencies/bodies.

Only a few countries have government bodies directly in charge of the coordination or implementation of quality assurance activities. This is the case in Australia (for accreditation), China, Iceland, Japan, Korea, the Netherlands, New Zealand, the Russian Federation and Switzerland (Table 5.2). In Iceland for instance, the evaluation of education is carried out by a division of evaluation and supervision in the Ministry. The Australian situation is peculiar. Indeed, as several other federal states, quality assurance is a joint responsibility of the federal and regional levels of government, with the federal state involved in the general steering and harmonisation of the quality assurance system while accreditation is delegated to states and territories for TEIs under their jurisdiction. However, the backbone of quality assurance audits is performed by the AUQA.

But in most countries, quality assurance responsibility is shared between government authorities and one or more agencies coordinating and implementing quality assurance operations. Quality assurance activities are performed by a single agency in Australia (for university audits), Croatia, Estonia, Finland, Greece, Norway, Poland, Portugal, Sweden and the United Kingdom. By contrast, two or more intermediate agencies/bodies are involved in Belgium (Fl. community), Chile, China, the Czech Republic, France, Japan, Mexico, the Netherlands, New Zealand, the Russian Federation, Spain and Switzerland. Professional and sectoral agencies are also involved in Korea and Poland[10] (Table 5.2).

Among countries where two or more agencies are involved in quality assurance activities, these separate agencies cover different categories of TEIs in Belgium (Fl. community), the Czech Republic, Japan, Korea, the Netherlands, New Zealand and Switzerland. In the other countries, there are several rationales for having more than one agency. Some intermediate agencies are in charge of specific disciplines and/or levels of study in Chile, China, France, Japan, Korea and Mexico. Similarly, there are different agencies for different types of approaches in China, Japan, the Netherlands and the Russian Federation whereas in Spain, the different agencies reflect the federal nature of the quality assurance system. Lastly, Belgium (Fl. community), Chile, Japan and the Netherlands has a pyramidal organisation whereby some intermediate agencies are in charge of pre-evaluations which are subsequently examined by another intermediate agency.

10 However the *State Accreditation Committee*'s assessments are the only ones to be legally-binding.

Role of civil society: the growing importance of media rankings

The past few years have seen the emergence of civil society as a new player in quality assurance − albeit informally and outside of national quality assurance frameworks − through the development of institutional rankings and league tables for the most part produced by commercial publishing enterprises (Usher and Savino, 2006; Marginson, 2007). A growing number of such rankings have been developed at both national and international levels in order to compare tertiary education providers against a number of quality criteria. These rankings typically combine various quantitative variables into a single, all-encompassing "score" which is presented as a proxy for the quality of the TEI.

The precursor ranking is the annual US News and World Report's (USNWR) *Guide to America's Best Colleges* which has been published since 1983. Rankings of domestic TEIs are also published by the *Perspektyvy* magazine in Poland, the *Asahi Shimbun* newspaper in Japan and the *Joong Ang Daily* in Korea (Salmi and Saroyan, 2007). In Norway, four newspapers cooperate on interviewing a substantial number of first-year students and publish the results on their perception of their programme and TEIs along a number of dimensions. Usher and Savino (2006) also report national rankings in Australia, China, Spain and the United Kingdom.

Rankings bring some credibility in terms of autonomy and independence of evaluators. They have however received wide criticisms from TEIs and quality assurance specialists due to their arbitrariness, sensitivity to the weightings of the different criteria considered, and lack of reliability and professionalism (Altbach, 2006). Usher and Savino (2006) also show – on the basis of a comparative analysis – that league tables consistently tend to be biased towards larger TEIs and those that have good inputs in terms of money and more talented students. In the US context, critics have also shown that these rankings encourage TEIs to "game" the system by exaggerating the criteria that affect the final ranking, *e.g.* by recruiting the academic staff which drives improved performance in the ranking index, notably Thomson/ISI-classified 'HiCi' researchers and Nobel Prize winners. Several authors also question their usefulness as proxies of quality (Dill and So, 2005; Astin and Lee, 2003).

Yet, there is strong empirical evidence across countries and internationally that institutional rankings have a strong signalling power and play a persuasive role in prospective students' choice of a TEI (Griffith and Rask, 2007). As noted by Merisotis (2002), rankings are here to stay. As imperfect as they are, they satisfy a public demand for transparency and information (Sadlak and Liu, 2007). This awareness has led the main organisations producing rankings and league tables to agree on a set of principles of quality and good practice – the so-called *Berlin Principles* (CHE, 2006). There are also a number of policy responses at national level. In China and the Russian Federation, the development of rankings within the framework of the quality assurance system is being envisaged as a way to avoid that these are done by non-specialists. In most countries however, policy makers have sought to counterbalance the impact of rankings by publishing quality-related information at institutional level to allow users develop their own judgment and taylor-made rankings. Current work by the German Centre for Higher Education Development is an interesting initiative in this respect (CHE, 2007). Yet, these quality databases are often plagued by gaps in the information base. In particular, few countries have objective measures of learning outcomes (Box 5.2).

Box 5.2. Assessments of tertiary education learning outcomes

Numerous indicators exist at both national and international levels on tertiary education outputs and outcomes in terms of the type and number of degrees awarded, the research outputs produced or the labour-market returns to tertiary education. However, for other aspects, and most notably for the learning outcomes of tertiary education, available data are much more limited.

Nevertheless, a few assessments of tertiary education learning outcomes exist, which measure the skills of tertiary graduates (Nusche, 2007). Brazil is the only country where testing takes place at the national level and is mandatory for graduates from all TEIs. The Brazilian national exam (ENADE) has been carried out since 2004 as a random-sampling test to assess both subject-specific knowledge and generic academic abilities. It is publicly funded and involves no cost for TEIs.

Standardised assessments of graduates' skills also exist in Australia, Mexico and the United States. In Australia and Mexico, TEIs may voluntarily subscribe to nationally developed standardised tests for graduating students, the *Graduate Skills Assessment* (GSA) in Australia, and in Mexico the *General Examination for Graduates of "Técnico Superior" Degrees* (EGETSU) for 2-year degrees and the *General Examination for Graduates of "Licenciatura" Degrees* (EGEL) for 4-year degrees. In the United States, private assessment agencies offer a vast array of different tests that are being used by hundreds of TEIs every year (*e.g.* the *Collegiate Learning Assessment* project).

However, no instrument allows a comparison of tertiary education learning outcomes across countries. This information gap attracted particular attention by OECD Education Ministers at their meeting in June 2006, and the OECD was invited to explore how this gap could be filled. In response, a high-level expert group was established to explore the feasibility of developing a new generation of comparative assessments of tertiary education learning outcomes and to develop a roadmap for future work in this field. Such a project would be similar to what the OECD is now doing on a routine basis for schooling outcomes through the *Programme of International Student Assessment* (PISA). If successful this assessment would provide stakeholders with better information on what tertiary students know and can do. A motivation behind this work is that this information could contribute to TEIs' knowledge of their own teaching performance, and thereby provide a tool for improvement.

The expert group has convened on three occasions in 2007, to review potential uses and users of benchmarks for the quality of tertiary education outcomes, to discuss options for defining and operationalising learning outcomes, and to discuss the design and implementation of a feasibility study. During an informal meeting in January 2008, OECD Education Ministers underlined the importance of establishing valid and reliable measures of learning outcomes and encouraged the OECD to carry out the feasibility study, with the aim of contributing to increased accountability and improvement of assessment methods of learning outcomes by governments, TEIs and quality assurance agencies.

The objective of the feasibility study is to determine whether an international assessment is scientifically and practically possible. The assessment will be done at the institutional level, and will be based on a written test of the competencies of students who are almost at the end of a Bachelor programme. Expert advice is that the feasibility study should look both at transverse critical thinking and problem-solving skills that are necessary for success in both academic and business contexts, combined with a subject specific test relating to one or at most two disciplines. It is expected that the feasibility study will be carried out in 2009. On the basis of its results, decisions on further action will be taken [for more information on how this project develops, see www.oecd.org/edu/tertiary/assessment].

Ownership of quality assurance agencies and implications

External quality assurance agencies are usually established either by the national or regional government or by the TEIs themselves, often at the requirement of the government. These different arrangements translate into varying balances of ownership and governance, each with different types of drawbacks. Woodhouse (1999) indicates that systems in which quality assurance agencies are established by individual or groups of TEIs may be subject to suspicions of lenience. By contrast, agencies with closer links with government authorities may face critics for putting too much emphasis on funding and national priorities, and having less freedom of action. A third type of quality

assurance agencies – those dealing with professional accreditation – are often criticised for being too cautious and conservative, and protecting the interests of insiders.

Several countries have quality assurance agencies established by the TEIs themselves. This is for instance the case in Belgium with the *Flemish Inter-University Council* (VLIR) and the *Flemish Council for Higher Non-University Education* (VLHORA), or in New Zealand for universities (*New Zealand Vice-Chancellors Committee*). In the United Kingdom the *Quality Assurance Agency for Higher Education* (QAA) is an independent body funded by subscriptions from TEIs and through contracts with the major funding bodies. By contrast, the quality assurance agencies are established by government authorities in Australia, France, Japan, New Zealand (for the non-university sector), Norway or Spain. However, even when quality assurance agencies are established by government authorities they often benefit from a significant degree of autonomy.

A few countries also have part of their quality assurance activities carried out by professional associations, usually through the accreditation of some professional courses. Private professional accreditation boards are in charge of department evaluations in the engineering, medical and nursing disciplines in Korea, for programmes leading to accounting, engineering, medicine, nursing or teacher qualifications in New Zealand and for programmes leading to lawyer, doctor, engineer or pharmacist title in Portugal. Professional accreditation also takes place in Australia and the United Kingdom.

Involvement of stakeholders

The role of stakeholder groups in the context of quality assurance is subject to discussion in the literature, in terms of whether they should be actively involved in quality assurance processes at all, and if so, what organisational implications this could have within quality assurance systems (Thune, 1998). The involvement of stakeholders in the design and implementation of quality assurance activities is important from the perspective of accountability to society at large – and not only to government authorities – but also to ensure that tertiary programmes best meet the needs of students and, further downstream, of the labour market. Involving students and employers in the governance of quality assurance agencies or at least in quality assurance activities is therefore crucial to ensure that their concerns receive due consideration in the processes put in place and their implementation.

The involvement of stakeholders in quality assurance activities is usually considered best practice, as illustrated by the standards and guidelines for quality assurance adopted in 2005 by the Education Ministers of countries participants to the Bologna process (Bologna Secretariat, 2005). The Bologna standards for quality assurance emphasise that "strategy, policy and procedures should have a formal status and be publicly available. They should also include a role for students and other stakeholders" (ENQA, 2005). In practice, while the involvement of students in quality assurance activities is progressing among countries participating in the Review, other stakeholders such as graduates and employers generally have a limited role in quality assurance activities.

Students

Students can participate in quality assurance activities in several ways. The most common form is when they respond to internal evaluation questionnaires as part of TEIs' internal quality assurance procedures. At a second level, students may be consulted by experts during site visits of external reviews. At the next level, students may participate in

the external reviews of TEIs and/or programmes themselves, either in expert teams, as observers in expert teams or at the decision making stage. Finally, at the last level, students may fully participate in the governance of national quality assurance agencies.

The Bologna Stocktaking exercise prepared ahead of the 2007 London Ministerial meeting highlights significant progress. Students participate in at least three of the four levels of student involvement in more than two-thirds of Bologna participating countries. Yet, a closer look highlights uneven progress across countries. Students participate in quality assurance activities at all four levels in Belgium (Fl. community), Croatia, Estonia, Finland, the Netherlands, Norway, Poland, Sweden and Scotland in the United Kingdom. Students participate in quality assurance activities at three of the four above levels in Greece, Iceland, Portugal, the Russian Federation, Switzerland and the rest of the United Kingdom. However the level of student participation in quality assurance activities is more limited in the Czech Republic, France and Spain, with students involved at only two levels of participation (Bologna Secretariat, 2007a).

Outside of the Bologna area, there is also evidence of student involvement in quality assurance activities, through course evaluation questionnaires in Australia and China while in New Zealand students are represented on academic boards of most TEIs and are consulted or participate in the quality audits of universities and polytechnics. There is by contrast no evidence of significant involvement of students in quality assurance activities in Japan, Mexico and Korea where they have a minimal role in evaluations in spite of nearly universal course ratings. Indeed, these ratings are more symbolic than anything else and do not seem to have much influence on faculty promotions, attempts to improve quality, nor on TEIs' rankings.

Illustrating best practice, students in the Netherlands have an opportunity to be involved in an annual overview of all tertiary programmes aimed at future students. For this purpose they complete a questionnaire to assess the quality of their programmes on a standardised number of topics. The results are published together with other independent information on all programmes in an annual report – the *Keuzegids* (Higher Education Guide) – which is also made available through the Internet since 2006. In this way the *Keuzegids* not only gives information to prospective students on various aspects of the quality of a programme, but the information can also be used by TEIs as a benchmark instrument. The *National Student Survey* (NSS) in the United Kingdom serves similar purposes and has a like effect. Iceland and Poland are other interesting examples of student involvement. In Poland, the president of the students' parliament is by law a member of the *State Accreditation Committee* and student experts also participate in site visits. In Iceland, regulations stipulate that students must be involved in TEIs' self-evaluation teams as well as in site visits, typically through interviews of 8-12 students by peer review groups. Evidence suggests that Icelandic students are active participants in the development of internal quality systems.

Industry and employers

There is much less evidence of a significant involvement of employers and industry stakeholders in the governance of quality assurance agencies or in their activities, other than the role of some professional associations in the accreditation of some vocational tertiary programmes.

Employer surveys are only used in China and Korea where the government has systematised surveys to monitor employers' satisfaction as part of a broader endeavour to

improve the overall quality of tertiary education. However, external stakeholders play a minimal role in quality assurance activities. A few countries also indicate including non-academics in their expert panels during quality evaluations. This is for instance the case in Finland, Iceland, Spain and Sweden. Employers are also interviewed during expert visits in Belgium (Fl. community). In other countries, the role of industry stakeholders is more ambiguous. It is expected in the Netherlands and New Zealand that the views of industry and employers are built into the quality management system, but their actual impact is less clear. The same can be said of Estonia and Poland where employers' organisations are involved through their nominations of candidates for the *Higher Education Quality Assessment Council* (HEQAC) in Estonia and for the *State Accreditation Committee* (SAC) in Poland[11]. The United Kingdom is one of the few countries where industry and employer representatives are directly involved in the governance of the quality assurance agency. Indeed, the Board of Directors for the *Quality Assurance Agency for Higher Education* (QAA) includes membership from employers and the professions, who make up the largest single group of members and from whom the chair of the Board is always appointed. An industry representative is also member of the *State Accreditation Committee* in Poland in the present term of office.

Some programmes entail a greater level of involvement of stakeholders. In general, professional and industry bodies tend to play a very significant role in the quality assurance of courses preparing for occupations in which some form of professional recognition, registration or accreditation is required – *e.g.* in the professional areas of accounting, teaching, medicine, pharmacy, physiotherapy, nursing, architecture, engineering *etc*. This is the case in Australia or the United Kingdom, where professionals' views may be rather prescriptive in terms of curriculum content, teaching approaches, numbers and qualifications of teaching staff, and facilities. Similarly, professional organisations are involved in the definition of quality standards in cooperation with vocational tertiary education partners, the confederation and the cantons in Switzerland.

5.2.3 Methods and instruments

Range of methods

Quality assurance of tertiary education encompasses a range of different methods which can be used in subsequent stages. The majority of quality assurance agencies use a four-stage model which includes:

- Autonomous internal quality assurance system implemented independently;
- Self-evaluation;
- External assessment by peer-review group and site visit; and
- Publication of an assessment report.

This four-stage model is generally accepted as the shared foundation of international practice and has a prominent place in the tertiary education quality assurance standards and guidelines developed at European and international levels and adopted by the European Council (ENQA, 2005; INQAAHE, 2006; European Commission, 1998). Overall, countries with improvement-driven regimes tend to place more emphasis on the

11 However, there is no industry representative in the SAC present term of office.

first element of internal quality assurance systems, but as far as external evaluations are concerned, the choice of approach to quality – *i.e.* accreditation, assessment or audit – does not fundamentally influence the latter three methodological elements.

Several countries encourage or obligate their TEIs to engage in internal quality assurance evaluations as part of their regular activities. This is for instance the case of Belgium (Fl. community), the Czech Republic, Finland, Iceland, Japan, New Zealand and Norway.

In addition, the majority of countries participating in the Review have accountability-driven approaches in a form or another, in which external evaluations play a prominent role (Table 5.2). These external evaluations always rely upon a sequence of self-evaluations followed by a peer-review and the preparation of an evaluation report, which is published in the great majority of cases.

Self-evaluations are a key element in external evaluation procedures. They provide a standard against which the TEIs can measure themselves, as well as a framework for building up a definition of quality. Self-evaluations thus help TEIs check how far they are achieving their strategic mission and goals, and allow them to prepare an action plan for further improvement (Thune, 1998). Self-evaluations are a nearly universal feature in TEIs in both Europe and the United States, although their nature varies significantly (Brennan, 1997; ENQA, 2003; Brennan and Shah, 2000).

Peer-reviews – which have a long tradition in research evaluations – are also increasingly used in the evaluation of teaching and learning. These evaluations are carried out by one or more other academics, usually in the same discipline (Frederiks *et al.*, 1994). Increasingly, peer-review panels include foreign academics to ensure that international standards are met. In addition, non-academics are more and more involved in review panels. This method is then referred to as external review rather than peer-review (Eaton, 2004).

Instruments

When it comes to the implementation of these methods, several instruments are used to enhance the effectiveness of quality assurance processes, although the extent of their use is uneven across countries.

Guidelines

Guidelines are a useful tool to assist TEIs, in the design of their internal quality assurance systems, but also in carrying out their self-evaluations and preparing self-evaluation reports for the purpose of external evaluations. A number of countries have developed such guidelines for quality assurance activities, including Belgium (Fl. community), China, the Czech Republic, Estonia, Iceland, Korea, the Netherlands, Portugal, the Russian Federation, Spain, Switzerland and the United Kingdom (MOESC, 2003). In addition, Poland is in the process of doing so.

Guidelines for quality assurance usually relate to the practical implementation of quality assurance procedures applicable at national level, like in Korea where guidelines for the self-assessment of departments detail the criteria to be appraised and the weight assigned to each one in the overall evaluation. This is also the case in Estonia (www.ekak.archimedes.ee/eneseanaluusi_juhend_inglise_keeles.htm). In addition, the

Accreditation Centre in Estonia organises regular training seminars for TEI administrators with the purpose of improving the quality of self-evaluation reports.

But guidelines may also cover specific aspects of tertiary education activities where quality issues arise and need to be monitored. For instance, *Universities Australia* developed guidelines for the provision of education to international students (AVCC, 2005). Likewise, the United Kingdom has developed a comprehensive code of practice addressing a range of specific issues (Box 5.3).

Self-evaluation reports

Self-evaluation reports generally provide a foundation for peer or external-review teams. In Korea for instance, the process of university reviews – at institutional and programme level – is based in both cases on a self-assessment by TEIs which follows common guidelines and criteria established by the *Korean Council for University Education* (KCUE).

These self-evaluation reports are generally believed to raise awareness for quality issues at institutional level, and help academics and TEIs identify weak points where corrective action and improvement may be needed. International experience suggests however that self-evaluation is most effective in achieving improvement when TEIs are not required to publish their self-evaluation reports, and in fact few countries require TEIs to publish the results of their self-evaluations. The Czech Republic is one exception.

Box 5.3. Code of practice for the assurance of academic quality and standards in the United Kingdom

In the United Kingdom, the *Code of Practice for the Assurance of Academic Quality and Standards in Higher Education* (the Code) provides guidance on maintaining quality and standards for universities and colleges subscribing to the *Quality Assurance Agency for Higher Education* (QAA). It was prepared by the QAA between 1998 and 2001 in response to the Reports of the National Committee of Inquiry into Higher Education and its Scottish Committee (the Daring and Garrick Reports). Revisions of individual sections began in 2004.

The Code is made up of ten sections, and covers issues of post-graduate research programmes; collaborative provision and flexible and distributed learning (including e-learning); students with disabilities; external examining; academic appeals and student complaints on academic matters; assessment of students; programme design, approval, monitoring and review; career education, information and guidance; work-based and placement learning; and admissions to higher education
(see www.qaa.ac.uk/academicinfrastructure/codeOfPractice/default.asp for more details).

Each section of the Code indicates the key issues that a TEI should consider in the respective areas of activity. The precepts encapsulate the matters that a TEI could reasonably be expected to address through its own quality assurance arrangements. The accompanying guidance/explanation suggests possible ways by which those expectations might be met and demonstrated.

Each section of the Code has been prepared in consultation with the tertiary education sector and with the participation of key stakeholder groups. As such it represents a consensus of the providers and users of tertiary education.

Site visits

Typically, site visits follow the preparation of the self-evaluation reports. In Europe for instance, an ENQA survey found that only in two cases site visits are not used, in Norway for the accreditation of programmes and in the Netherlands for the benchmarking of programmes (ENQA, 2003). In Spain, the external evaluation of universities begins

with an analysis of the self-evaluation report by the *External Evaluation Committee* (CEE). As a rule, the committee is made up of experts in the same field as the unit being assessed such as an academic, a person from outside the university world and an expert in assessment methods, none of which have any connection to the TEI being assessed. The CEE analyses the self-evaluation report and visits the unit being evaluated. During the visit, the committee members gather any data, opinions or judgments that help them make their own evaluation. Finally, the committee issues its recommendations and proposes improvements in an external evaluation report.

While site visits by expert teams are commonplace, the composition of these teams varies significantly across countries. The presence of experts in evaluations or in the academic field scrutinised is widespread, as illustrated by New Zealand where the external audit committees visiting TEIs usually consist of evaluation experts from the quality assurance agencies and academic experts from other TEIs. But the teams also include foreign academics, students or graduates, and representatives of industry or employers in a number of countries.

Foreign experts are incorporated in the external review teams in Australia, Belgium (Fl. community), Chile, Croatia, Estonia, the Czech Republic, Estonia, Finland, Iceland, Japan, the Netherlands, New Zealand, Norway, Portugal (since 2007), the Russian Federation, Spain, Sweden, Switzerland and to a more limited extent in Poland[12]. By contrast, this is not common practice in China, Greece, Korea, Mexico and the United Kingdom (Table 5.2).

Students are typically involved in the external review teams in Belgium (Fl. community), Croatia, Estonia, Finland, Greece, Iceland, the Netherlands, New Zealand, Norway, Poland, the Russian Federation, Sweden, Switzerland and Scotland, and in some cases in the Czech Republic (Table 5.2; Bologna Secretariat, 2007a). In New Zealand, Norway and Sweden, students are represented in the peer review team as ordinary members with full rights and obligations. Graduates are also involved in China and Finland.

Finally, the external review teams carrying out site visits also include professionals from industry and representatives of employers on a systematic basis in Australia, Belgium (Fl. community), Chile, Croatia, Greece, Iceland, Japan, Korea, the Netherlands, New Zealand, the Russian Federation, Spain and Switzerland, and in some cases in the Czech Republic, Estonia, Finland, Poland, Portugal and Sweden (Table 5.2).

Surveys of students, recent graduates and/or employers

Surveys of students, recent graduates and/or employers (questionnaires, interviews *etc.*) are typically produced in connection with an evaluation procedure.

Student evaluations of courses and programmes are the most common form of survey, found in Australia, China, the Czech Republic, Finland, Korea, Mexico, the Netherlands, Norway, Poland and the United Kingdom. These student surveys provide valuable information to TEIs on their strengths and weaknesses. In some countries such as Korea or Mexico, these surveys are typically carried out by individual TEIs. In a few countries however, student surveys are carried out at the national level, which provides additional scope for quality improvement as a result of the possibility for TEIs to benchmark their

12 At present, the Polish *State Accreditation Committee* cooperates with some 50 foreign experts and their list is still being expanded.

performance on a number of criteria with the achievement of others. Nation-wide student surveys also serve accountability objectives as prospective students can assess the quality of various TEIs/programmes in a comparative way.

Illustrating this latter approach, Australia administers annual surveys of under-graduate and post-graduate students to monitor and benchmark their satisfaction with respect to teaching, goals and standards, workload, assessment, generic skills and skills development, supervision, intellectual climate, infrastructure, thesis examination and overall satisfaction. An annual *National Student Survey* also exists in the Netherlands and the United Kingdom.

In addition, a few countries carry out graduate surveys to better capture the adequacy of tertiary education to the needs of the labour market. To this end, tertiary graduates are surveyed in Australia, Belgium (Fl. community), Estonia, Sweden and the United Kingdom, although Australia and the United Kingdom are the only countries where this is done in a systematic way. In Australia, a *Graduate Destination Survey* has been carried out since the 1970s with government funding. It provides useful comparative information to the public and benchmarking information to universities to help assess the success of their graduates in the competitive labour market. Likewise, the *Destinations of Leavers from Higher Education* survey in the United Kingdom provides information on the activities of graduates approximately six months after completing their degrees, including what sort of further study they may be engaged in, or what type of work, industry sector or occupation type they may have entered. The data allow analysis of destinations by students' gender, subject of study and qualification obtained. In other countries, similar graduate destination surveys are often carried out at the initiative of individual TEIs.

Performance indicators and statistical data

Lastly, performance indicators and statistical data on student progress, dropout and outcomes provide a valuable information base for understanding the performance of tertiary education at institutional level and may help TEIs monitor their performance and identify areas where to focus efforts from a quality improvement perspective. The most commonly used indicators in this respect relate to completion rates and time needed for degree completion to assess student progress, dropout rates, especially after the first year, and graduation rates as well as destinations and employment rates of graduates in specific fields of study. According to Ewell (1999), there has been a remarkable development worldwide of performance indicators as policy tools in tertiary education, principally as a result of growing pressure for public accountability. However Cave *et al.* (1997) remark that the extent of the use of performance indicators in quality assurance is far from systematic, and varies significantly across countries. In some, TEIs specify their performance indicators while in other systems they are expected to report their standing against a system-wide set of performance indicators (Woodhouse, 1999).

There is evidence of a systematic use of performance indicators in quality assurance processes in Australia, Belgium (Fl. community), Korea, the Netherlands, New Zealand, Poland, the Russian Federation and in the United Kingdom (Box 5.4), while quality-related information systems are being developed in China and the Czech Republic. In Korea and New Zealand, legal provisions require TEIs to disclose selected quantitative indicators on enrolments, faculty-student ratio, employment rate of graduates, proportion of part-time lecturers, budget and other data relating directly or indirectly to the quality of the system. In Australia, a range of performance indicators is used to assess the quality of outcomes as part of the *Institution Assessment Framework* (IAF). These quality indicators

include graduate destinations, student satisfaction, student entrance scores, student attrition rates and progress rates. Mexico has also established standardised assessments of students – the General Examination for Graduates of "Técnico Superior" Degrees (EGETSU) and the General Examination for Graduates of "Licenciatura" Degrees (EGEL) – although participation is at the discretion of TEIs (Box 5.2).

5.2.4 Outcomes

Quality assurance processes result in several outcomes. The delivery of an evaluation report is universal, and this report is published in most cases. Some countries have also established formal follow-up procedures ranging from recommendations for improvement to more accountability types of decisions whereby the results of the quality evaluations sometimes have consequences in terms of permission to operate TEIs and/or deliver specific programmes or in terms of financing.

Report and publication of results

The reports produced by the quality assurance agencies on the TEIs or programmes they review are published in the overwhelming majority of systems (ENQA, 2003; Billing, 2004).

The publication of evaluation reports in all cases – *i.e.* irrespective of the positive or negative outcome – is the norm in Australia (for audits), Belgium (Fl. community), Chile, China (for accreditation and assessment processes), Croatia, the Czech Republic, Estonia, Finland, Greece, Iceland, Japan, the Netherlands, Norway, Poland (at the end of the subject-area review cycles[13]), Portugal, Spain, Sweden and the United Kingdom (Table 5.2 and Box 5.4). Their release usually attracts significant attention from stakeholders and the media.

Moreover, the reports are posted on the Internet to enhance transparency and accountability to stakeholders in Australia, Estonia, Iceland, New Zealand, Norway, Sweden and the United Kingdom. Other interesting initiatives to enhance transparency are the publication of evaluation reports in English as is done in Finland, the Netherlands and the Russian Federation. In countries with several quality assurance agencies – like New Zealand – transparency is however impaired for external stakeholders given that similar qualifications are offered by different types of TEIs whose quality assurance processes and outcomes are not necessarily comparable.

From the perspective of accountability, the Chinese periodic assessment of various disciplines is noteworthy since objective quantitative indicators and experts' perceptions of the reputation of particular programmes are graded with a view to rank TEIs in each discipline. In other countries however, rankings are usually avoided in order to safeguard honest assessments by TEIs. An exception is Sweden where rankings of the top-five TEIs take place – but only for thematic evaluations – with a view to highlight best practices on specific aspects of quality (*e.g.* gender equality, internationalisation, co-operation with surrounding community).

13 The Polish State Accreditation Committee publishes the summary reports on the assessment of quality of education in given fields of study after ending the cycle of assessment procedures (Box 5.4).

Box 5.4. Dissemination of reports in Poland and the United Kingdom

In **Poland**, the *State Accreditation Committee* (SAC) was established in 2002 as the central body for quality assurance in tertiary education. The SAC has independent authority and is responsible for assessing the quality of education in individual areas of study and providing advice to the minister responsible for higher education on applications to establish new TEIs, organisational units or study areas.

TEIs are required to participate in subject-area reviews organised by the SAC on five-year cycles. These reviews include the preparation of a self-evaluation report by each programme, followed by a site visit by experts. On this basis, the SAC issues assessments that summarise results by categories as outstanding, positive, conditional or negative. In case of outstanding or positive assessment, the cycle is extended to six-years.

The review reports are submitted to the minister responsible for tertiary education and TEIs scrutinised, whereas the assessment results are made public through the SAC Web site (www.pka.edu.pl) and have been widely reported in the media. Despite this relatively strict approach (issuing negative assessments that are publicly available and that carry consequences for TEIs), the SAC has gained general acceptance in Poland.

Moreover, the SAC publishes the reports on the assessment of quality of education in given fields of study after ending the cycle of assessment procedures.

In the **United Kingdom**, the Quality Assurance Agency for tertiary education (QAA) was formed in 1997 to rationalise the external quality assurance of tertiary education. It is independent of the UK government and is owned by the organisations that represent the heads of UK universities and colleges.

The QAA safeguards the public interest in sound standards of tertiary education qualifications, by judging how well TEIs fulfil their responsibility for managing the academic standards and quality of their awards. The QAA also encourages universities and colleges to keep improving the management of quality by conducting external reviews in universities at the institutional level (audit, review and enhancement-related institutional review, collaborative provision audit in England and the audit of UK overseas provision) and at the subject and programme level (academic review of tertiary education delivered in further education colleges, major review of healthcare education in England, review of foundation degrees).

All institutional audit and review reports and academic (subject) review reports produced by the QAA are available in hard copy and are also placed on the Internet (www.qaa.ac.uk/reviews). In addition, the reports are distributed widely to schools and further education colleges, public libraries and career services.

In addition, the UK government has also set up and supports a national Web site providing both quantitative and qualitative information on teaching quality for individual subjects at individual universities: the Unistats Web site (www.unistats.com). The Unistats Web site is geared at prospective students, families and employers, and includes the results of an annual national survey of students in their final under-graduate year (Alderman and Brown, 2007). However, further efforts are needed to maximise the impact of this initiative. Indeed, a recent survey of UK employers indicates that only 12% of them were aware of the existence of the Unistats Web site (Morley *et al.*, 2006).

On the other hand, a few countries limit the disclosure of evaluation reports. This is the case of China (for institutional audits), Korea, Mexico, New Zealand, the Russian Federation and Switzerland (Table 5.2). In most cases, the non-publication of detailed evaluation reports is justified on the grounds that this is a way of enhancing the improvement function of quality assurance. Hence evaluation reports are only released in case of a positive outcome in China (for institutional audits), Mexico, New Zealand (for accreditations), the Russian Federation and Switzerland. Another current practice is to release only partial information. For instance, only final decisions on accreditation are published in Korea, while the detailed reports are only sent to the TEIs or departments concerned. This is also the case for the detailed reports of institutional audits in New Zealand. In the same vein, the management recommendations attached to evaluation reports in the Netherlands are only sent to the TEIs.

Follow-up procedures

It is often argued that the enormous amount of time and money being put into quality assurance processes will be wasted unless these activities have a beneficial effect (Woodhouse, 1999). However Woodhouse points out that few external quality assurance agencies have thorough formal follow-up procedures in place, and many do nothing about it, or simply ask the TEI what it has done. Furthermore many quality assurance agencies are ambivalent about using sanctions in follow-up procedures, believing on the one hand that threat of police action is unlikely to foster quality, while recognising on the other hand that some TEIs are so weak that they are reluctant to even try to improve unless the agency can insist on action.

A number of countries lack any form of follow-up process. This is the case of Belgium (Fl. community), Estonia, Greece, Korea, Mexico and Portugal (Table 5.2). In other countries, formal follow-up processes exist but they are limited to situations of negative or conditional evaluations. This is for instance the case of the Netherlands where the ministry's inspectorate may step in if quality assurance evaluations identify serious problems with a TEI or programme. China, Finland (for quality audits), Norway, Poland and Switzerland also have follow-up processes only in the event of negative or conditional evaluations. By contrast, systematic follow-up processes take place in Chile, Croatia, the Czech Republic (for accreditations), Finland (for accreditations), Iceland, Japan (for audits), New Zealand, the Russian Federation, Spain, Sweden and the United Kingdom.

Yet, the type of follow-up and the implications of evaluation results vary greatly across countries. Evaluation reports usually include recommendations for improvement which are sometimes being followed-up. A number of countries also use a range of rewards and sanctions to enforce corrective action on the basis of these recommendations for improvement.

Recommendations for improvement

Some countries have adopted provisions allowing the quality assurance agencies/bodies to follow-up the implementation of their recommendations for improvement. This is for instance the case in Australia where TEIs are required to submit a progress report following their quality audits, which is reviewed by the AUQA and followed up as necessary. Under changes to the relevant legislation, the Minister now has the capacity to require a TEI to respond in respect of audit recommendations. In addition, audit reports may also be followed up as part of the *Institution Assessment Framework* (IAF).

Another approach – followed for instance by Estonia – is to grant the TEI and/or programme being scrutinised a conditional accreditation instead of a full accreditation status whenever major shortcomings are found that definitely need corrective action. TEIs and/or programmes granted a conditional accreditation in Estonia must address the shortcomings identified in the evaluation reports within three years. In case of failure to do so, they lose their conditional accreditation and can no longer continue operations. The Czech Republic, France, New Zealand, Poland, Sweden and Switzerland have adopted a similar approach whereby recommendations for improvement are enforced through conditional accreditations or reduced durations of the quality "stamp" to give TEIs time to improve their performance.

Rewards and sanctions

And indeed, the threat of sanctions is often used as an incentive for TEIs and departments to undertake corrective action on the basis of recommendations for improvement, although reward mechanisms are also used in some cases. Countries participating in the Review have introduced various schemes of rewards and sanctions to encourage TEIs and departments improve the quality of their educational delivery and implement the recommendations of the quality assurance agencies/bodies.

In several countries, a negative evaluation may result in the closure of a TEI, or the suspension of a programme. In Poland for instance, the *State Accreditation Committee*'s assessments are forwarded to the minister in charge of tertiary education in the form of resolutions, and negative evaluations are sanctioned by the withdrawal or suspension of the permit to provide degree programmes in a given field and at a given level of study. Similar provisions exist in the legislation of Estonia, Iceland, Norway, Portugal, the Russian Federation and Sweden and there have been instances of TEI closures in Estonia, Poland and the Russian Federation in the past. In Switzerland, negative evaluations may also result in the merging of some programmes.

Incentives also take the form of financial sanctions and rewards in some countries, through reductions or possible loss of public funding in the event of a negative evaluation or conversely rewards for outstanding performance. Yet, the issue of linking the allocation of public funds to TEIs with the results of evaluation processes – either wholly or partially – is highly controversial (Thune, 1998). Woodhouse (1999) reports that although quality reviews of research are often directly linked to funding decisions, there is a general view inside academia that basing funding for teaching solely on the basis of evaluation results would lead more to problems being concealed than solved as TEIs would have incentives to hide weaknesses so as not to risk losing their core funding. An in fact, China and Mexico are the only countries in which there is a direct link between quality assurance evaluation results and the level of funding received – albeit limited to 10% in the case of Mexico (Table 5.2).

In addition, the results of quality evaluations may have an indirect impact on funding in several systems where the accreditation of a TEI and/or programme conditions the availability of public funds. In these situations, positive quality evaluations constitute a pre-requisite to receive public funds whereas negative evaluations may have serious financial consequences if the TEI or programme loses its accreditation. Australia, Croatia, Korea, the Netherlands, New Zealand, Norway, Poland, Portugal, Spain and Sweden are examples of such an approach where the availability of public funding is tied to compliance with accreditation procedures.

A few countries have also put in place specific financial incentives to reward outstanding quality in teaching, although the amounts involved are usually marginal. Illustrating this approach, Poland awards additional funds to TEIs whose programmes are of particularly high quality although the funds allocated for this purpose cannot exceed 0.5% of the basic subsidy. Australia has adopted a similar policy in 2006 through the *Learning and Teaching Performance Fund* to reward universities on the basis of measures of student satisfaction and success as well as graduate outcomes while the performance-based funding mechanisms used in New Zealand give due consideration to quality issues (see Chapter 4).

Non-monetary rewards are another tool to steer TEIs' behaviours towards greater awareness and attention to quality. Sweden has adopted an interesting initiative in this

respect, whereby TEIs can apply for a label of "excellent learning environment". An external evaluation then assesses whether the course or department can offer a learning environment of a high standard. The label is intended as a driver for quality and an example to inspire other TEIs.

5.3 Issues at stake and related policy challenges

The above analysis has shown great variation between countries in the way quality assurance is apprehended and implemented. Still, all countries face similar challenges in developing their quality assurance systems and policies, but several aspects of the quality assurance framework are subject to debate in the literature as well as in academic and government circles. These issues of contention challenge policy makers in designing a quality assurance framework that is effective in achieving the overarching goal of ensuring high quality provision in tertiary education. These challenges as well as the underlying points of debate are reviewed in this section.

The five key challenges of quality assurance systems relate to the design of the overall quality assurance framework in a way that combines the accountability and improvement functions, the imperative need to build consensus and trust among all stakeholders with an interest in tertiary education quality, the need to enhance the cost-effectiveness of the quality assurance system, the necessity to address the implications of the growing internationalisation of quality assurance, and the overarching challenge of maximising the impact of quality assurance processes on tertiary education outcomes.

5.3.1 Designing a framework that combines accountability and improvement functions effectively

A recurrent theme in the literature relates to the purposes of quality assurance and whether (and how) the purposes of accountability and quality improvement may be combined in a balanced strategy (Thune, 1996; Dano and Stensaker, 2007). On the one hand, some argue that accountability and improvement are incompatible as the openness essential for improvement will be absent if accountability is the purpose of the quality procedure (Woodhouse, 1999). By contrast, others consider that accountability and improvement are closely linked and cannot be addressed separately, in which case the challenge for policy makers is to find effective ways of combining these two functions in the design of the quality assurance framework.

The debate is made more complex as there is a common confusion between the purposes of quality assurance and the instruments and methods used to accomplish those purposes. Indeed, Stensaker (2003) notes that the accountability *vs.* improvement debate has contributed to a simplified view on how change in tertiary education occurs. Instead of seeing change as a dynamic process where interaction between actors and stakeholders takes place in a continuum, this debate has contributed to the development of a simple cause-effect model implying that internal processes are related to improvement, while external processes are associated with accountability. And indeed, the debate on accountability *vs.* improvement has to a large extent translated in terms of whether quality would be better addressed by external or internal mechanisms. Several arguments have been advanced in support of both external and internal evaluations.

Several authors contend that the involvement of an external body is necessary to address accountability and ensure the integrity of tertiary education through mechanisms

similar to an accreditation process (Thune, 1996; Middlehurst and Woodhouse, 1995). Harvey (2002) adds that the context and stage of development of the tertiary education sector also matters as the need for some form of external accreditation increases with the development of private TEIs. External quality assurance is also seen by many as a way to provide information to various stakeholders that is impartial, credible, authoritative, comprehensive, consistent and transparent (Thune; 1996; Harvey, 2002).

It is also often argued that external evaluations should take place as a catalyst for internal improvement within TEIs. Empirical evidence shows that the most effective improvement seems to occur when external processes mesh with internal improvement activities. On this basis, Harvey and Newton (2004) conclude that the interaction between external and internal processes is thus essential to ensure that the results of evaluation processes are not just temporary adjustments but result in lasting improvement. Dano and Stensaker (2007) also stress the importance of external quality assurance for the development of an internal quality culture in tertiary education. This role of catalyst occurs in several ways. First, the context of an external evaluation provides an external motivation to academics and/or TEIs for realising their self-evaluation – a process widely recognised as quality-enhancing but which could be postponed in the absence of an external request given the considerable workload involved (Rasmussen, 1997; Saarinen, 1995; Thune, 1996; Smeby and Stensaker, 1999; Brennan and Shah, 2000; Harvey, 2006). The potential consequences of external evaluations are also an incentive to take the self-evaluation process seriously (Brennan, 1997) while external quality assurance agencies may assist the process through the provision of benchmarking data, external advice, research evidence and dissemination of best practice (Middlehurst and Woodhouse, 1995).

Finally, external evaluations are often advocated on the grounds that self-evaluations carry the risk of 'write-ups' – *i.e.* self-evaluations for compliance – especially when self-evaluation is intended for external use (Harvey, 2002). De Vries (1997) warns against the risk that some TEIs use self-evaluations as a way to promote their reputation and image as quality providers, or in the case of self-financing TEIs to stay in business if self-evaluations may have external consequences. Also, Brennan (1997) argues that self-evaluations can be carried out with a view to influence external judgements rather than to inform 'self' whenever they constitute the preliminary stage of a process of external appraisal.

By contrast, a number of authors privilege internal approaches to quality assurance. Primarily, they claim that sustainable improvement relies on internal engagement, and the best that can be hoped for without intrinsic motivation to improve quality is compliance with external requirements (Middlehurst and Woodhouse, 1995). Askling (1997) also argues that internally-initiated quality monitoring can be problem-driven and useful as a mean for improvement whereas externally-initiated processes tend to be more accountability-driven and less sensitive to internal needs. External evaluations are also criticised on the grounds that their conservative or rigid evaluation criteria may lead to excessive bureaucratisation and inflexibility, and hence inhibit innovation for fear that it will not be understood (Harvey, 2002; Williams, 1997). In this respect, Dano and Stensaker (2007) underline that external quality assurance can stimulate but also create obstacles for institutional improvement. Several studies also point to the cost of external evaluations – both in financial terms and in human resources (HEFCE, 2000; Stephenson, 2004; Graham, 2000) and their inefficiency in achieving lasting quality improvement (Harvey, 2002). As a result, it is suggested that the significant resources spent on quality bureaucracies could be better spent on improving internal quality assurance mechanisms.

Finally, several studies warn against the risk of 'game playing' and 'impression management' in external evaluations (Williams, 1997; Newton, 2001).

However, a number of authors argue that accountability and improvement may be combined – and should be combined since they are both among the aims of the government – and they advocate the combination of internal and external quality assurance mechanisms to build on their complementarities. For instance, Harvey (2002) suggests that an emphasis on internal processes does not exclude the use of external processes while Woodhouse (1999) considers that accountability can always be re-phrased to focus on quality improvement. Overall, Middlehurst and Woodhouse (1995) recommend the integration of improvement and accountability in some areas – *e.g.* guidelines, performance indicators linked to the benchmarking of best practice, research leading to recommendations for improvement – whereas improvement would be best kept independent of accountability in the areas of public information, training and staff development.

The practical implementation of quality assurance processes is important to successfully combine the accountability and improvement functions of quality assurance. In this respect, it is also often argued that peer-reviews are one way of bringing more legitimacy to external evaluation mechanisms, since academics are more likely to listen to their peers' opinion than to 'control' by administrators or inspectors (Vroeijenstijn, 1995b; Finch, 1997), although Brennan (1997) notes that one of the most important issues in this respect is the selection of peers to assure the legitimacy of the evaluation. The above analysis of current practices in countries participating in the Review has shown that a number of them have adopted dual regimes with both accountability and improvement-driven mechanisms in place. Moreover, the recourse to peer-reviews is sufficiently widespread to ensure some form of legitimacy in external evaluation processes carried out at national level. Yet, Harvey (2002) notes that the role of external evaluation mechanisms as a catalyst for improvement requires dialogue and advice to develop a trusting relationship between the external quality assurance agency/body and the TEIs. This highlights the importance of building consensus and trust over the quality assurance framework and processes.

5.3.2 Building consensus and trust with various stakeholders

Indeed, another key challenge from the perspective of the design and operations of quality assurance systems is to build consensus and trust among all stakeholders with an interest in quality. Middlehurst and Woodhouse (1995) remind that improvement relies upon individual or group engagement with the desired objectives and commitment to their achievement. They further suggest that without intrinsic motivation, compliance with external requirements may pass for improvement in the short term but old habits are likely to re-emerge as soon as the need to display improvement has passed. The role of academics is critical in this respect, since they are ultimately the frontline actors of knowledge transmission. Ensuring the trust and cooperation of the academic community in the quality assurance system is therefore crucial to ensure that quality assurance mechanisms yield the desired outcomes and improvement over time.

Ensuring successful implementation

A large body of literature examines the reasons why effective quality assurance systems are apparently difficult to implement. One reported reason is the difference of

interests and conceptions of quality between stakeholders in tertiary education. Another problem identified is the 'implementation gap' and finally the external ownership of quality assurance systems which often leads to compliance instead of improvement.

Different interests and conceptions of quality between diverse stakeholders

As indicated at the outset of this chapter, different stakeholder groups with an interest in tertiary education tend to have different views of quality, and hence quality assurance. This lack of congruence between different approaches to quality has implications for the implementation of quality-induced change.

At the institutional level, several studies have reported evidence of distrust by academics for the quality assurance schemes and mechanisms designed by their administrators (Campbell and Slaughter, 1999; Everett and Entrekin, 1994; McInnes *et al.*, 1994). As put by Watty (2003), 'academics, who do not conceive quality as fitness for purpose, are likely to question the value of such a system'. There is similar evidence that this disbelief translates in a range of resistance and defensive responses to quality requirements (Vidovich, 1998). Vroeijenstijn (1995b) reports a similar mismatch between governments' and TEIs' approaches to quality assurance, with governments putting more emphasis on summative approaches while TEIs have more inclination for formative approaches. On the one hand, governments aim to demonstrate to society that they make justifiable decisions on tertiary education policy – such as the allocation of funding or termination of academic programmes. On the other hand, the main objective of TEIs is quality improvement within the conditions set by the government, and they aim to convince the public that the quality of their educational provision is the best possible.

These differences in conceptions of quality can make the implementation of quality assurance mechanisms more difficult. At the macro level, Rodriguez and Gutierrez (2003) report for instance that one of the weaknesses of quality evaluation in Spain is the disconnection between definition of the objectives of quality assurance between the government, the university and the autonomous regional governments which inhibits the effective implementation of such policies. In addition, micro level case studies suggest that there is little evidence that the majority of academics are embracing quality-led initiatives, and they adopt a variety of behaviours in response (Watty, 2003).

The 'implementation gap'

An important feature of quality assurance policies relates indeed to the importance of the 'implementation gap', defined as the difference between the planned outcomes of policy and the outcomes of the implementation process (Newton, 2001). Several reasons have been advanced to explain this gap.

The lack of preparedness of staff for quality assurance activities is a major reason for the weakness of some quality assurance systems. The lack of training may impair quality assurance at the stage of self-evaluation – *e.g.* due to insufficiently explicit indicators and standards (Silva *et al.*, 1997) – or during the external evaluation. In this respect, the selection process and training offered to evaluators is critical to ensure that the information gathered during the quality evaluation is effectively analysed (Rodriguez and Gutierrez, 2003).

In addition, a key feature of policy implementation is the discretion exercised by front-line workers, or street level bureaucrats (Lipsky, 1980; Prottas, 1978). These policy

implementers, it is argued, are the real makers of policy since they have a relative autonomy at the point of implementation. As a result, the success of a quality assurance system may be less dependent on the rigour of application or the neatness of the drydocumented quality assurance system *per se* and more on its contingent use by actors, and on how the quality assurance system is viewed and interpreted by them (Newton, 2001). The views of front-line academic staff engaged in the implementation of quality assurance policies are therefore crucial to ensure the success of their implementation. Consequently, the way quality assurance policies and procedures are received and decoded by academics seems to be of utmost importance.

Academics perception of and behaviour in response to quality assurance

The implementation of quality assurance mechanisms has affected the daily working lives of academics in various ways, and has resulted in negative perceptions of the process in a number of instances. The consequences of quality assurance processes for academics are four-fold.

First, there is much evidence of changing relationships within TEIs as a result of the implementation of quality assurance mechanisms. These include a gradual distanciation of institutional leaders from faculty members, with an increasing gap in views between the academics who participate in management activities (as elected member of boards) and those who do not (Askling, 1997; Newton, 2001). Numerous academics see the new managerial prerogatives associated with accountability requirements as undermining traditions of collegiate decision-making and staff autonomy, and several studies suggest that quality assurance processes have resulted in declining morale and loss of job satisfaction among frontline academics as well as a decline of collegiality within departments (see Chapter 3; Newton, 2001; Baldwin, 1997; Harvey and Newton, 2004; Warde, 1996).

Second, several studies report a perceived loss of autonomy by academics as a result of external evaluations. Newton (2001) argues that the development of external quality assurance tends to induce senior managers to get involved more directly into the heart of the academic domain in terms of curriculum delivery, design, and standards. For academics, this suggests increased tension between the local level of department and the corporate requirement that the 'product' should meet both institutional targets and external monitoring requirements. Also, some reports suggests that academics often feel that their integrity is offended by demands for increased transparency and by suggestions that quality might be improved (Askling, 1994; Bauer, 1994, 1996; Bauer and Henkel, 1996).

Third, complaints by academics over the considerable workload created by quality assurance mechanisms are commonplace. Excessive bureaucratic demands, the overwhelming volume of paperwork and increased time spent in meetings are the most common grievances (Rasmussen, 1997; Baldwin, 1997; Askling, 1997; Harvey, 2002; Stephenson, 2004).

At the same time, quality assurance instruments have generally been perceived more positively by academics. Although self-evaluations have sometimes been regarded as mere preparation for the external site visits adding little value in terms of improvement (Stensaker, 1999), there are a number of positive feedbacks from academics on the stimulating experience of self-evaluations and peer-reviews as a way to confront staff

with their own educational practices, initiate discussion and incite reflection on change (Silva *et al.*, 1997; Rasmussen, 1997; Dill, 2000).

Building internal ownership and trust to induce improvement rather than mere compliance

There is extensive evidence that negative perceptions by academics of quality assurance mechanisms and their impact on their daily working life are to blame for the failure of some quality assurance systems. In the Australian context for instance Vidovich (1998) found that 69% of academics expressed varying levels of resistance to accountability requirements, ranging from verbal objections to outright refusal, careless responses or delaying tactics. Similar distrust has been observed in Korea, where evaluations are not seen as crucial to the development of TEIs but rather as a nuisance and a superficial formality. According to Barrow (1999), these resistances are to a large extent the result of a lack of internal ownership of quality assurance goals and processes. He argues that the imposition of quality assurance systems on academics encourages them to compliance behaviour rather than genuine improvement, a behaviour which is reinforced by the use of rewards and sanctions in many instances. Barrow concludes that "the ownership of the system, let alone its intended outcomes, is unlikely to be achieved when the development of the system is carried out at a distance from the academic to whom, and by whom, the system is applied".

The challenge for successful implementation is therefore to build a sense of ownership of the quality assurance framework among academics (see Chapter 11). According to Watty (2003), this is the best way forward to facilitate the implementation of quality assurance mechanisms and enhance their efficiency, since ultimately it is academics that are responsible for the performance of TEIs.

Yet, building ownership is no easy task. Evidence from the Review suggests that the legitimacy of quality assurance systems builds up over time as illustrated by the experience of precursor countries like New Zealand. Indeed, Harvey (2006) notes that over time, TEIs display increasing degrees of honesty and openness to evaluation surveys as they see the impact and value of quality assurance mechanisms. At the same time, even more recent quality assurance systems may reach the goal of legitimacy, as suggested by the Polish experience where there are indications that in spite of a relatively recent system and a strict external approach of the *State Accreditation Committee*, the quality assurance framework has gained general acceptance among academics and other stakeholders.

5.3.3 Enhancing the cost effectiveness of the quality assurance system

Another area where challenges lie ahead for quality assurance systems relate to enhancing their cost-effectiveness. Indeed, while thorough evaluations and strong accountability mechanisms may be justified at the establishment of a quality assurance system and/or when new TEIs and programmes are established, they incur large costs which may be less justified over time as internal quality assurance systems mature, leaving scope for more self-regulation (Harvey, 2006). The issue of cost-effectiveness is also connected to the organisation of quality assurance activities between various agencies/bodies. The relationship that exists between the evaluation of teaching and learning and the evaluation of research, and whether synergies may be found to avoid duplication of quality assurance activities in these two areas is another determinant of the cost-effectiveness of the system. Finally, another challenge lies in the selection of

methods and instruments to enhance the cost-effectiveness of the quality assurance system.

Costs of quality evaluations

A number of studies have pointed to the large costs of quality evaluations, although Stensaker (2003) observes that the economic efficiency of external quality assurance systems is a surprisingly little-researched topic. As described in Campbell and Rozsnyai (2002), costs of evaluation can be divided between direct and indirect costs. Direct costs include those related to the setting up of the quality assurance agency/body and the operation of the external evaluation procedures. In addition to these costs, there are also hidden costs related to staff time in preparing for external monitoring and the collection of information for the self-evaluation which need to be taken into account when determining the type and amount of information to be requested from TEIs. Quantifying these hidden costs is problematic given the difficulty in estimating the time devoted by diverse stakeholders to quality assurance activities in addition to the staff, space and operational costs of TEIs' quality assurance units (Stephenson, 2004). Another indirect cost relates to the detrimental effect that overly bureaucratic quality assurance procedures may have on the legitimacy of the system and staff morale. Indeed, Graham (2000) warns against "the frequency and burden of quality assessment in a resource-starved system which, paradoxically, detracts from the delivery of quality [and results] in a loss of professional trust and consensus".

A number of factors have cost implications. These include the number and types of TEIs operating in the national system, the institutional or programme focus of the quality evaluations, their frequency, and the extent to which the experts carrying out the external evaluations are paid for this task (Campbell and Rozsnyai, 2002). Evaluations at programme level incur substantial costs compared to those focusing on TEIs while the costs of evaluations focusing on broader groupings of subjects/disciplines lie somewhere in between. Similarly, evaluations carried out as part of a periodic monitoring tend to be more costly than those performed on an *ad-hoc* or on demand basis, although it may be argued that periodic evaluations allow TEIs and/or departments to build capacity in the collection and analysis of quality-related information. The systematic involvement of foreign experts also incurs additional costs. Finally, quality assurance systems in which experts are recruited on a 'volunteer' basis and only receive reimbursement for expenses related to the quality assurance activities tend to be less expensive than those in which they receive an honorarium for their task. The question then is whether this approach is more cost-effective as the requirements and level of commitment to be expected from volunteers cannot be as high as those to be expected from professional consultants.

Illustrating the tradeoffs facing policy makers, the Netherlands has adopted a system of periodic accreditation at programme level building upon evaluations of applications by independent accreditation bodies. This system is believed to be very expensive both in terms of resources required to develop the self-evaluation document and the charges imposed by the private accreditation bodies. In addition, this accreditation process is considered one of the most severe ones known. Overall, it is estimated that the average internal costs for a TEI to get an existing programme accredited is in the range of EUR 55 000 every six-years (Inspectie van het Onderwijs, 2005). These significant costs have been recognised, and the possibility to revise the legislation and to move towards a combination of an institutional focus and programme accreditation is now being investigated.

Similarly, the subject reviews that took place in the United Kingdom in the late 1990s proved to be a massive logistical exercise. A 2000 review of tertiary education in England identified an accumulation of accountability burdens on TEIs and concluded that the quality assurance system represented poor value for money for both TEIs and other stakeholders (HEFCE, 2000). These persistent concerns about the resources needed to organise the reviews and the time taken by universities and colleges to participate in them led to their abandon and a focus on institutional audit and review mechanisms in 2000. In 2005, an independent review of the new quality assurance mechanisms concluded that the institutional audits had achieved a very significant reduction in the costs of external quality assurance and had succeeded in reducing the burdens of the previous subject review process on university staff. Overall, the new procedures were deemed as both fit for purpose and cost-effective (Burslem, 2005; JM Consulting, 2005).

Concerns about the high level of costs and nuisances associated with quality assurance procedures have surfaced in other countries, for instance in Korea and New Zealand. In Sweden, the costs of quality assurance mechanisms are also believed to be high, but by contrast, evidence suggests that stakeholders seem satisfied with the current system. Other countries where the cost-effectiveness of the quality assurance system is also perceived positively by stakeholders and the public at large include Australia, Estonia, Finland and Iceland. And indeed, the issue of cost-effectiveness of the quality assurance framework requires looking into the elements of cost in the quality assurance procedures – focus, frequency, method, composition and remuneration of expert panels – but also the way these procedures are perceived and accepted by frontline actors and stakeholders. An expensive system of quality assurance may be justified as long as it meets the needs of stakeholders. However these needs may evolve over time as confidence in the quality of education builds up, leaving scope for more self-regulation. The above experiences of the Netherlands and the United Kingdom illustrate these changing needs, and suggest that over time the economic viability and effectiveness of evaluations at programme level tend to decrease – or be perceived as such. This raises the question of whether the responsibility for the quality of programmes ought to be shifted to TEIs and the focus of external evaluations be refocused on TEIs' processes for ensuring quality provision.

Rationalising the number of quality assurance agencies/bodies and the scope of their activities

The organisation of the quality assurance system in terms of the number of quality assurance agencies/bodies involved and the scope of their activities also has implications for the cost and effectiveness of the system. In this respect, a challenging mission for policy makers is to organise quality assurance in ways that enhance transparency from the perspective of stakeholders while at the same time respecting the diversity of tertiary education offerings and allowing capacity-building throughout the system.

In practice, some countries rely upon a single quality assurance agency/body for all types of quality assurance activities – *e.g.* accreditation and audits – and this unique agency covers all types of TEIs. By contrast, other countries have more fragmented systems of quality assurance with different agencies/bodies in charge of distinct types of TEIs, different approaches or separate geographical jurisdictions. Both approaches are encountered in countries participating in the Review. Each one has its own merits and disadvantages.

There are three main arguments supporting the involvement of several quality assurance agencies. The first one is closely related to the debate on the compatibility of the accountability and improvement functions of quality assurance. As reported in Middlehurst and Woodhouse (1995), authors who believe that accountability and improvement are incompatible sometimes argue that it is essential to have separate agencies because TEIs are likely to hide from accountability agencies information which is essential for achieving quality improvement. In this perspective, it is argued that having separate agencies allows each agency to have the structure and processes appropriate to its particular functions. Another frequent rationale for having several quality assurance agencies/bodies is to cover different types of TEIs and/or fields of study and adapt the focus and methodologies of quality assurance mechanisms to their different needs and missions. For instance, Parker and Jary (1995) are critical of the trend in recent years to standardise student experience as a result of uniform standards of teaching and evaluation processes, and warn against the risk of developing a 'McUniversity'. Finally, reliance upon several quality assurance agencies/bodies is sometimes advocated on the grounds of efficiency, especially in very large tertiary education systems.

The alternate view is that having separate agencies to better distinguish the accountability and improvement functions incurs a risk of duplication of the workload and unstable situation between the separate agencies. According to proponents of this approach, it would be inefficient to establish multiple agencies addressing different objectives separately unless the multiple agencies have clearly distinct spheres of responsibility (such as evaluation of research *vs.* evaluation of teaching). Moreover they argue that while it is possible to establish a separate system for improvement, it is not possible to have one solely dedicated for accountability as it will inevitably overlap with quality improvement. Some authors also support a more unified approach to quality assurance across different sub-sectors of tertiary education in order to bring more integration and coherence in the system and improve communication and co-ordination between quality assurance activities, educational authorities and TEIs. Another merit of having fewer agencies also lies in the potential to improve the organisational learning within the system as different types of TEIs are likely to face common problems and best-practice from other types of TEIs could be disseminated throughout the system. But the most pervasive rationale for limiting the number of quality assurance agencies is to enhance the transparency towards stakeholders, by offering them comparison tools of quality across the system irrespective of the quality assurance organisational structures.

In a number of countries visited as part of the Review, the analyses of the external review teams highlight that rationalising the organisation of the quality assurance system across a more limited number of agencies remains a challenge to be addressed. Yet, quality assurance systems relying upon distinct agencies may well be effective in some national contexts, for instance in very large countries, federal systems, or in situations where the TEIs' internal quality assurance systems have reached different levels of maturity in the various sub-sectors of tertiary education and where more differentiated approaches thus make sense.

Relationship between evaluation of education and evaluation of research

A related question in terms of cost-effectiveness is whether the quality of teaching and learning and the quality of research should be addressed separately or whether synergies could be found between these two aspects of TEIs' activities. This issue has

generated debate in the literature, and Thune (1998) identifies two distinct viewpoints with respect to the need for convergence of evaluation of research and education.

On the one hand, Vroeijenstijn (1995a) argues that teaching and research should be assessed separately on the ground that they require different types of expertise, with highly specialised experts in the case of research while a broad overview of the discipline is sufficient in the case of teaching. Furthermore combining the evaluation of research projects and academic programmes would require very big committees and site-visits would be much more time-consuming. Thune also advocates the separation of teaching and research evaluations to allow good teaching to be identified and rewarded and to redress to some extent the imbalance between rewards and incentives for teaching and research. He also considers that focusing on teaching only would allow TEIs to focus on their particular strengths without focusing too much in being rated highly, which would allow the various customers' needs to be addressed more specifically (Thune, 1998). On the other hand, some authors stress the need for greater convergence of evaluation of research and teaching given the close connection between tertiary education and research. They argue that there is necessarily a link between teaching and research at a university, which needs to be taken into account during the evaluation of educational quality. Other arguments advanced in favour of enhanced convergence relate to the need to avoid duplication of quality assurance activities.

Overall, Vroeijenstijn (1995a) concludes that there are questions which cannot be avoided and must be answered during the evaluation of teaching, such as whether students come into contact with research, the role that research plays in the programme, or the extent to which the most recent developments in research are reflected in the curriculum. This is a particularly important aspect of the quality of teaching at post-graduate level where there is certainly a case to bring together the evaluation of post-graduate programmes and the research undertaken by the concerned departments. For other types of tertiary education provision, however, it is generally argued that the evaluation of research quality does not need to be part of the evaluation of teaching and learning, and the best way is to assess teaching and research separately, although it will be useful if each evaluation is planned with the other in mind.

In countries participating in the Review, this issue has been addressed in varied ways. While in France and Japan, the quality assurance of teaching and research are carried out by the same agency, the evaluation of teaching is disconnected from the evaluation of research in Sweden. Several countries have also adopted intermediate policies. For instance, the research base is included as one of the evaluation criteria considered in evaluations of teaching in Belgium (Fl. community). Conversely, the number of research students is included as one of the criteria for the evaluation of research quality in China, Estonia, Finland, Iceland, Korea, Mexico, New Zealand, Portugal the Russian Federation and the United Kingdom while Mexico also takes into account the supervision of post-graduate students and the Russian Federation considers the use of new technologies in teaching to assess research quality (see Table 7.4). Irrespective of the approach adopted, a challenge for policy makers is to ensure that policies related to the evaluation of teaching and the evaluation of research are co-ordinated, so that TEIs and academics do not receive contradictory incentives. Illustrating this challenge, concerns have arisen in recent years in New Zealand, that the new funding mechanism for research may skew some TEIs' selection and promotion processes in favour of research and to the detriment of teaching performance.

Promoting the use of performance indicators

Another debated area relates to the advantages and disadvantages of data gathering instruments used in quality assurance systems, and in particular whether performance indicators ought to be used to assist quality monitoring.

A number of authors advocate the use of performance indicators as a way to ensure the objective measurement and comparability of quality. Illustrating this perspective, Alderman and Brown (2007) argue that if societies are to get best value from their TEIs, there is a need for sharpening the focus on student learning outcomes and published information about them. Performance indicators in a broader sense than the sole student learning outcomes are indeed often regarded as useful tools for accountability purposes – by providing an overall picture of what is happening in a particular TEI (Ewell, 1999) – and to inform policy-making (Vroeijenstijn, 1995b). But the usefulness of performance indicators is not limited to accountability and informed policy-making. Performance indicators may also contribute to quality improvement by helping TEIs diagnose problems through benchmarking. Ewell (1999) also sees performance indicators as useful to stimulate certain kinds of institutional behaviour. Indeed, the focus of the monitoring on desired outcomes and behaviours means that performance indicators may be used intentionally to encourage TEIs to increase their progress toward meeting certain standards. It is assumed that continuing poor performance, if widely reported, will constitute an incentive to stimulate quality improvement.

By contrast, many academics have been opposed to the increasing use of performance indicators, arguing that they are reductionist, offer inaccurate comparisons and are unduly burdensome (El-Khawas *et al.*, 1998). Middlehurst and Woodhouse (1995) argue for instance that popular discussion often trivialises comparisons, selecting only one or two aspects, reducing them to simplistic terms and paying little regard to whether the aspects are truly commensurate. In addition, some have warned against the risk of manipulation of data by TEIs to meet targets (Harvey, 2002; Knight, 2001). Another common criticism is that the link between performance indicators and quality is not evident. With respect to quantitative measures of quality, Rodriguez and Gutierrez (2003) argue that quantitative performance indicators are often basic data (*e.g.* numbers of students, numbers of staff, drop-out rate) and tell nothing about performance. Vroeijenstijn (1995a) also questions whether a high success rate in education is a sign of quality, or reflects the reduction of standards. The link is even less evident when it comes to qualitative measures of quality, where the concept of performance indicator itself has generated heated debate on objectivity and subjectivity. For instance, Gray and Bergman (2003) underline the problems posed by student ratings, which have been shown to be influenced by irrelevant factors like the ease of grading, the joviality of the teacher, and sometimes even his or her looks. Obviously, these perverse effects constitute extreme manifestations that are more likely to appear if the information derived from indicators is used mechanistically, and are in no way systematically associated with the use of performance indicators.

In fact, these diverging views on the merits and pitfalls of performance indicators can be reconciled. It can be argued that indicators do not have to be burdensome and that it is possible to construct reasonable and meaningful indicators. Vroeijenstijn (1995b) also underlines the importance of the interpretation of performance indicators. Moreover, some argue that the use of indicators can actually strengthen assessments if the information is used as a contextual backdrop for qualitative assessments. As put by Vidal (2001), performance indicators are never absolute measures and are only meaningful after a process of contextualisation. According to this approach, complementing other forms of

assessment with indicators has the merit of allowing regular, more frequent and more cost-effective views of performance – which can inform discussion and which can perhaps identify in a timely way where qualitative assessment might be best directed.

In practice, extensive use of performance indicators in quality assurance activities takes place in some countries participating in the Review. For instance, Australia uses a range of performance indicators to assess quality of outcomes as part of the *Institution Assessment Framework* (IAF). These quality indicators include graduate destinations, student satisfaction, student entrance scores, student attrition rates and progress rates. By contrast, quality monitoring is hampered by a complete lack of benchmarking data in other countries, making it difficult for TEIs and external evaluators to diagnose problems and target improvement efforts in the most-needed areas. This challenge remains to be addressed in many countries.

5.3.4 Addressing the implications of internationalisation for quality assurance

Another challenging task for policy makers is to address the multiple implications of internationalisation of tertiary education for quality assurance systems. On the one hand, the emergence of new – cross-border – modes of delivery in tertiary education raises quality issues and requires better systems of consumer protection (OECD, 2004b; OECD, 2005). At the same time, the remarkable growth in international student mobility over the past three decades (Figure 10.1) and the growing globalisation of the labour market for the highly-skilled call for enhanced transparency and improved systems of recognition of foreign courses and degrees. Both trends are likely to bring about more control on TEIs, *e.g.* through accreditation processes (Jeliazkova & Westerheijden 2002). Illustrating this tendency, the decision by European ministers of Education to establish a *European Quality Assurance Register in Higher Education* (EQAR) as of March 2008[14] is likely to reinforce accountability requirements in the future, in the Bologna area and beyond since the Register will be open to quality assurance agencies/bodies from all over the world. Finally, the Bologna Process and the increased convergence of tertiary education systems worldwide raise the question of whether quality assurance systems ought to converge as well. Indeed, the construction of a *European Higher Education Area* (EHEA) passes through the operation of quality assurance benchmarks and indicators that may serve to measure the efficiency of the continent's higher education structures (Stamoulas, 2006). In this respect, the EQAR is likely to bring about some convergence of quality assurance systems since quality assurance agencies/bodies will need to demonstrate compliance with agreed common standards to be listed on the Register.

The issue of consumer protection is treated separately in Chapter 10 hence this section focuses essentially on international cooperation of quality assurance agencies/bodies and international comparability and recognition. Indeed, as education, research and some highly-skilled labour markets become more global, quality assurance systems need to adjust so that national credentials can be understood and approved by international partners. Increased international transparency and comparability can be achieved in several ways.

The involvement of foreign academics in evaluation teams – although not initially deemed to enhance transparency and assure more international visibility of the national

14 Although the European Quality Assurance Register has formally been established as on 4 March 2008, quality assurance agencies/bodies will only have the opportunity to apply for listing on the Register from the summer 2008 (see www.eqar.eu/ for more information).

tertiary system – can however serve this objective by initiating quality-related discussions between academics of different countries. In this respect, the above analysis of current practices in countries participating in the Review has highlighted that the involvement of foreign experts in quality evaluations is common in Europe as well as in Australia, Chile, Japan, New Zealand and the Russian Federation (Table 5.2; ENQA, 2003).

In addition, a few countries publish the reports of their external evaluations in English in addition to the national language in order to enhance transparency towards international partners. This practice takes place in Finland, the Netherlands and the Russian Federation in particular.

But for the majority of countries participating in the Review, international cooperation between national quality assurance agencies/bodies is the principal channel to enhance transparency. Indeed, all countries but Greece and Korea are involved in international networks of quality assurance agencies/bodies (Table 5.4).

Table 5.4 Involvement in international cooperation on quality assurance, 2007

	Geographical focus						
	Global	Regional					
	International Network of Quality Assurance Agencies in Higher Education (INQAAHE)	European Consortium for Accreditation (ECA)	European Network for Quality Assurance (ENQA)	Central and Eastern European Network of Quality Assurance Agencies in Higher Education (CEEN)	Nordic Quality Assurance Network in Higher Education (NOQA)	Asia-Pacific Quality Network (APQN)	Eurasian Quality Assurance Network (EAQAN)
Australia	Member					Member	
Belgium (Fl. community)	Member	Member	Member				
Chile	Member						
China	Member					Member (quality assurance agencies of some provinces)	
Croatia	Associate member		Aims to join	Member			
Czech Republic	Member		Member	Member			
Estonia	Member		Member	Member			Member
Finland	Member		Member		Member		
France	Member	Member	Member				
Greece							
Iceland	Member				Member		
Japan	Member					Member	
Korea						Prospective member	
Mexico	Member						
Netherlands	Member	Member	Member				
New Zealand	Member					Member	
Norway	Member	Member	Member		Member		
Poland	Member	Member	Aims to join	Member			
Portugal	Member		Member				
Russian Federation	Member		Candidate member	Member		Member	Member
Spain	Member	Member	Member				
Sweden	Member		Member		Member		
Switzerland	Member	Member	Member				
United Kingdom	Member		Member			Observer	

Sources: Derived from information supplied by countries in background reports, country notes and Web sites of the different networks.

In the European context, this international cooperation has permitted the development of an agreed set of European Standards and Guidelines (ESG) on quality assurance (ENQA, 2005). These have been endorsed as part of the Bologna Process (Bologna Secretariat, 2005), and are having an impact on the continued development of quality assurance systems in the broader European area, as suggested by current reforms of the Swedish system for instance.

Other forms of international cooperation between national agencies/bodies of quality assurance include bilateral cooperation arrangements as between the Czech and Slovak *Accreditation Committees*, between the *Australian Universities Quality Agency* and a number of overseas audit and accreditation agencies, the United Kingdom *Quality Assurance Agency*'s cooperation agreement with agencies in other countries and continents, or in the most accomplished form, the operation of a joint quality assurance agency as in Belgium (Fl. community) and the Netherlands (Box 5.1).

Finally, another emerging trend relates to the mutual recognition of national quality assurance agencies/bodies' decisions. At the moment, few countries participating in the Review have adopted provisions whereby TEIs have the possibility to turn to accredited international quality assurance agencies for external evaluation. Finland is one exception, as well as the Netherlands in the case of engineers (van der Wende, 1999). In addition, quality assurance agencies from nine European countries are currently working together through the *European Consortium for Accreditation*[15] (ECA) with an aim of recognising each other's accreditation decisions by 2007.

However the situation with respect to recognition is likely to evolve dramatically in the years to come, following the request by Bologna ministers to the E4 group[16] in London to set up a *European Quality Assurance Register* of quality assurance agencies/bodies (Bologna Secretariat, 2007b). This Register was formally established in March 2008 and is deemed to allow all stakeholders and the general public open access to objective information about trustworthy quality assurance agencies that are working in line with the ESG. And indeed, quality assurance agencies/bodies will have to undergo an independent external evaluation and to demonstrate compliance with the ESG to be listed on the Register. As a result, the general model proposed in the ESG is likely to diffuse internationally and to have a significant impact on the development of national systems of quality assurance. Countries part of the Bologna Process will need to strive to ensure that their quality assurance systems meet the ESG standards that allow their quality assurance agencies to be included in the Register. Outside of the Bologna area, the emergence of this Register raises the question of whether to join the convergence process or improve comparability by different means.

5.3.5 Maximising the impact of the quality assurance system

Finally, the last macro challenge for tertiary education quality assurance frameworks has to do with impact. Indeed, the overarching goal of quality assurance processes is to ensure that minimum standards are met and to improve the quality of tertiary education outcomes over time. Yet, the impact of quality assurance mechanisms on tertiary education is difficult to assess, although there is evidence of effects on academics' behaviours and management within TEIs and on teaching and learning. The implementation of quality assurance mechanisms has also revealed a number of downsides. The question then arises of finding the right set of incentives to lead frontline actors to adopt quality-enhancing practices and limit the perverse effects.

15 Countries participating in the ECA include Austria, Belgium (Fl. community), France, Germany, the Netherlands, Norway, Poland, Spain and Switzerland.

16 The E4 group is a dialogue platform established to discuss tertiary education issues at the European level. It includes representatives of the key tertiary education stakeholders, namely the European Universities Association (EUA), the European Association of Institutions in Higher Education (EURASHE), the European Network on Quality Assurance (ENQA), and the European Student's Union (ESU).

Difficulties in measuring the impact of quality assurance

According to Barrow (1999), the measurement of the impact of quality assurance is complex given the difficulty in measuring the achievement of a quality definition, particularly in terms of student transformation. In addition, Brennan (1997) notes that investigations of the impact of quality assurance systems face several challenges due to the invisible, incremental and slow nature of educational change, and because it is often difficult to isolate the impact of quality assurance mechanisms from other forces affecting tertiary education.

As a result, organisational change – such as the effect of quality monitoring on staff, internal procedures, or management structures in TEIs – has been the focus of most impact studies because it is often easier to identify, even though many authors underline that the linkage between organisational and educational change cannot be assumed (Brennan, 1997; Cave *et al*., 1990; Horsburgh, 1999; Harvey and Newton, 2004). Another obstacle lies in the difficulty to isolate the impact of quality assurance from other forces affecting tertiary education (Shah, 1997; Askling, 1997). Lastly, Stensaker (2003) and Zbaracki (1998) indicate that another methodological problem in the measurement of the impact of quality assurance systems is related to the risk of overly-optimistic reporting, as managers may have incentives to appear like 'good implementers' of external quality management.

Impact on organisation and management within TEIs

A range of analysts point out that quality assurance activities may have an impact on organisation and management within TEIs. This impact is four-fold. To begin with, several studies have concluded that external quality assurance mechanisms affect the distribution of power within TEIs towards greater centralisation in procedures and decision-making (Askling, 1997, Stensaker, 1999; Stensaker 2003). Closely related to the trend towards centralisation is the tendency that TEIs have become more bureaucratic (Gornitzka *et al*., 1996; Kogan *et al.*, 2000). There is also reportedly a trend towards a more autonomous role for the institutional management, including in giving managers greater responsibility for follow-up procedures (Stensaker, 2003). Alvesson and Willmott (1996) note in this respect that the rise in management is one explanation for the unwillingness of frontline academics to do more than comply with the quality assurance requirements. Finally, Stensaker (2003) argues that increased institutional transparency is a noticeable effect of external quality assurance in tertiary education.

Impact on teaching and learning

At first glance, a review of the literature on the medium-term impact of quality assurance processes on teaching and learning seems disappointing. According to Harvey and Newton (2004), most studies reinforce the view that quality is about compliance and accountability and has contributed little to the improvement of the student learning experience. Vroeijenstijn (1995a) reports for instance that the quality of Dutch tertiary education did not improve substantially after five years of intensive external quality assurance in the Netherlands. This scepticism surfaces in a number of other studies (Harvey 2006; Newton 2000; Newton, 2001). Furthermore, even when changes in learning outcomes have been observed, these authors argue that they are not necessarily linked to the implementation of quality assurance mechanisms and other factors

completely outweigh the impact of external quality evaluation (Horsburgh, 1999; Harvey, 2002).

Some authors are more optimistic though, and indicate evidence of a more concrete impact of quality evaluations on teaching practices. For instance, Brennan (1997) indicates on the basis of 53 case studies in the United Kingdom, that 65% of the teaching quality recommendations had been acted upon, especially when the assessment results fell below institutional expectations. Silva *et al.* (1997) also found outstanding improvements in the teaching environment in Chile, including curriculum reforms, higher standards and improved instruments for student assessments, innovations in professional programmes, upgrading programmes for instructors and improvements in the academic hiring and promotion system. But the most commonly reported benefit of quality assurance processes is a greater awareness of quality, and increased attention given to the teaching function within TEIs and academic communities, through discussions about teaching, monitoring teaching, and by implication the teaching act itself (Brennan and Shah, 2000; Vroeijenstijn, 1995a; Dill, 2000).

In the countries participating in the Review, evidence suggests that the implementation of quality assurance mechanisms has had a positive impact on the quality of teaching and learning in a number of cases. In Poland for instance, this positive impact is suggested by a rapid drop in conditional approvals and negative accreditation evaluations during the first few years of operation of the *State Accreditation Commission*. Similarly, student survey data in Australia indicate a 10 percentage point increase in bachelor students' level of satisfaction between 1995 and 2005 which could result from a greater responsiveness of TEIs to the needs of students as a result of the increased focus on quality assurance in Australian universities. And in Switzerland, there is evidence that detailed evaluations in vocational tertiary education have had visible repercussions on the acceptance and recognition of these TEIs both nationally and internationally, even though they had no visible impact on dropout rates or the length of studies.

Overall, Dubois (1998) identifies some conditions under which evaluation can bring about lasting improvements on the basis of 31 European case studies. According to this study, the impact of evaluations depends on the extent to which it informs faculties on strengths and weaknesses, helps diagnose situations, brings about changes in values, enhances the sense of belonging to the TEI and legitimates those who have initiated the evaluation. Evaluations are also more likely to be effective when carried out by a powerful and legitimate board of directors, thereby contributing to a sense of ownership of the evaluation results. The establishment of internal evaluation mechanisms is also important. Finally, the presentation of results and the presence of sanctions matter, with widely-disseminated and precise recommendations most likely to have an impact, especially if potential financial implications exist. This last condition raises the issue – and challenge – of incentives as discussed below.

Undesired outcomes of quality assurance

At the same time, the implementation of quality assurance does not go without problems, and international experience has revealed a number of undesired outcomes or perverse effects of quality assurance mechanisms. For instance, Lee and Harley (1998) have found that the British research evaluation of the Economics discipline has reinforced a conservative mainstream approach and has been detrimental to alternative approaches to economics and the intellectual diversity of teaching environments.

In a different vein, another undesired outcome of the growing awareness and need for quality assurance has been brought to light, whereby the tertiary education world has seen a proliferation of self-appointed and rather self-serving accreditors and accreditation mills that simply sell 'bogus' accreditation labels (OECD, 2004b). Knight (2005) argues that the need for accreditation status is bringing about the commercialisation of quality assurance, and incurs the risk that the weaker TEIs turn to rogue accreditors to acquire as many 'accreditation stars' as possible and to boost their apparent legitimacy. This new situation entails serious equity issues since those most likely to be deceived by these false quality assurance labels are the students with no family tradition of tertiary education and less ability to decode information, *i.e.* most likely those from less privileged SES backgrounds. A challenge for quality assurance systems is therefore to enhance ethical principles and signal *bona fide* quality assurance agencies/bodies. In some countries like Australia and the United States, lists of accredited programmes and accreditation agencies – or conversely unaccredited ones – are published (CHEA, 2003) whereas at the international level, the establishment of the *European Quality Assurance Register* – which is open to any quality assurance agency/body worldwide – is an interesting step in the direction of enhancing the credibility of *bona fide* agencies.

Finally, another collateral damage of quality assurance mechanisms relates to the lack of preparedness of some users to process and deal with the information produced by quality assurance mechanisms. Illustrating this downside, there is evidence in a number of countries that international students – whose information on domestic providers is somewhat limited – all want to enrol in elite research universities of world-class standards. This pattern reflects the pervasiveness of rankings to demonstrate and signal institutional excellence, but can be destructive for users unable to read this information according to their profile so as to find the programme best-suited to their own needs.

The ensuing challenge for policy makers is therefore to ensure that the design and operations of the quality assurance framework limits the prevalence and minimises the risks of such perverse effects.

Incentives

Finally, the overarching challenge of maximising impact and limiting perverse effects naturally leads to the need for quality assurance systems to devise the right set of incentives to ensure that TEIs and academics not only comply with quality assurance requirements, but actually implement quality-enhancing teaching practices on a sustained basis. In this respect, a widely debated issue in the literature relates to the extent to which public funding allocations ought to be linked to the results of quality evaluations, as an incentive for TEIs and academics to enhance the quality of their programmes.

A number of analysts advise against linking results of quality assessments to funding. They argue that a direct link to funding undermines quality improvement, by encouraging compliance rather than improvement (Brennan, 1997). According to Vroeijenstijn (1995b), 'the direct link to funding is a threat to quality assurance, because every evaluation loses its value for improvement. Academics are smart people: so they will find all ways to beat the system and by doing so try to get the money'. Harvey (2002) also draws attention to the risk of lack of openness in quality assurance, whereby TEIs may fear revealing weaknesses or problems in self-evaluation in countries where funding is used to reward strengths rather than combat weaknesses. In addition, these authors reject linking funding to the results of quality assessments on methodological grounds, arguing that the quality and outcomes of teaching are more difficult to measure (Middlehurst and

Woodhouse, 1995). From a system effectiveness perspective, Woodhouse (1999) claims that rewarding the 'successful' would involve the state paying more for an already 'good product', while the reduction of funding is unlikely to improve low quality education. Brennan and Shah (2000) actually suggest the opposite, arguing that an improvement logic would advise giving more to the least good. Finally, these authors consider that linking funding to the results of quality assessments would be inefficient as it would create a compliance culture among TEIs and skew the system to follow the money (Middlehurst and Woodhouse, 1995; Thune, 1998).

By contrast, linking funding to the results of quality assessments has been advocated on several grounds. The first argument is that it is an incentive to improvement. Indeed, Ewell (1999) argues that linking funding to the results of quality assessments rewards excellence and stimulates lower performers to increase their efforts. However, subject to debate is what actions should follow from the results of the quality evaluations and, especially whether bad results should have financial consequences. Some advocate rewarding good performance only possibly through supplemental funding or incentive systems. Others would like to sanction bad results, for instance by withholding funds or not allowing a programme to enrol new students. Still others suggest shaping results so that they lead to voluntary improvements (El-Khawas *et al*., 1998). In addition, authors in favour of linking funding to the results of quality assessments argue that this is already fairly accepted among both governments and TEIs with respect to research funding (Middlehurst and Woodhouse, 1995; Harvey, 2002). Finally, these authors suggest that not linking funding to the results of quality assessments would not avoid the risk of compliance in any case (Thune, 1998; Brennan, 1997).

This debate highlights the challenges lying ahead for policy makers in devising the right sets of incentives to lead to quality improvement throughout the system. This challenge involves finding the right balance between reward mechanisms to encourage TEIs strive for excellence in teaching, as well as direct funding to correct deficiencies and discourage TEIs to hide weaknesses. It also implies improving coordination with research funding mechanisms to ensure that academics and TEIs do not receive contradictory signals and incentives.

5.4 Pointers for future policy development

The practices and challenges of tertiary education quality assurance described in this chapter point to several areas where policy development could help countries achieve their goal of ensuring high quality provision in tertiary education and adequately preparing their populations for participation in the knowledge economy.

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 improve the quality of 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 design of the quality assurance framework, the strengthening of internal evaluation mechanisms, the improvement of external evaluation mechanisms, the enhancement of quality assurance methodologies and the practical arrangements for the quality assurance system.

Design of the quality assurance framework

Design a quality assurance framework consistent with the goals of tertiary education

It is important, in order to build a national commitment to quality, that the aim of the quality assurance system be clear and expectations be formulated in alignment with the tertiary education strategy. A well co-ordinated quality assurance system might be expected to ensure that: each student is provided with quality education; the overall system is contributing to the social and economic development of the country; TEIs' activities foster equity of access and outcomes; quality assurance contributes to the improvement of co-ordination within and integration of the overall tertiary system.

Build consensus on clear goals and expectations of the quality assurance system

An effective quality assurance system would need to gather consensus among the different stakeholders based on shared expectations on purposes and outcomes. Building consensus requires agreement on a comprehensive framework on conceptions and indicators of quality. In this respect, one way of reaching consensus could be to distinguish improvement and accountability conceptually and practically, while allowing for close contact between them. The comprehensive framework could also specify some elements – *e.g.* certain data requirements and institutional quality assurance mechanisms – applicable to all TEIs to strengthen the coherence of the system, while allowing specialised requirements for certain types of TEIs or adapted to their missions.

Ensure that quality assurance serves both the improvement and accountability purposes

There is also a balance to be struck between accountability and quality improvement. From an accountability point of view, it is important that quality assurance systems provide information to various stakeholders but quality assurance also needs to be/become a mechanism to enhance quality rather than simply force compliance with bureaucratic requirements. A balance between the two purposes of improvement and accountability is therefore crucial for the effectiveness of a quality assurance system and to maintain the support of academics by focusing on issues that are important to them.

Revisiting the balance between accountability and improvement periodically would be desirable, *e.g.* to put less emphasis on accountability over time once there is evidence of stronger adherence to baseline standards.

Combine internal and external quality assurance mechanisms

The balance between accountability and improvement is more likely to be successfully addressed through distinct evaluation processes, especially so in systems where some form of connection with funding exists. A combination of internal and external quality assurance mechanisms could be used to address the different purposes of quality assurance. One possible model for this may be to focus on improvement through

external audits and internal quality assurance mechanisms while accountability would be addressed on the basis of performance indicators and verifying data in public databases. But clearly, other combinations are possible depending on countries' traditions and level of development of their quality assurance systems.

Build capacity and secure legitimacy

Legitimacy is a key factor determining the impact of quality assurance, since quality judgements which lack legitimacy in the eyes of those on the receiving end are not likely to be acted upon if action can be avoided. The nature of the involvement of the academic community as a whole is important to enhance the legitimacy of the quality assurance processes, especially when it comes to the composition of external evaluation teams. It would also seem important that the quality assurance agency/body in charge of external evaluations be independent of tertiary education authorities, and have trust in the TEIs and their internal quality assurance processes. Ideally, the collection of data and processing of quality indicators to be used in accountability checks would be best developed outside of the quality assurance agency/body in order to strengthen its perceived independence.

Some capacity building is necessary to capture the full benefits of external evaluations. Indeed, the development of dialogue and frequent communication between external experts and TEIs are vital to the quality enhancement process, through the dissemination of research, benchmarking data and best practices, but this cross-fertilisation of ideas requires a high level of professional expertise within the agency/body in charge of external quality assurance. It therefore important for the strength and effectiveness of quality assurance that the staff involved in external evaluations be adequately selected and trained to analyse the information gathered during the evaluations.

Make stakeholders such as students, graduates and employers visible in the evaluation procedures

The legitimacy of the quality assurance system also lies in its ability to take into account the perspectives of a wide range of stakeholders with an interest in tertiary education, such as students, graduates, and employers. It would therefore be important to systematically include representatives of employers and students in external evaluation panels to enhance accountability to society. A wider use and analysis of graduate destination surveys would also help assess the success of graduates in joining the labour market and the adequacy of tertiary programmes to labour market needs.

Increase focus on student outcomes

The focus of quality assurance ought to be shifted on student outcomes – in terms of learning and labour market performance – relative to input factors (faculty and physical resources). This can be achieved by describing the desired outcomes of tertiary education in national qualifications frameworks, and referring to these intended outcomes in the design and evaluation of tertiary programmes' curricula. The views of graduates and employers may also be sought during external evaluations, either through analyses of graduate destination survey data or participation of these stakeholders in the external evaluation panels. Indicators on the effectiveness of individual TEIs in preparing

graduates for the labour market could also be developed and published as an incentive for TEIs to improve.

Student outcomes in terms of cognitive learning are equally important. It would thus be important to develop indicators of teaching quality – in the sense of value-added and how much teaching at the institution adds to the cumulative learning of students – and include them in performance appraisals of TEIs. Indeed, in the absence of objective measures of learning outcomes, there is no way for students to judge the quality of TEIs except by reputation that does not necessarily reflect quality. A related issue concerns rankings of TEIs and programmes. One way that policy makers may choose to counterbalance the impact of unsound rankings and put more emphasis on teaching quality may be to publish quality-related information at institutional level – such as student evaluations of their learning experience.

Enhance the international comparability of the quality assurance framework

As education and research become global, quality assurance systems could be developed so that they can be understood and approved by international partners, *e.g.* by making quality evaluation results available in English in addition to the national language or involving foreign experts or foreign quality assurance agencies/bodies in the monitoring process. The continued implementation of the European Standards and Guidelines on quality assurance is also to be encouraged. In addition, quality issues arising in relation to internationalisation activities call for better systems of consumer protection and for the implementation of the OECD-UNESCO Guidelines for quality provision in cross-border higher education.

Internal evaluation

Develop a strong quality culture in the system

A strong quality culture in TEIs – shared by the academic leadership, staff and students – helps to reinforce the quality assurance system. To a large extent, this attention to maintaining and improving academic standards builds up over-time. However, evidence suggests that a strong quality culture may also develop as a result of public intervention, *e.g.* through the (mandatory) creation of internal quality assurance systems by TEIs or in response to appropriate incentives such as publishing student evaluations of their learning experience.

Put more stress on internal quality assurance mechanisms

More emphasis should be given to internal mechanisms to establish trust in and commitment with TEIs, take full account of the expectations and values of administrators and academic staff and trigger the intrinsic motivation of staff to achieve improvement. In addition, an approach mostly based on external quality assurance mechanisms is likely to be excessively costly and inefficient in achieving sustained improvement.

Ideally, internal evaluation systems would need to be shaped in such a way that academics in each study area can gather systematic feedback from students, assess their programme's effectiveness and identify and carry out improvements in areas where weaknesses are identified. To do so, they would need methods for obtaining fair and valid assessments of teaching and learning processes, and resources to help shape needed

improvements. While full regard must be given to institutional autonomy and to the virtues of institutional initiative, the national quality assurance agency/body may be uniquely well placed to organise and disseminate a variety of technical assistance materials, sponsor workshops and best practice of internal quality assurance models to fit national circumstances.

Ensure that internal accountability is guided by some key principles

Quality processes ought to be non-burdensome and delegation of responsibility for quality go to those people able to effect change at the teaching-learning interface. In addition, research has found that informal internal quality monitoring seems to be the most valuable in terms of improvement and enhancement of student learning. Peer observation of teaching should therefore be encouraged in a way that is conducive to improvement, i.e. by being separated from other institutional processes for probation, under-performance or promotion, and with feedback to individual staff remaining confidential. These approaches could be assisted by the creation of centres of teaching excellence within TEIs to develop pedagogical strategies and training materials.

Undertake the external validation of internal quality assurance systems

It would also be important to bring legitimacy to internal quality assurance mechanisms by having them formally validated periodically by an external assessment. There should be the expectation that TEIs establish routines that lead to the continuous improvement of their internal quality systems.

External evaluation

Commit external quality assurance to an advisory role as the system gains maturity…

The development of the quality assurance system needs to be seen as an ongoing process. Whilst there is a clear need and rationale for external quality monitoring during the early stages of development to fulfil the need for accountability and ensure that baseline standards of quality are met throughout the system, this rationale is likely to fade over time. Indeed, the periodic external quality monitoring of TEIs and/or programmes with a comprehensive coverage of the entire tertiary education system entails prohibitive costs which are likely not to reflect the value gained from the process as the quality assurance system matures. It would therefore be important – once baseline standards are met – that external quality assurance evolves towards an advisory role to enhance improvement, *e.g.* by being available to TEIs for advice and consultation, undertaking research on quality, disseminating best practices and providing benchmarking data across the sector. This, however, requires a high level of professional expertise within the agency/body in charge of external quality assurance.

… but retain strong external components in certain contexts

At the same time, a more comprehensive approach to quality assurance, with a strong external component, may be needed in certain contexts such as less mature systems, systems in large expansion, or systems with large private sectors. In such contexts, it would be important to reinforce the role of external quality assurance, *e.g.* by introducing elements which are mandatory in nature or considering the launch of a single cycle of

external assessments for TEIs and/or programmes which have never been previously assessed. The improvement function of quality assurance would seem to be best achieved by concentrating monitoring and improvement efforts on those TEIs most in need of improving their quality, *e.g.* through priority treatment or more frequent monitoring.

Implement adequate follow-up procedures and view quality assurance as a continuous process

Many countries carry out external monitoring at regular intervals on a compulsory basis to ensure that adequate and continuous attention is paid to quality. But regular compulsory monitoring does not automatically generate improvement, and the implementation of adequate follow-up procedures is a necessary condition for quality assurance activities to have an impact. Formal mechanisms for following up the results of the reviews would therefore need to be established and go beyond simply asking the TEI what it has done. For instance, the quality assurance agency/body could have a reactive role and step in whenever a TEI does not act on the evaluation recommendations. If so, the consequences of failure to implement corrective action would have to be clear.

Allow for selected assessments to be initiated by an external quality assurance agency

The quality assurance system should also be sufficiently flexible to allow selected *ad-hoc* external evaluations focusing on specific disciplines/programmes, a particular theme (*e.g.* transition of graduates to the labour market), or take place when problems are identified by the external quality assurance agency/body.

Avoid direct links between assessment results and public funding decisions

It would seem wise to avoid establishing direct links between quality evaluation results and public funding, so as not to encourage TEIs to hide weaknesses and undermine the improvement function of quality assurance. This would not discard the possibility to make public funding conditional upon reaching minimum quality thresholds. The quality assurance system could be designed in a way that minimum quality thresholds would need to be demonstrated *ex-ante* to become eligible for public funds while the results of ongoing assessment evaluations would then be disconnected from public funding decisions *ex-post*.

It would be preferable to limit the extent of indirect links such as financial rewards for institutional-level teaching excellence on the ground of effectiveness. Indeed, these resources might be more useful to assist low-performing TEIs improve their quality, and the challenge is for policy makers to find the balance between reward mechanisms and directed funding to correct deficiencies in low-performing TEIs.

Methods

Align quality assurance processes to the particular profile of TEIs

Quality assurance processes need to be aligned to the particular profile and mission of TEIs. Even in countries where a single quality assurance agency/body monitors the quality of different types of TEIs, every institution should not necessarily undergo the same quality assurance procedures. For instance the evaluation of vocational TEIs could place a greater focus on issues of labour market relevance.

Improve co-ordination between the evaluation of teaching and research

In many countries, the evaluation of teaching and research require better co-ordination to minimise the volume and duplication of evaluation and the burden on TEIs. This can be achieved through a jointly evolved multi-year calendar of evaluations to avoid over-concentrations on specific TEIs, joint evaluations of particular phenomena such as a doctoral programmes, subject evaluations of teaching and research, *etc.*

Innovation

Routine processes, bureaucratisation and window-dressing are likely to follow when the same type of evaluation processes have been in place for many years. There is a need for constant reflection and change in external quality assurance mechanisms to ensure their effectiveness, including periodic change in both objectives and in the quality assurance agencies themselves to counteract tendencies of diminishing returns of repetition.

Develop quality assurance expertise in new areas

Quality assurance expertise should also be developed in some new areas such as adult learning, e-learning, off-campus education and international education (export and import) as tertiary education become more pluralist and diversified. Also, more needs to be known about the use of student learning outcomes and value-added indicators in quality assessment and about the role of professional bodies in assuring quality in tertiary education.

Practical arrangements for the quality assurance system

Avoid fragmentation of the quality assurance organisational structure

Whenever possible, quality assurance responsibilities should be brought under the umbrella of a limited number of agencies to improve oversight from an outside perspective, and therefore provide more transparency and accountability to society. A more unified approach would lead to a better integration and coherence of the system and improve communication and co-ordination between quality assurance activities, educational authorities and TEIs. A smaller number of agencies would also help improve learning within the system as best practice from various sub-sectors could be spread across organisational structures. Another advantage is that the external accountability function could be further improved as it would be more accessible for external stakeholders, e.g. through system-wide standards common to various types of TEIs with due consideration to different institutional aims and contexts. The possible existence of separate quality assurance agencies should correspond to a real need, and the scope and objectives of each agency should be clearly determined without unnecessary overlaps.

Avoid excessive costs and burdens

It would also seem important to avoid the costs of quality assurance outweighing the benefits. Thus the quality assurance system would need to be sufficiently light and flexible to avoid an undue burden in time and money. At the system level, the Review has identified several potential sources of excessive costs. Unnecessary costs may result from an organisation of tertiary education around a large number of small fragmented TEIs

which individually need to undergo quality assurance processes, complex and overly bureaucratic quality assurance systems relying upon numerous quality assurance processes and involving duplication of work, or the recourse to private external examiners.

Improve quality information base

In many countries, there seems to be a significant lack of relevant national and institutional data to assess the performance of the tertiary education system as a whole, as well as the performance of individual TEIs. This deficiency would need to be addressed. In particular, baseline information on outcomes – including labour market performance of graduates in specific fields of study – would be needed, as well information on student progress, dropout and completion rates and time needed for degree completion in each field and level of study. Although it is beyond the role of the national quality assurance agency/body to build a better national information system on tertiary students and their later employment experience, the agency could and should promote the development of such a system and could also be instrumental in identifying the most critical information gaps.

Improve information dissemination

The importance of providing users of tertiary education with information on the quality of educational offerings is fundamental to help prospective students make choices, provide feedback to current students and parents, and inform employers on the quality of graduates. As a result, many countries make the results of the external quality evaluations publicly available. But evidence suggests that in practice, they are mostly used by the TEIs themselves. An important aspect of the appropriateness of publications for accountability purposes is the extent to which the reports are easily accessible (*e.g* Internet) and comprehensible to non-experts in the field. Beyond the results of quality evaluations, initiatives to publish quality-related information on the Internet are also to be encouraged.

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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."*[17]

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

[17] 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 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.[18] 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.

[18] 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, Ichino, & Rustichini, 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;
- 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 (2005), 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.* 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).[19] The authors defend that expansion is itself a form of inclusion, even when odds ratios are stable.

19 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.[20] 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

20 European Social Survey was conducted biannually in three rounds up to now: 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 regional and 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).

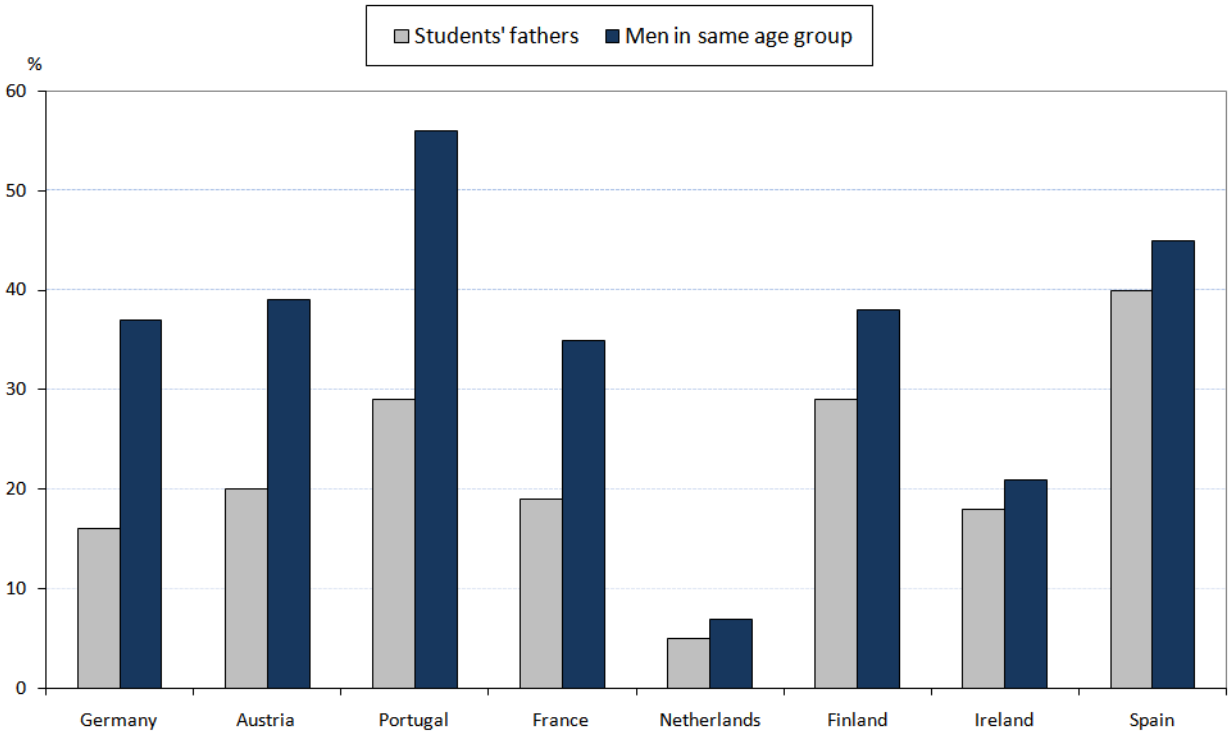
There is strong evidence that access to and participation in tertiary education is associated with the socio-economic background of students

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 underrepresented 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.

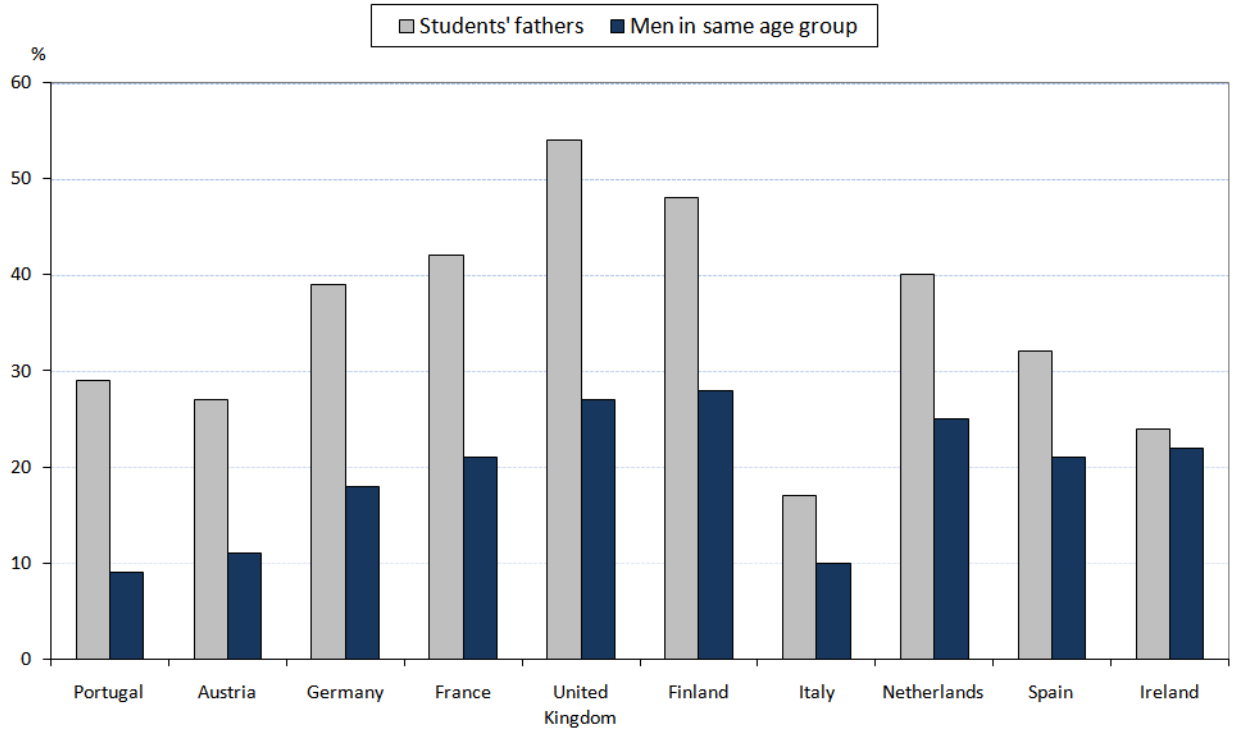
Source: Eurostudent 2005, as published in OECD (2007b).

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 overrepresented 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.

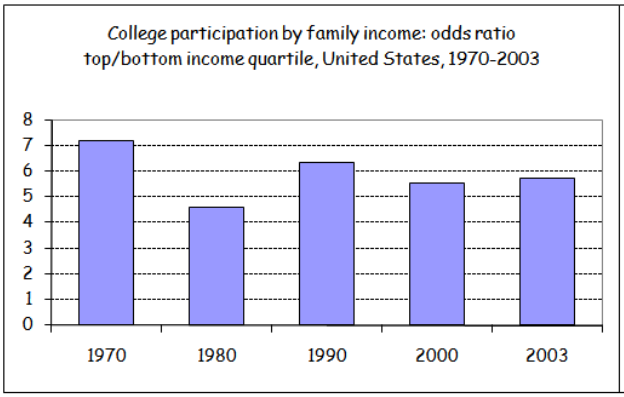
Note: The reference period differs across countries and is comprised between 2002 and 2004. Data for the United Kingdom refer to England and Wales and also refer to the parent (male or female) with the highest income.

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

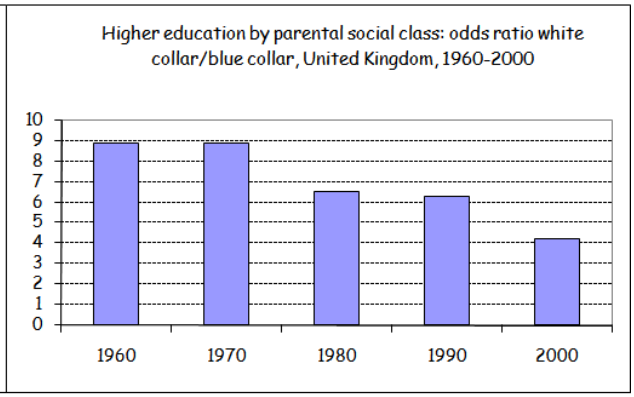
Koucký *et al.* (2008), using three rounds of the European Social Survey, assess inequality in the access to tertiary education over the 1950-2005 period for a set of 23 European countries. The measures used to characterise the socio-economic background of students are the father's occupation, the father's 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.*, 2004). 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).

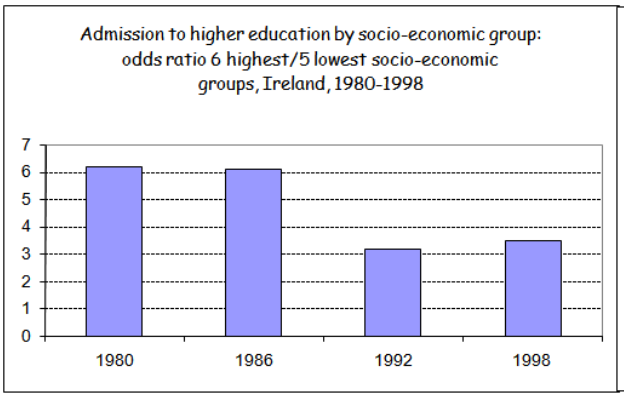
Figure 6.3. Access to and participation in tertiary education by students' socio-economic background in selected countries



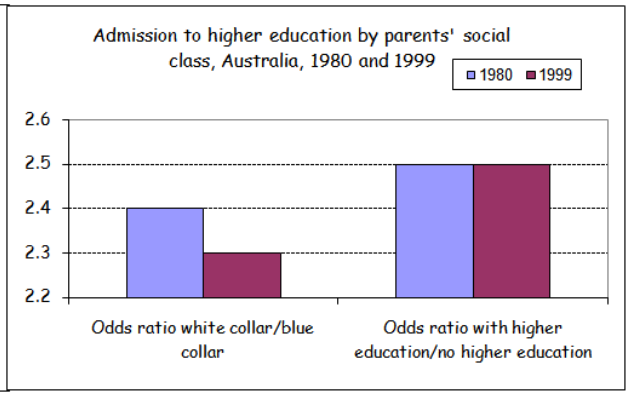
Source: Mortenson, 2005 (as reported in Table 3 of Clancy and Goastellec, 2007).



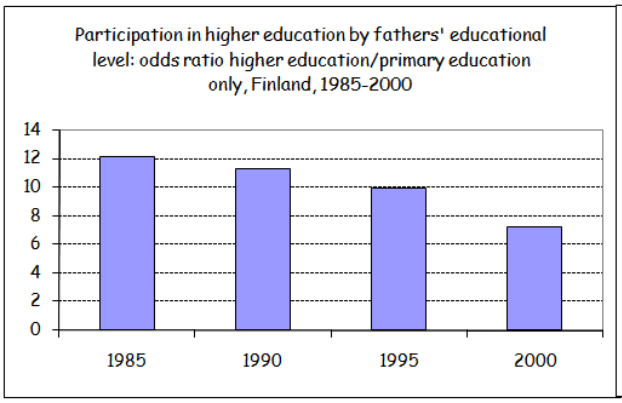
Source: DES, 2003; ONS, 2004 (as reported in Table 3 of Clancy and Goastellec, 2007).



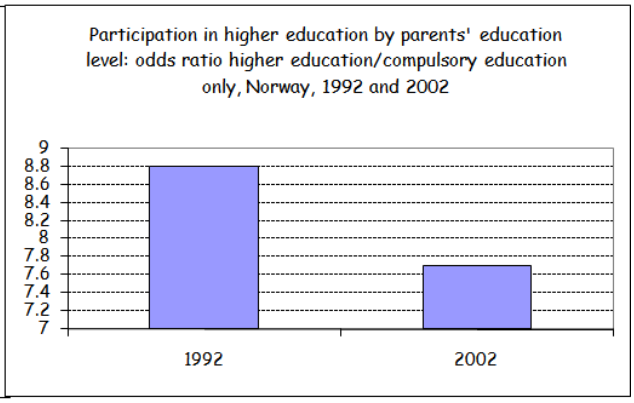
Source: Clancy, 2001 (as reported in Table 3 of Clancy and Goastellec, 2007).



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



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



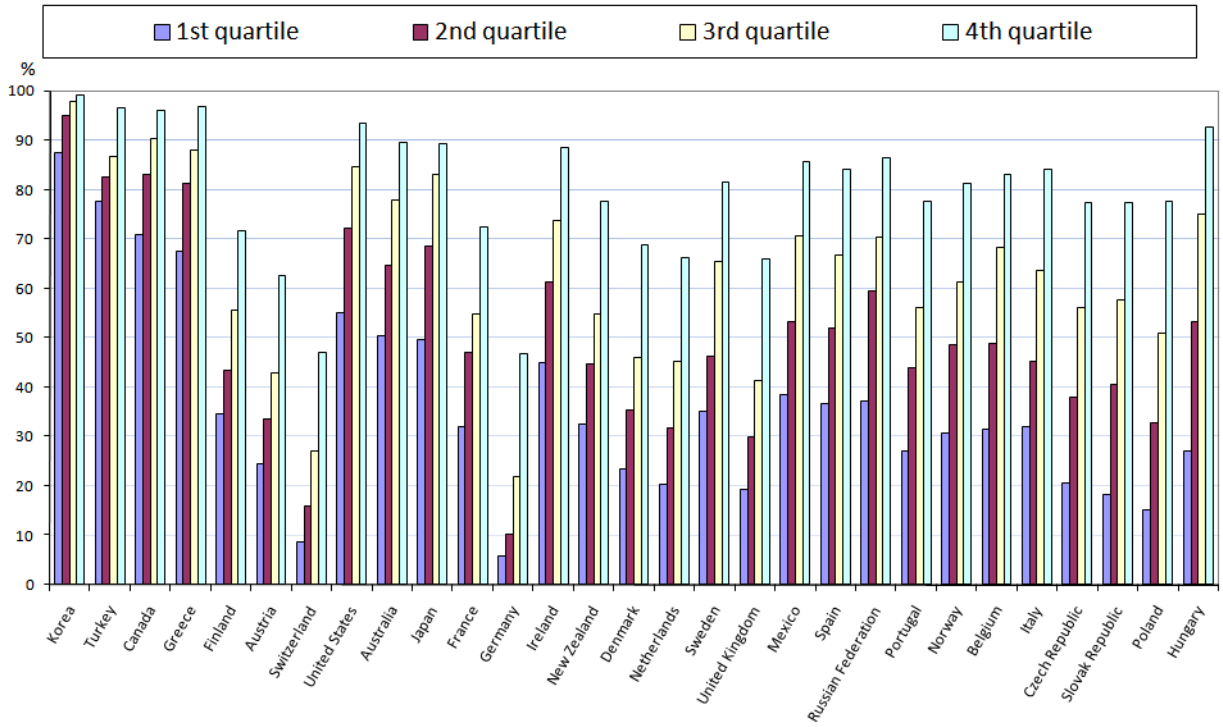
Source: MOER, Norway, 2005 (as reported in Table 3 of Clancy and Goastellec, 2007).

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.

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

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.

Figure 6.4 displays the aspirations for tertiary studies of 15-year-olds by quartile of the PISA[21] 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.

More disadvantaged students are overrepresented 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 overrepresented 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 overrepresented in non-university TEIs (*Hogescholen*). While the average proportion of graduates from the non-university sector 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

21 Programme for International Student Assessment.

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 Centres for Technical Education 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

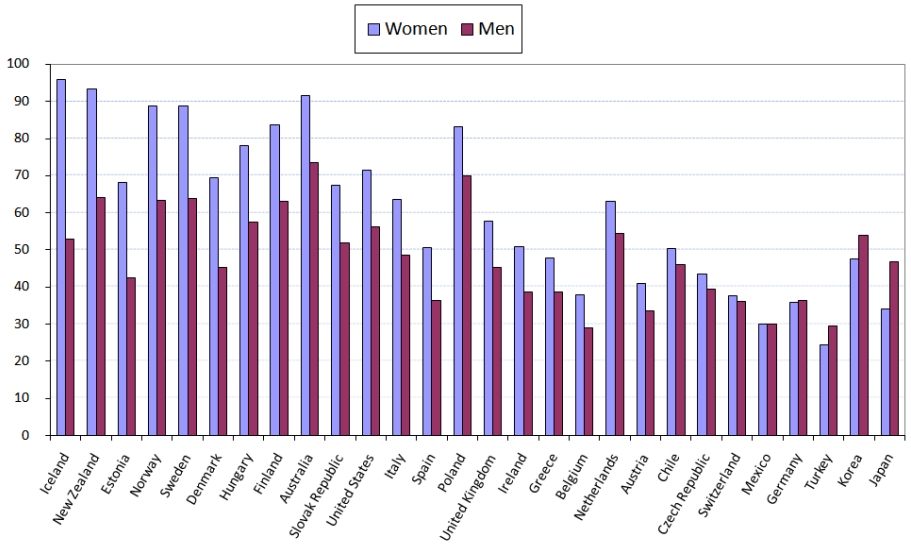


Figure 6.5b. Net entry rates in tertiary-type B programmes by gender, 2005

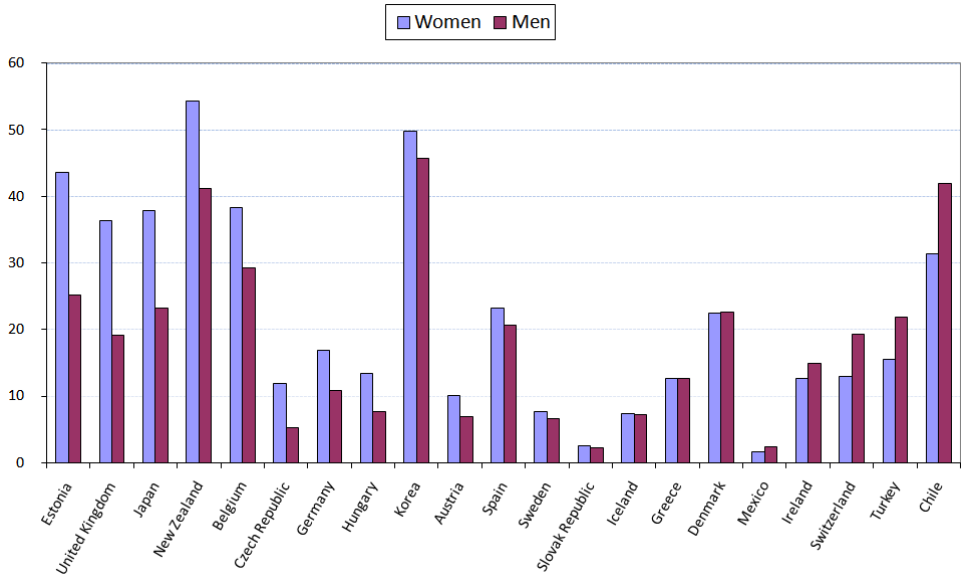
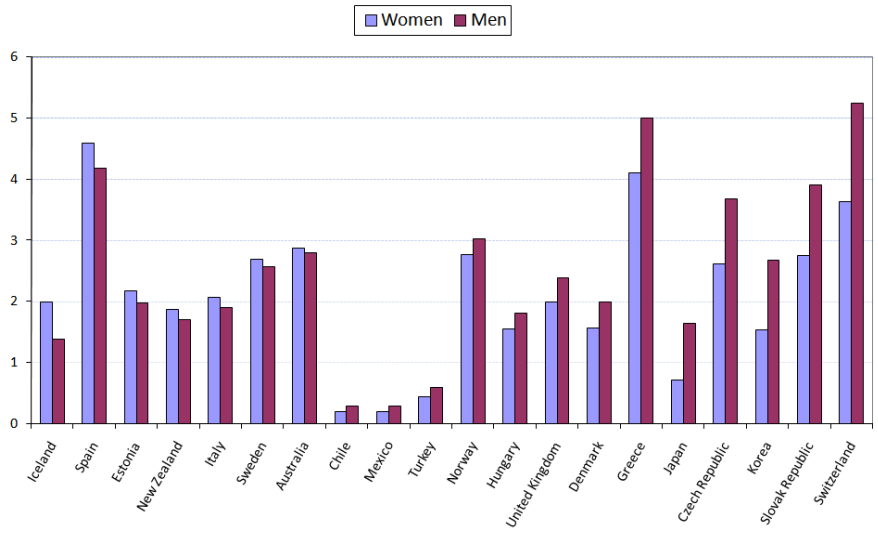


Figure 6.5c. Net entry rates in advanced research programmes by gender, 2005



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 underrepresented in some areas such as technology and engineering and overrepresented 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

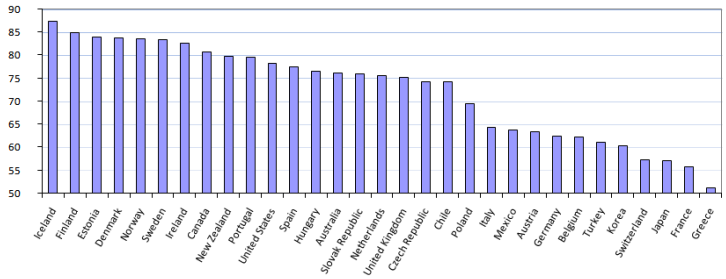


Figure 6.6b Percentage of tertiary-type A and advanced research qualifications awarded to females in the fields of Mathematics and Computer Science, 2005

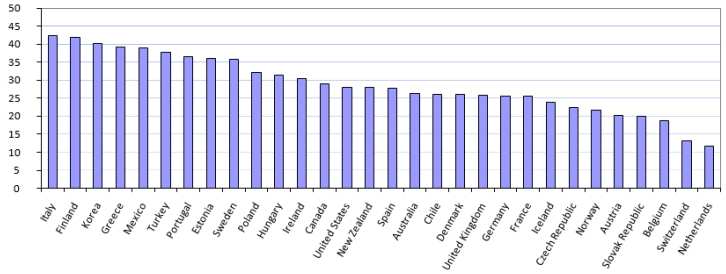


Figure 6.6c Percentage of tertiary-type A and advanced research qualifications awarded to females in the fields of Humanities, Arts and Education, 2005

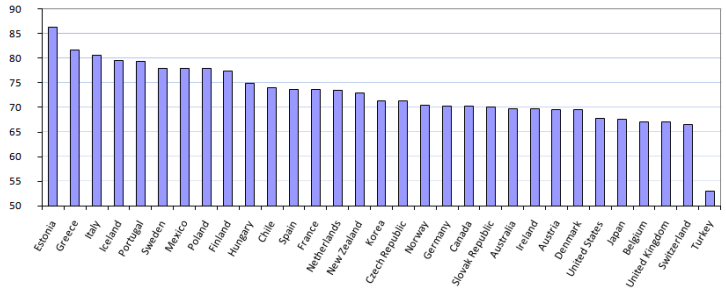
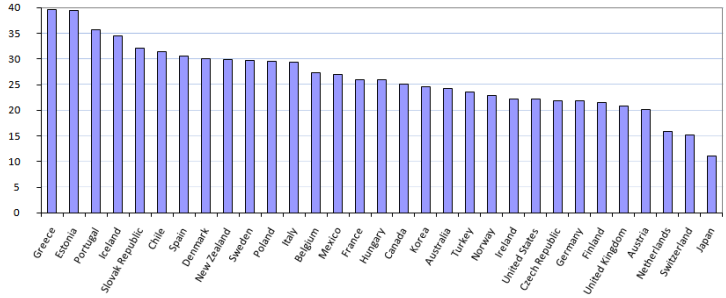


Figure 6.6d Percentage of tertiary-type A and advanced research qualifications awarded to females in the fields of Engineering, Manufacturing and Construction, 2005



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: it 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[22] increased until 1995 reaching 6%

[22] 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*).[23]

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

23 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, for every 10 urban people who attend university, six non-urban/isolated Australians on a *per capita* basis can 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.[24] 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 underrepresented 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 underrepresented 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

[24] 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 underrepresented 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 postsecondary 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 postsecondary participation. In addition, they find that parents' education had a strong effect on whether postsecondary 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.[25] Systems with high levels of segmentation show a stronger relationship between family background and student achievement (with consequences for tertiary enrolment) than those that do not. 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.

[25] 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 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 higher 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 Skolnik (1998) 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 Schepf (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, Ryley (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:

- 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;
- 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 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 postsecondary 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. Five 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, 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 only 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	**(1) Specific funds available to TEIs upon application for disabled students**	**None**	**Yes, imposed by national framework on all TEIs** (underrepresented gender)	**Yes, imposed by the national framework on all TEIs** (disabled students)
Switzerland	**Targeted funds** (project specific funding)	**Underrepresented 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.Irl.)[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: *m* : Information not available; *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 private TEIs. Public institutions do not exist at this level of education and most of the students are enrolled in government dependent institutions.
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. However, 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, A$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 $2 162 a year in 2008, assist students with general costs associated with higher education. Commonwealth Accommodation Scholarships, valued at $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 $4 080 (indexed annually). Over the five year period, 2005-2009, the Australian Government will have allocated around $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 Australian students;
- participation of Indigenous people in decision-making processes; and
- 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 underrepresented 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, as of 2007, has 57 staff and 173 students. 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 (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 underrepresented 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 underrepresented 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 underrepresented 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 underrepresented/underprepared 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 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-education 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]	*a*	*a*	Government authorities	*a*	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

Definition: 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 TEI.
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. There is a negotiation between the Ministry and higher education institutions on the annual increase of students.
5. The Council of Rectors which includes 25 TEIs sets the minimum score level at the national entrance examination.
6. Issues covered in this table refer to publicly-subsidised private TEIs. Public institutions do not exist at this level of education and most of the students are enrolled in government dependent institutions. Publicly-subsidised private TEIs are able to decide on the numbers of places in most programmes.
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 underrepresented 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.[26]

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 the 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

[26] 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 underrepresented 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 underrepresented 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 underrepresented 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.

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, A$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 will 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.

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 training 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.

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 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.

Career guidance and counselling services at the school level are instrumental in improving equity of access

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). 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 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. 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 identify 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 underrepresented 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 stronger 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 out 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 underrepresented 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 underrepresented 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.

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

7.1 Introduction

This chapter focuses on tertiary education institutions (TEIs) role 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 tertiary education institutions. 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 tertiary education institutions – 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 tertiary education institutions. 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. Tertiary education institutions 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.[27] Moreover, research in the social sciences and humanities is also essential for solving 'technical' problems. Nightingale and Scott (2007: 543) 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 NESTA's recent estimates (2006: 2) creative industries[28] account for 8% of the United Kingdom's economy, and the global market value of the 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

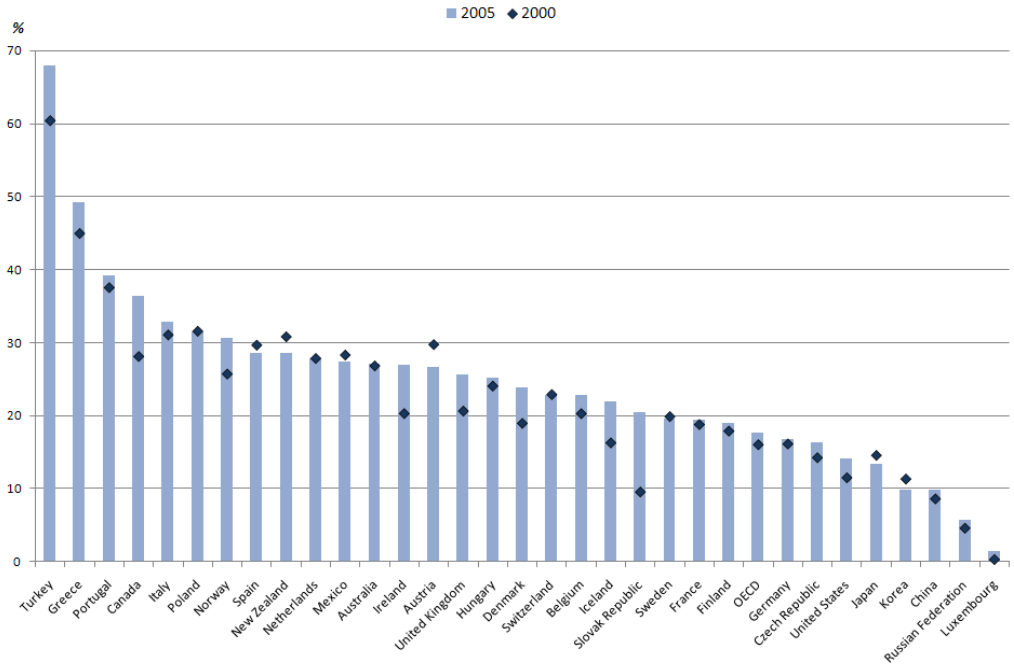
Investment in R&D is an important indicator of the efforts that countries are putting into achieving scientific and technological progress. Figure 7.1 shows the higher education sector performs a large share of R&D in many countries. In 2005, the share of

27 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 (Vision Matauranga Advisory Group to the Ministry of Research, Science and Technology, 2006).

28 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: p. 10).

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 sector grew in more than half of the countries represented in Figure 7.1 below. 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[1] and 2005[2]



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

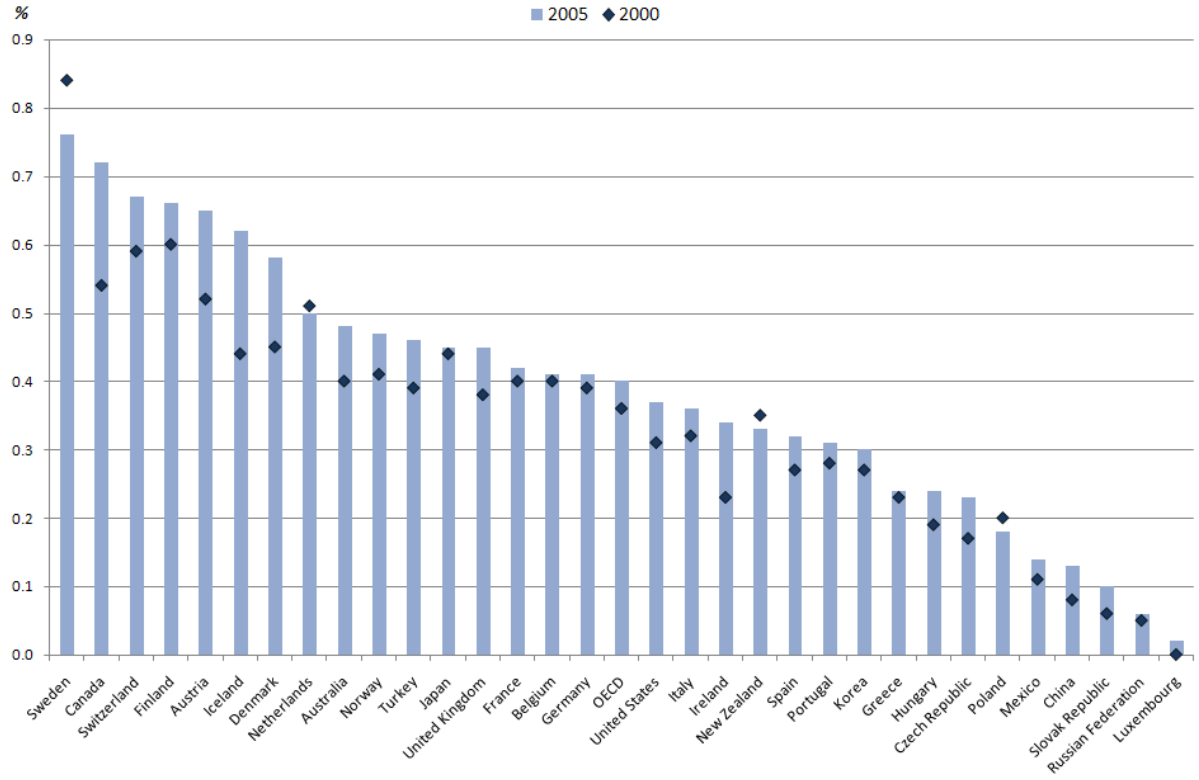
Note: 1. 1998 instead of 2000 for Austria; 2001 for the Czech Republic, Greece, New Zealand, Norway and Sweden.
2. 2003 instead of 2005 for New Zealand; 2004 for Australia, Italy, the Netherlands and Switzerland.

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 the period 2000 and 2005 (Figure 7.2). The largest increases occurred in Canada, Iceland, Denmark, Austria and Ireland. In Sweden, Poland, New Zealand and the Netherlands 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 the United States, Japan, Germany, France, Italy and the United Kingdom, devote between 0.45% and 0.35% of GDP to R&D in higher education intuitions. Luxembourg had the lowest ratio because it established its first university in

2003.[29] Other OECD countries with low R&D spending by higher education institutions as a proportion of GDP are Poland, Mexico and the Slovak Republic.

Figure 7.2. Higher Education Research and Development (HERD) as a percentage of GDP, 2000[1] and 2005[2]



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

Note: 1. 1998 instead of 2000 for Austria, 2001 for Greece, Norway and Sweden.

2. 2003 instead of 2005 for New Zealand; 2004 for Australia, Italy, the Netherlands, Switzerland and Turkey.

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

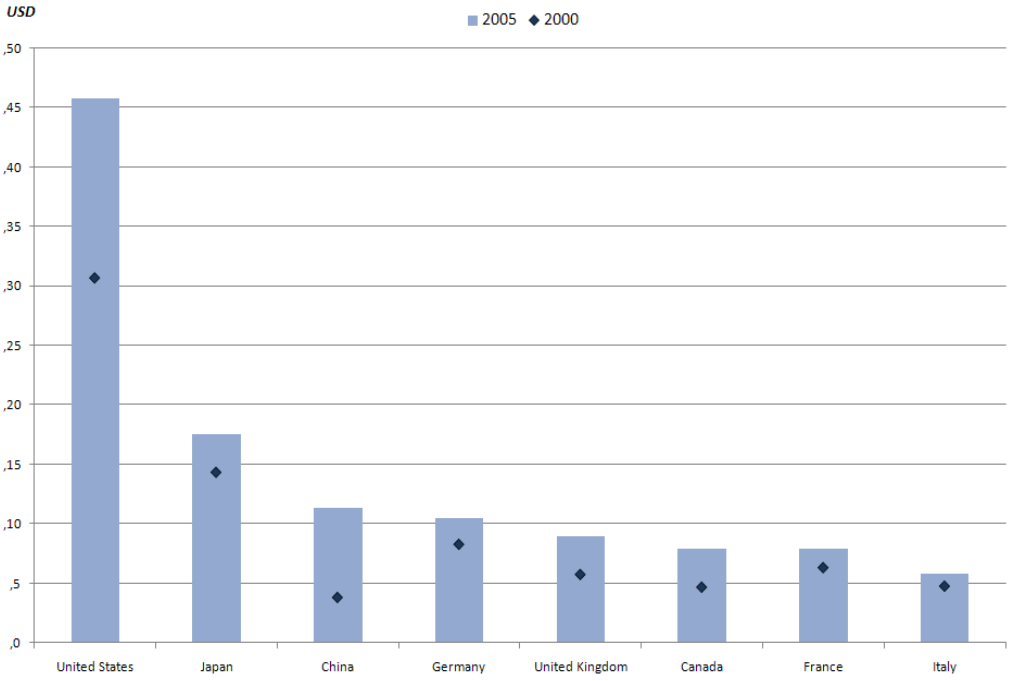
Between 2000 and 2005, higher education R&D expenditure (in absolute terms) increased across all countries represented in Figure 7.3. China experienced the highest average annual increase over the period reaching 24%, followed by the Slovak Republic (20%) and Ireland (17%). Russia, the Czech Republic, Iceland, Hungary, Austria, Canada, Spain and Mexico 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.

29 However, other types of TEIs existed before 2003.

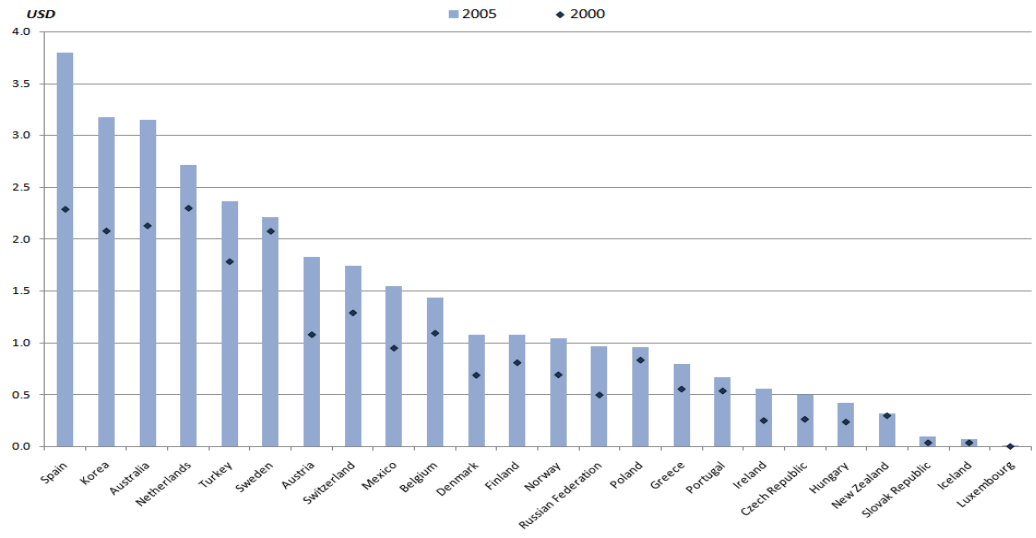
Figure 7.3. Higher education expenditure on R&D, 2000[1] and 2005[2]

Billions of USD, current (PPP)

Expenditure above 5 billion



Expenditure below 5 billion



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

Note: 1. 1998 instead of 2000 for Austria, 2001 for Greece, New Zealand, Norway and Sweden.

2. 2003 instead of 2004 for New Zealand, 2004 for Australia, Italy, the Netherlands, Switzerland and Turkey.

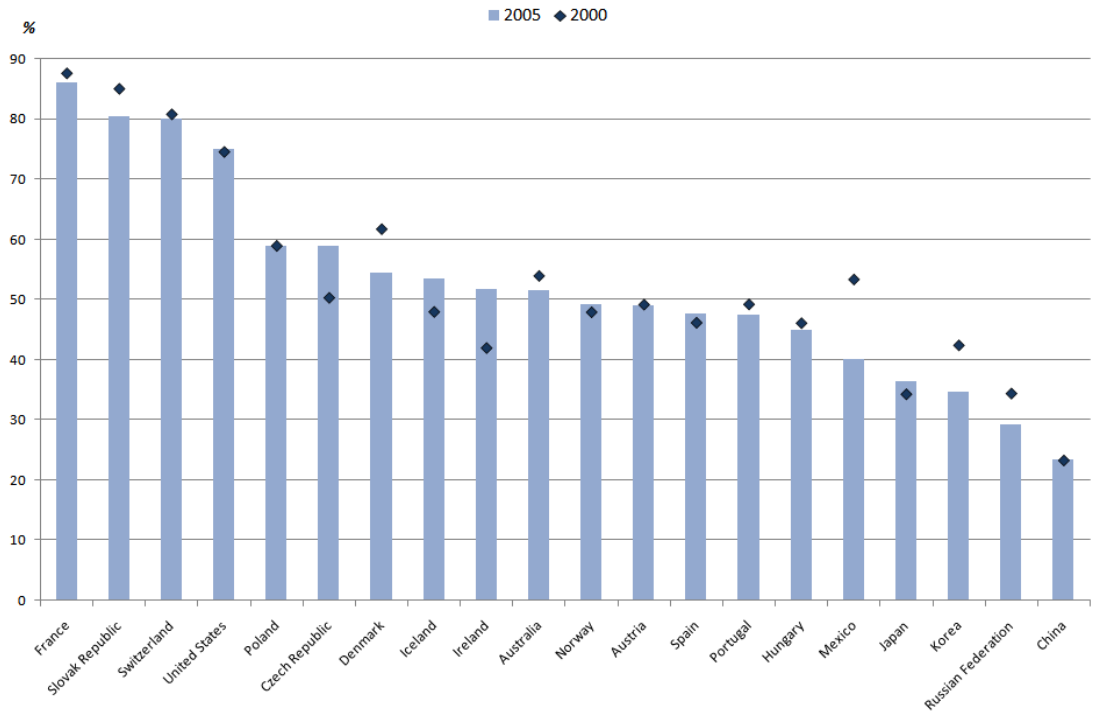
Source: OECD, Main Science and Technology Indicators Database, 2007-1.

Types and fields of R&D

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.

Figure 7.4. Share of basic research performed within the higher education sector, 2000[1] and 2005[2]

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



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

Note: 1. 1998 instead of 2000 for Iceland, 1999 for Norway. 2003 instead of 2005 for Mexico and Portugal; 2004 for Australia, Austria, Denmark, France and Switzerland.

Source: OECD, R&D database 2007.

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.[30] In some countries, 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: p.17). 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.

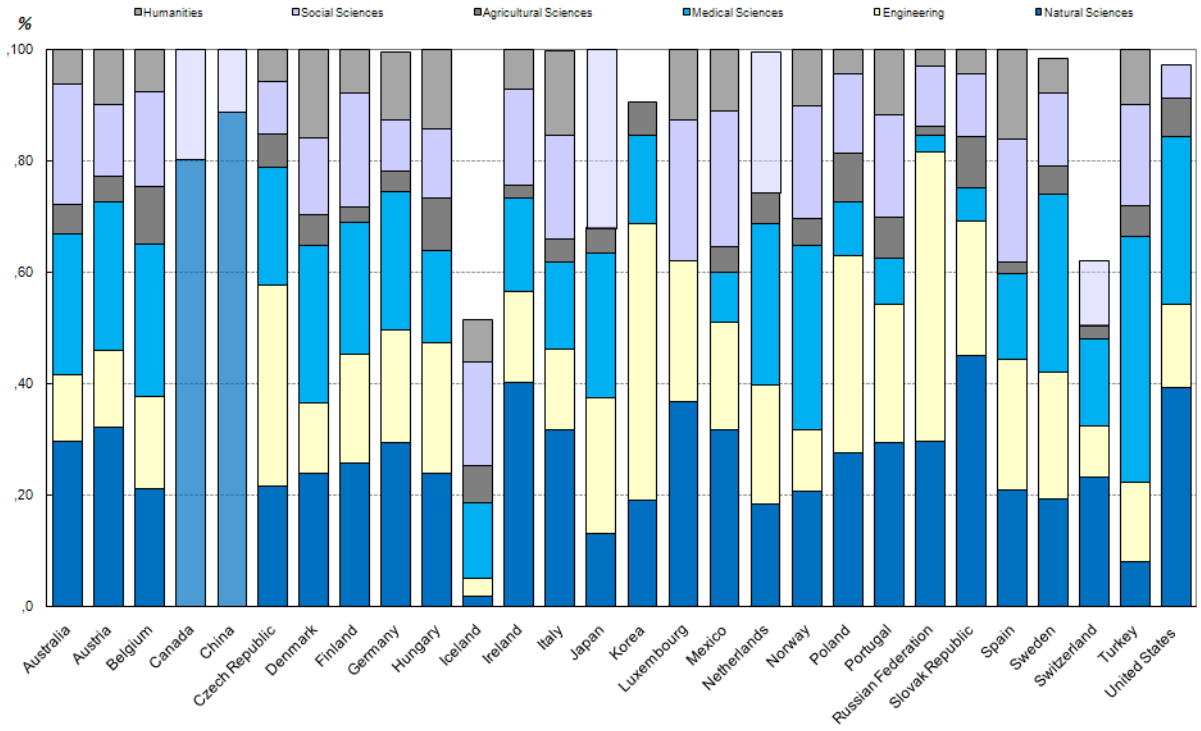
R&D expenditures differ across countries by field of study

Significant differences remain in the fields of study towards which higher education R&D is directed. In Russia 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 Spain and Mexico and South Africa 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.

30 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[1]

As a % of total higher education R&D expenditure



Note: 1. 2001 instead of 2005 for the United States, 2002 for the Netherlands, 2003 for Mexico and 2004 for Australia and Austria. In Canada and China sciences and engineering is 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,[31] the number of journal articles is an indicator of output and knowledge generation. As shown in Figure 7.6 below, 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.[32] However, in terms of the relative prominence of scientific literature (measured by the

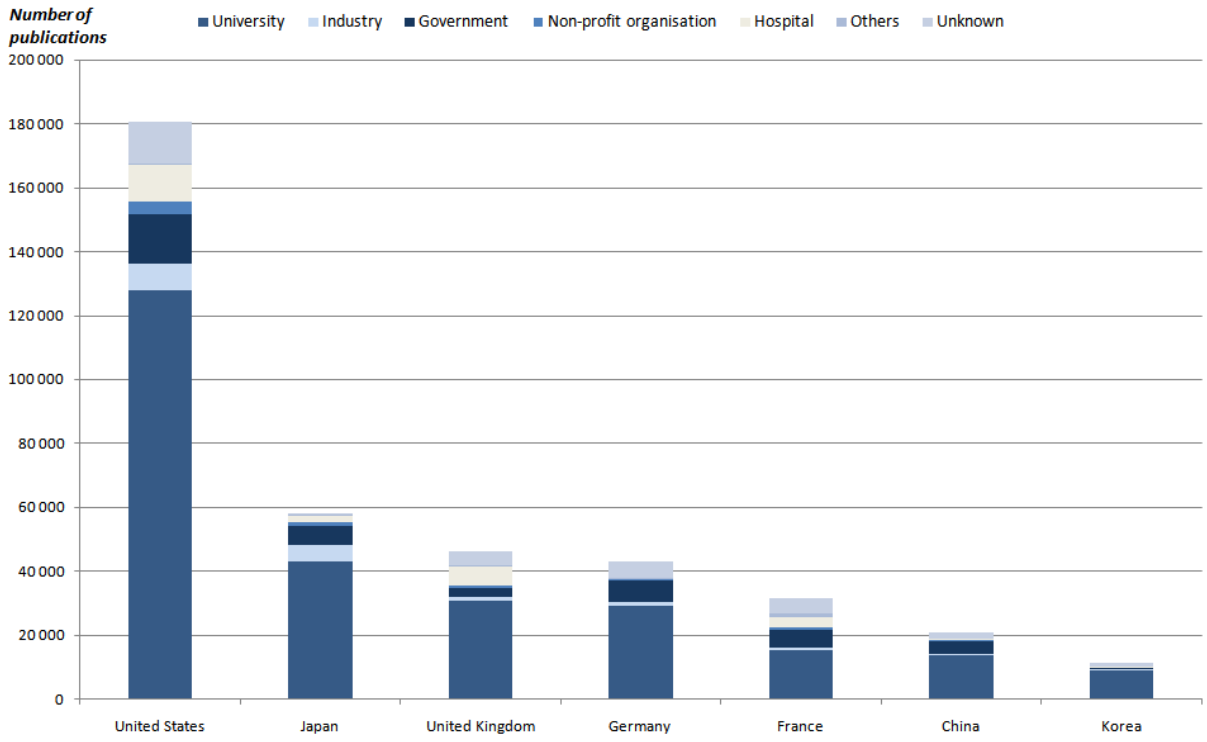
31 For example, bibliometric databases do not cover all disciplines equally well, citation practices vary by scientific field, non-English journals are less well represented and the frequency of citation is not necessarily an indication of quality.

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

relative citation index), the United States ranked second, behind Switzerland, in 1995 and 2003 (National Science Foundation, 2006: A5-135). 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 (Country Background Report). In New Zealand, a study on the academic impact of research found the relative impact of research performance[33] differed markedly across universities and disciplines (Ministry of Education, 2007).

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

Total number of publications



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

Source: National Institute of Science and Technology Policy, 2005.

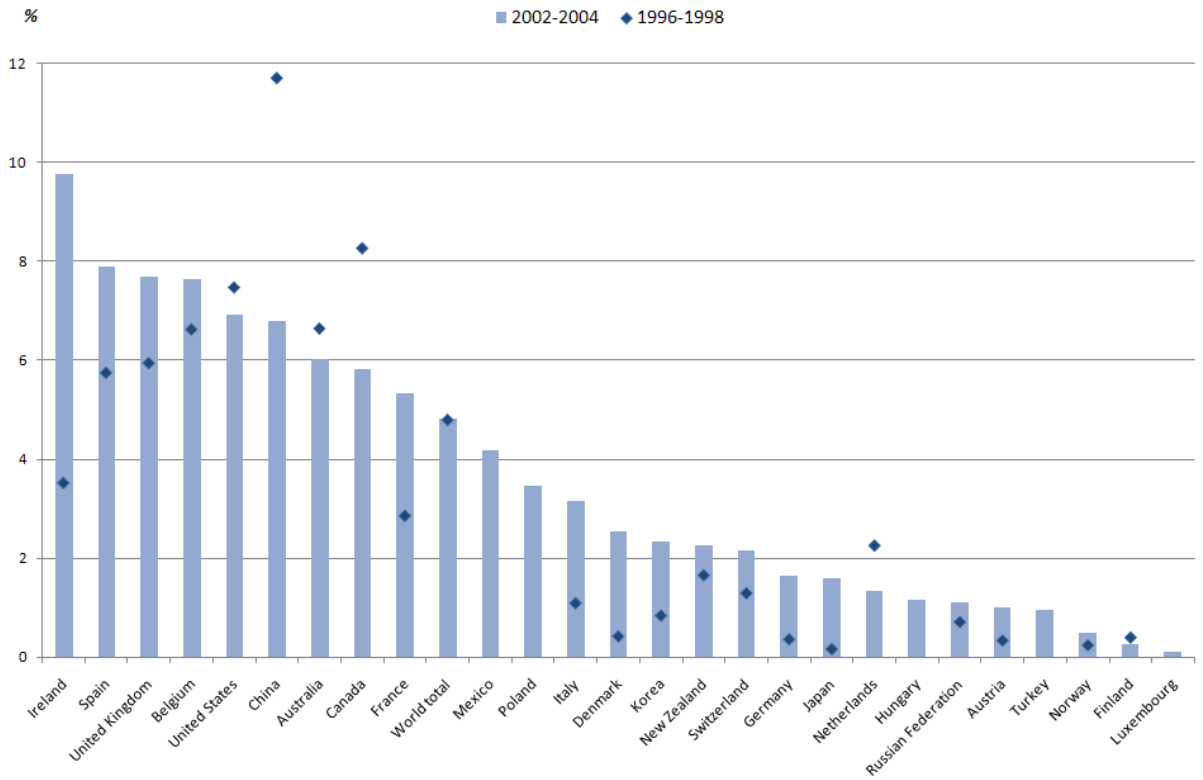
While TEIs dominate other institutional sectors in terms of scientific publication output, they account for only 4.8% of European Patent Office (EPO) world patents (Figure 7.7). The vast majority of patents are owned by companies (82% in 2002-2004). The share of patents owned by universities increased 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

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

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, 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[1] owned by universities[2], 2002-2004

As a percentage of total EPO patents



Countries are ranked in descending order of share of patent applications 2002-2004.

Note: Patent counts are based on the priority date, the inventor's country of residence and fractional counts.

1. 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.

2. 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: p. 92-93), 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 below provides a rough comparison of the size of each group in 2005 across the main OECD regions, Russia and China. 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. HRST in selected countries, 2005

	HRST (E) (ISCED 5A, 5B & 6)	R&D personnel (fulltime equivalent)	Researchers (fulltime 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
EU-15	51 770 011[1]	1 912 355[1]	1 088 206[1]
Russia	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 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 of this Chapter). 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.

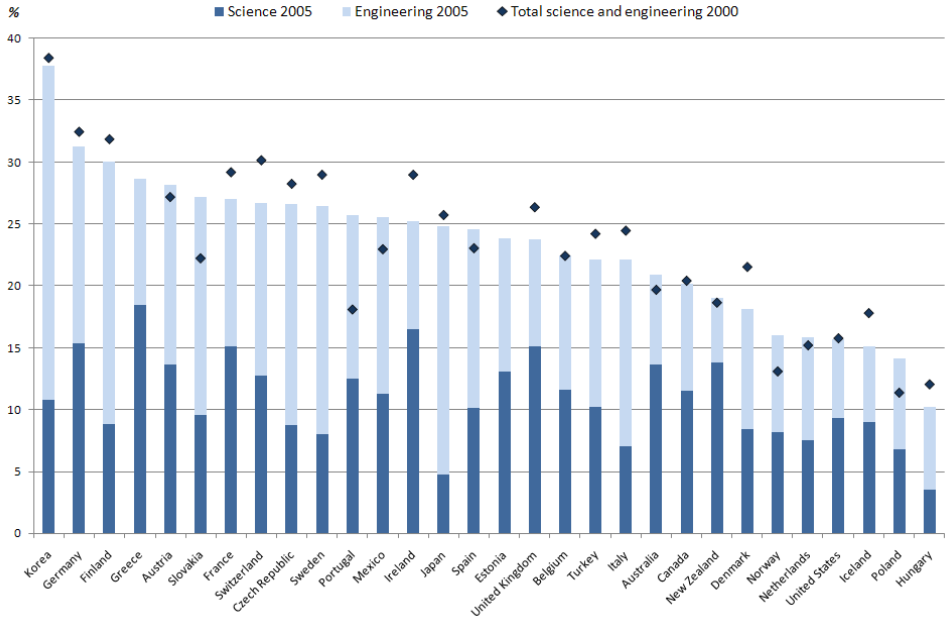
The supply of S&E graduates

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 Ireland, Switzerland, Denmark, Iceland the United Kingdom and Sweden. The share of S&E graduates in Portugal grew from 18% in 2000 to 26% in 2005, whereas growth in Norway, Poland, Mexico and Spain was between 1.5 and 5 percentage points in 2005.

Figure 7.8. Science and engineering degrees, 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 2005.

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, Norway, Germany Poland, Portugal and the Netherlands, 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 non universities 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 was available 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;
- 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.

OECD, Thematic Review of Tertiary Education, Country Review Report and Country Background Report and *The System In Change: Monitoring Report 2005 — Tertiary Education Strategy 2002/07*', New Zealand Government.

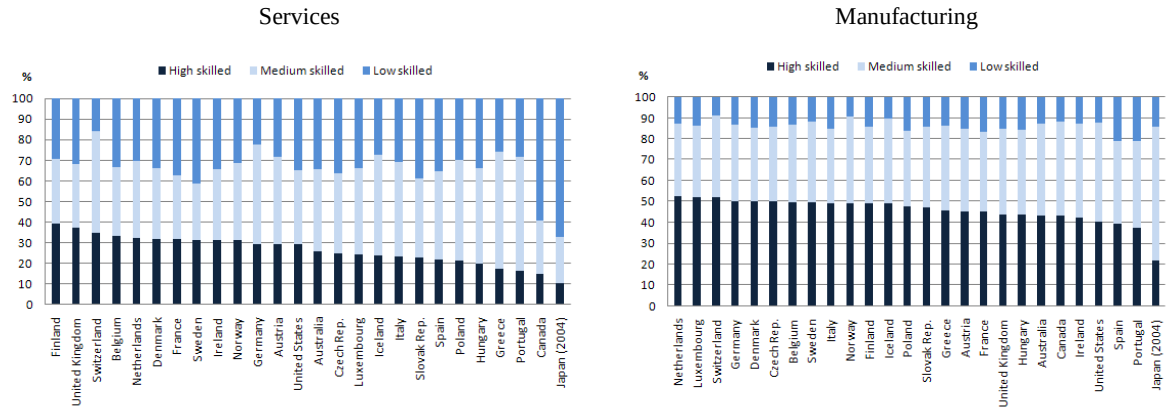
Vocational TEIs are essential for enhancing research and innovation. While many vocational TEIs are not engaged in formal R&D (see Section 7.3.1 above) their role, particularly in terms of training and knowledge transfer to industry is crucial. In Poland, for example, the review team noted that: "the 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'' (OECD, 2007, Country Review Report: p. 70). 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 non universities 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.

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 7.9. 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, ISCO 8-9 are considered as low skilled. These figures represent OECD calculations based on national estimations. 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.

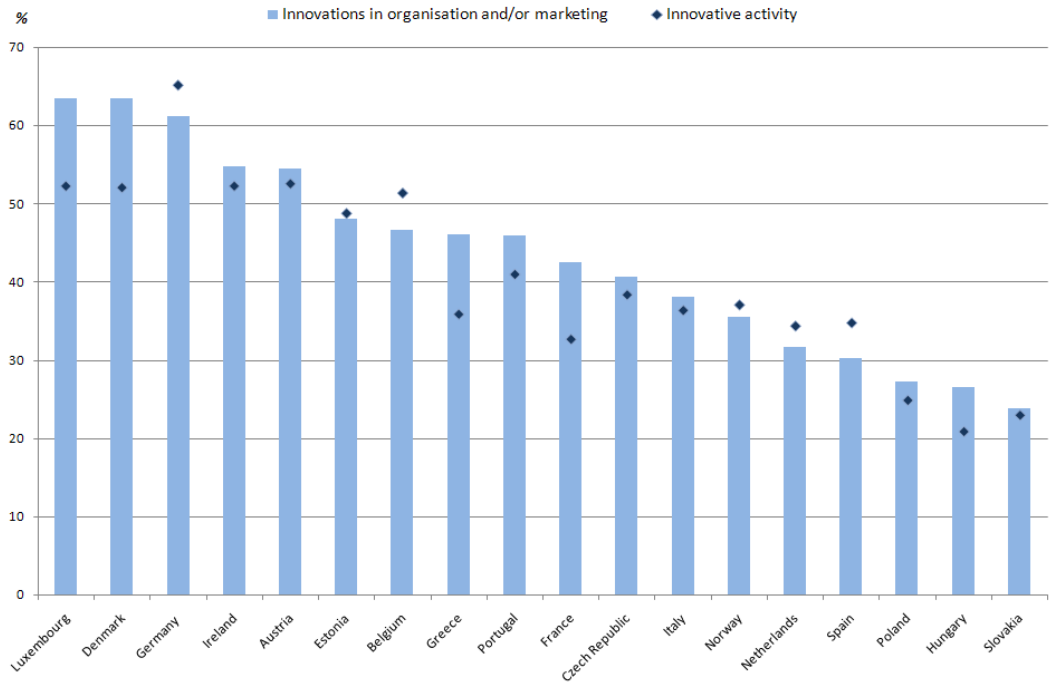
In recent years measuring non-technological, or organisational innovation, has received increasing attention and it is now routinely included in national innovation surveys (OECD, 2005). As shown in Figure 7.10, the proportion of firms reporting organisational and marketing innovations (*i.e.* non-technological innovation) was higher than technological innovative activity[34] 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

34 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, 2005 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: p. 9). This further demonstrates that TEIs need to equip graduates with flexible and broad skill-sets to enhance innovation.

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 2002-2004.

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.

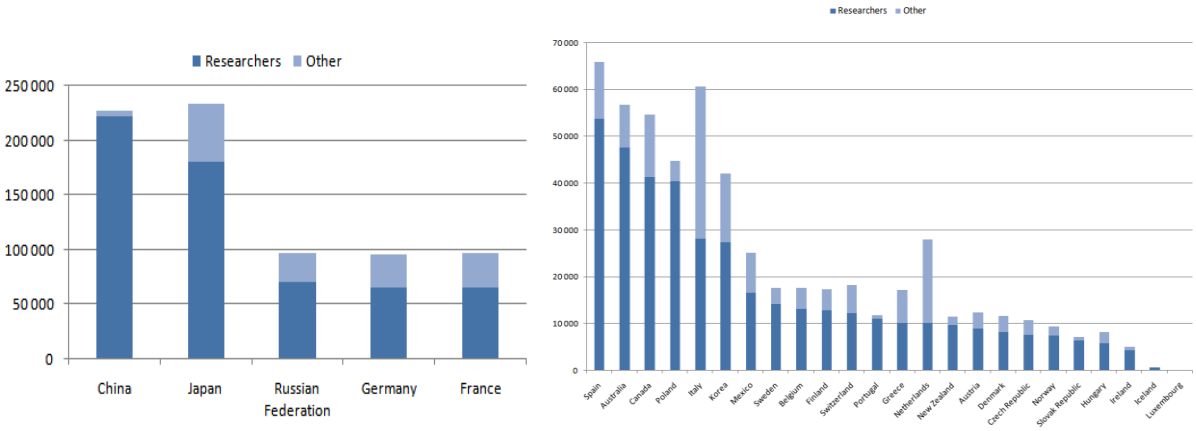
Source: Eurostat, Community Innovation Survey Database, 2007.

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 intuitions. 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.

Figure 7.11. Higher education R&D personnel, 2005[1]

Total number (Full time equivalent)



Countries are ranked in descending order of total number of higher education R&D personnel.

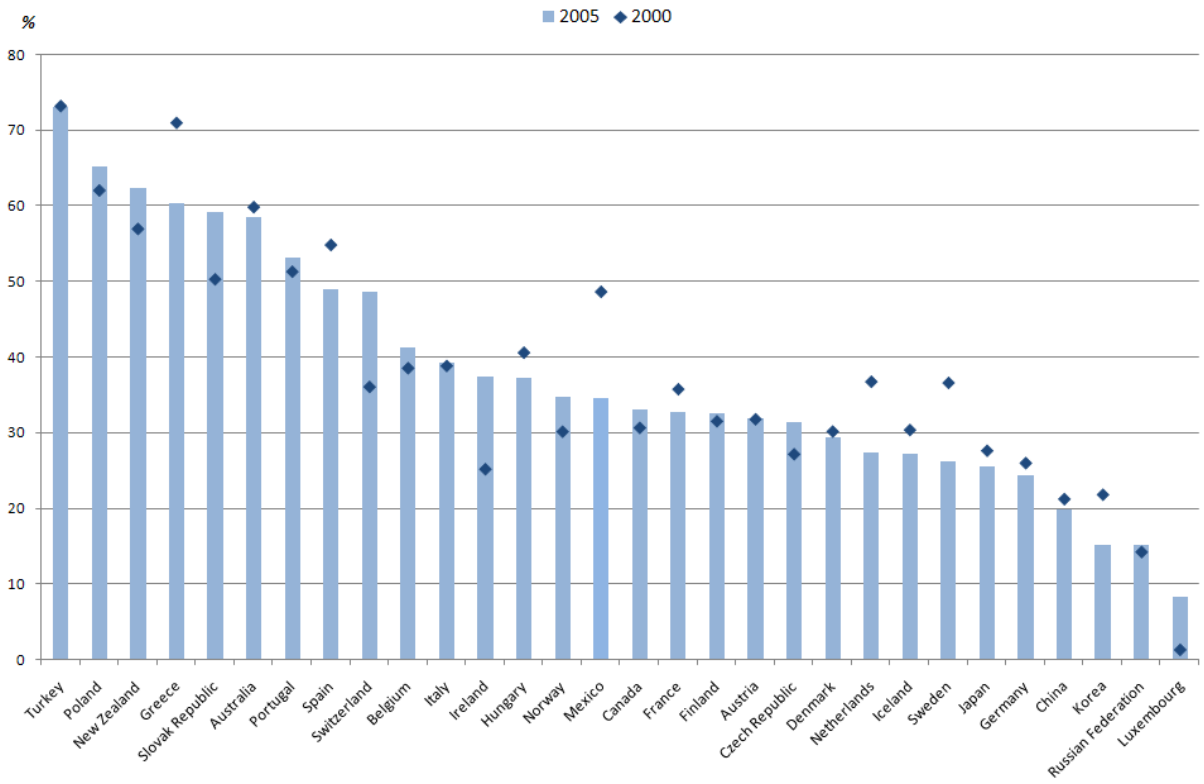
Note: 1. 2003 instead of 2005 for the Netherlands and New Zealand, 2004 for Australia, Canada, France, Italy, Switzerland and Turkey.

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.

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 above).

Figure 7.12. Higher education researchers as a percentage of national total, 2000[1] and 2005[2]



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

Note: 1. 1998 instead of 2000 for Austria, 1999 for Denmark, Greece, Iceland, Mexico, New Zealand, Norway, Sweden and the United States.

2. 2003 instead of 2005 for the Netherlands and New Zealand, 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, Russia, Sweden and the Netherlands[35]). 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%.

35 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[36]

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. 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

36 Part of this section draws on work conducted by the Committee for Scientific and Technological Policy Working Group on the Steering and Funding of Research Institutions (SFRI) HRST work programme.

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, 2007b and 2006a).

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.

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 infrastructures 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 *CRC 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, Norway, the Netherlands 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 undergraduate, post graduate and PhD 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 Minister 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 they 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.

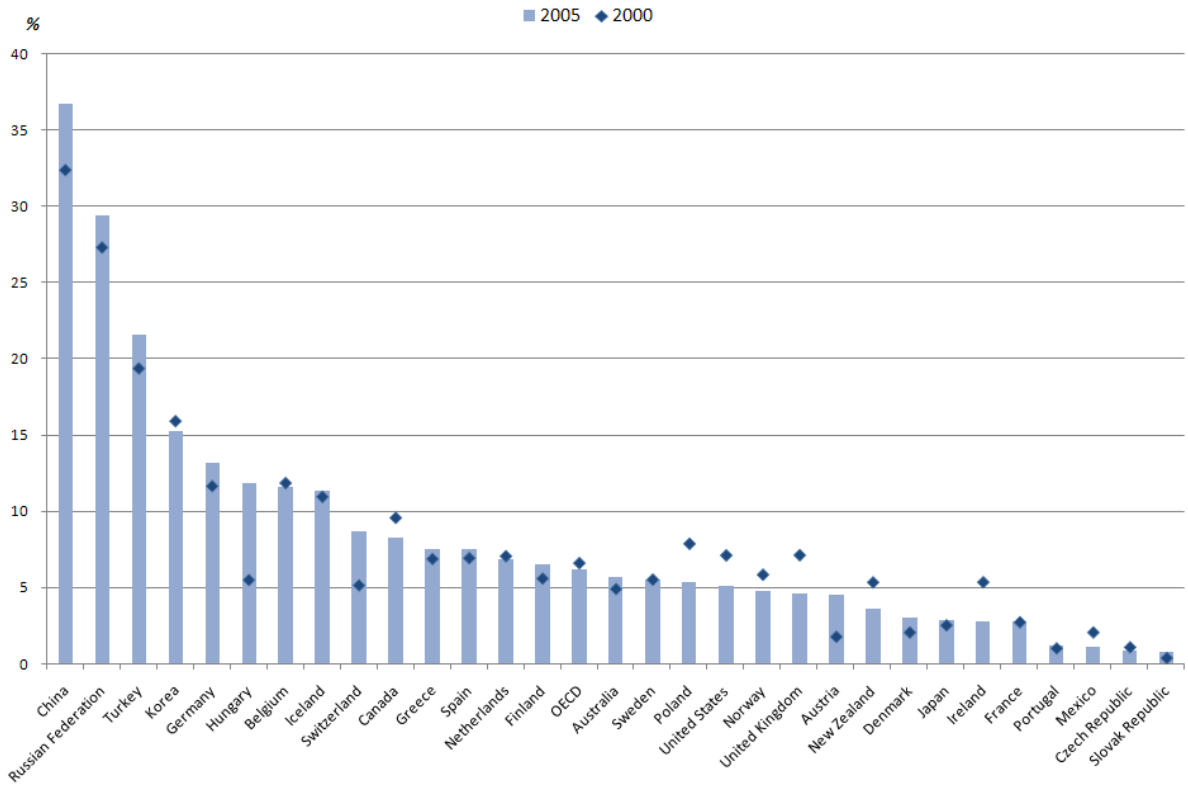
OECD, Thematic Review of Tertiary Education, Country Review Reports and Country Background Reports and National Programme Websites.

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 the United States, Poland, the United Kingdom and Ireland the share of industry financing dropped by more than 2 percentage points in each country.

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, 2005), 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 7.13. Percentage of Higher Education R&D financed by industry, 2000[1] and 2005[2]



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

Note: 1. 1998 instead of 2000 for Austria, 2001 for Greece, Iceland, New Zealand, Norway and Sweden.

2. 2003 instead of 2005 for Belgium, Greece, the Netherlands, New Zealand and Sweden, 2004 for Australia, Denmark, France, Germany, Spain, Switzerland and Turkey.

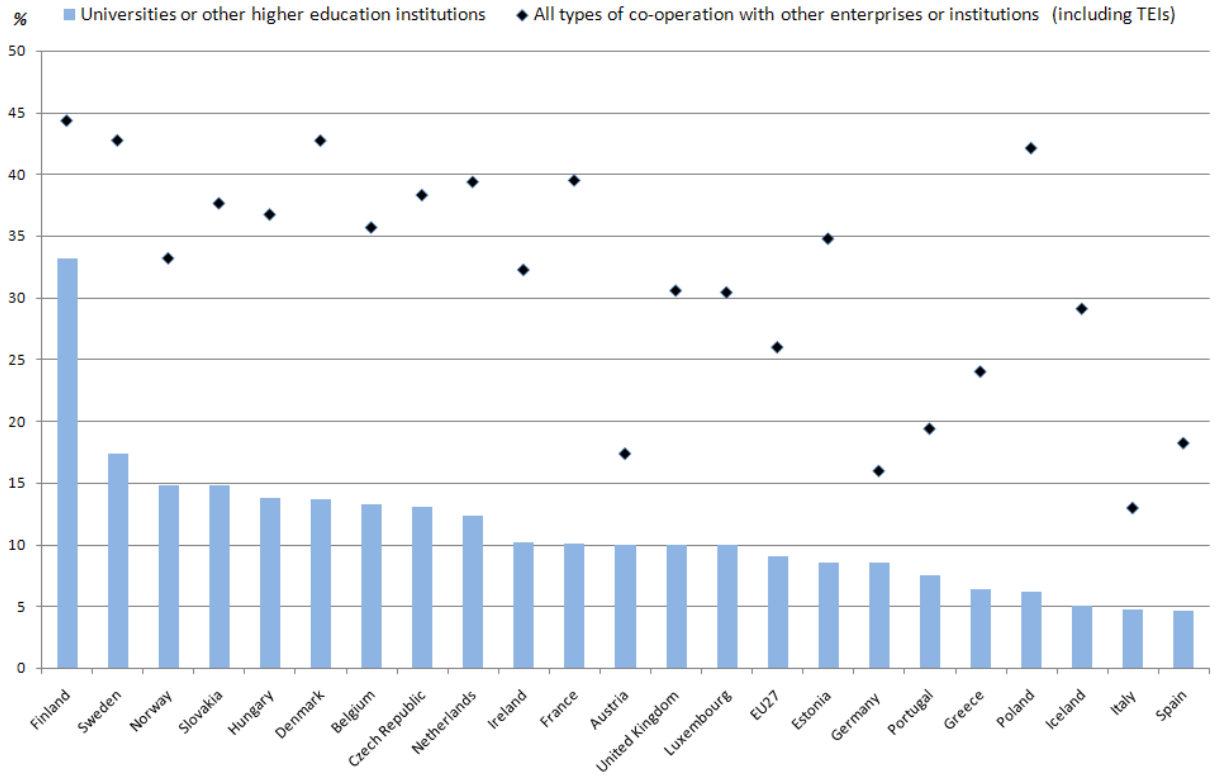
Source: OECD, Main Science and Technology Indicators Database, 2007-1.

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.[37] These results are not surprising given the different roles collaboration partners play in the innovation process.

Figure 7.14. Co-operation in innovation with other enterprises, institutions, and TEIs

As a percentage of all innovating firms, 2002-2004



Countries are ranked in descending order of co-operation with universities or other higher education institutions.

Note: Innovation co-operation refers to active participation with other firms or non-commercial institutions on innovation activities. Co-operation can take place with more than one partner.

Source: Eurostat, Community Innovation Survey Database, 2007.

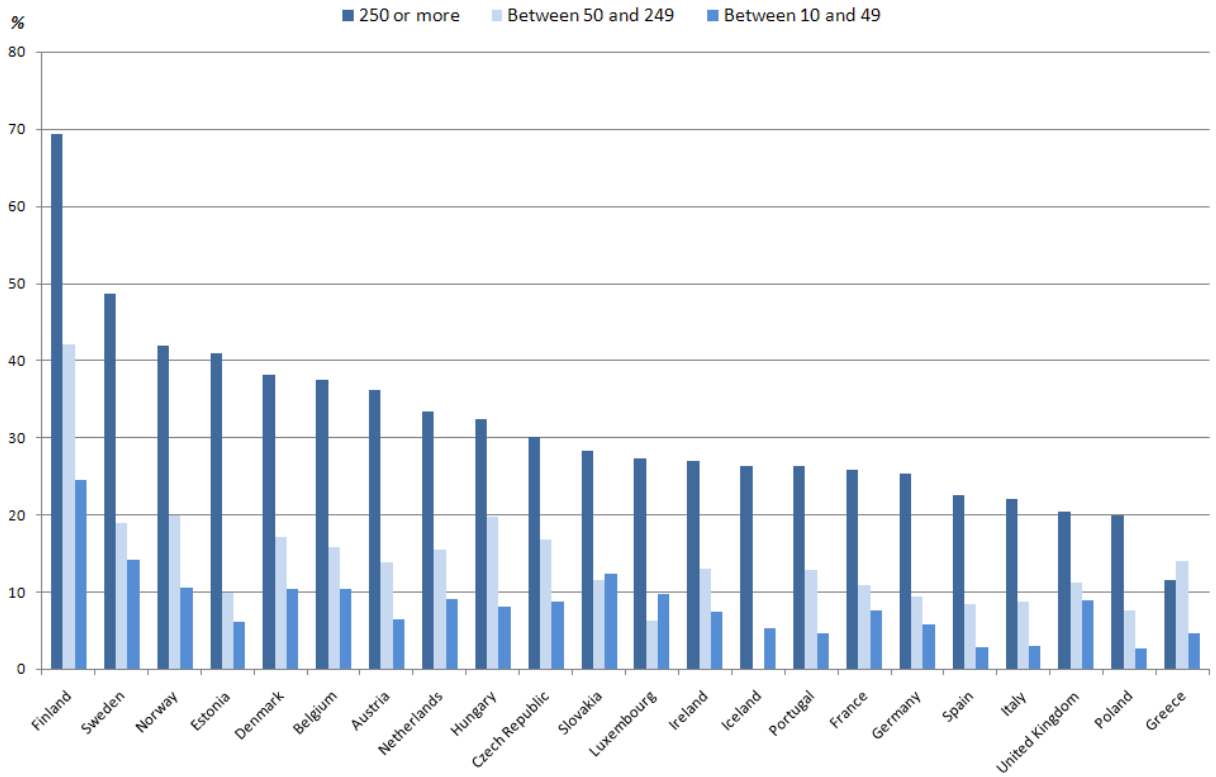
As Figure 7.15 shows, large firms reported more collaboration with TEIs than small firms. This may reflect the higher rate of new product development in large firms as well as easier access to collaboration partners and more resources. The variation among countries is noteworthy. In Finland, nearly 70% 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 Finland, Sweden, Slovakia, Norway, Belgium and Denmark, co-operation between small firms and TEI is under 10% in each country and it drops below 5% in Portugal, Greece, Italy, Spain and Poland. A similar

37 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).

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.

Figure 7.15. Innovating firms co-operation in innovation with universities or higher education institutions by firm size

As a percentage of all innovating firms, 2002-2004



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

Source: Eurostat, Community Innovation Survey Database, 2007.

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: p. 21), however, the basis of advocating 10% is not apparent. In 20 of the 27 European 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 (*ie.* 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 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). Although the coverage of countries in the CDH study is currently limited, it is expected that data will be available for another 20 countries in mid-2008

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 is 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 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" (2002: p. viii). 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).

Table 7.2 **Commercialising public research, 2007**

			Incentives structures	
	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?	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 institutions	Yes, regular survey (biennial)	Yes, fully at the discretion of TEIs[2]	Yes, at the discretion of institutions (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 institutions	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 institutions
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 institutions)	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 institutions
Norway	No[9]	Yes, regular survey (annual)[10]	No	Yes, with time restrictions (at the discretion of institutions)
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 institutions[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 academic 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.

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 this 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)[38] 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).[39] 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.

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.*, 2005:1 p. 107). 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: p. 1310) 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

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

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

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.

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).

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 together the previous Ministry Trade and Industry, Ministry of Labour and the Regional Development Department from the Ministry of the Interior. A National Innovation Strategy – the first of its kind – will be prepared by early 2008. France has launched a series of reforms to strengthen the quality of higher education and research as well 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, 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 -HCST*) to the President of the Republic. (For a comprehensive overview of policy reforms and initiatives see OECD, 2006a: Chapter 2 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 Russia's objective is 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 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).

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, 2007d). 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 Russia) 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, PhD 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 focuses on key industries in many different sectors including culture, media and digital content. In **Japan**, the Knowledge Cluster Programme of MEXT 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. For further details about these programmes see *Higher Education and Regions: Globally Competitive, Locally Engaged* (OECD, 2007d, Chapter 5).

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.

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.

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: p. 14). 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, India and China, 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 maintain good health and safeguarding Australia.

EU – The ERAWATCH exercise reveals noticeable parallels across EU countries in terms of public R&D priorities, with an overwhelming focus on ICT, biotechnology and nanotechnology.

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.

Source: OECD, Thematic Review of Tertiary Education, Country Review Reports and Country Background Reports, European Commission, 2007.

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.[40] It shows a combination of allocation mechanisms are used, but project-based funding is now prevalent and is used in all countries.[41] 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.

40 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.

41 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**[1]

	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[2]	**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)[3]	**Yes, partially** (includes budget for equipment)	**Government authority**	**Funding formula**	Number of: master's degrees awarded, PhD 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)[3]	**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, but with some restrictions** (equipment, beginning researchers)	**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: PhD 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; PhDs 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**[1] (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**[4]	*a*
	Research centre funding	**Yes, in a way similar to public institutions**	**Yes, fully**	**Government authorities**	**Negotiations with government authorities**[4]	*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[5]	**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, PhD 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 PhD
	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**[1] (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[2]	**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[6]	**Research core funding**	**Yes, but with some restrictions** (only publicly-subsidised private TEIs)	**No, integrated in another budget item**	**Intermediate agencies**[7] (The Funding Councils)	**Funding formula**	Results of a periodic Research Assessment Exercise[8]; 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.
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; *m* : Information not available; *TEI* : Tertiary education institution
1. Please 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.
2. Information concerns universities only and does not account for the non-university sector.
3. Private TEIs that are not under public responsibility are not eligible for public funds but can offer accredited Master courses.
4. Research core funding and research centre funding are allocated through performance contracts, which are negotiated with government authority. The performance contract is based on national priorities, work with other research institutions, tender for international funding and management of research quality.
5. Public institutions do not exist at this level of education and most of the students are enrolled in government dependent institutions.
6. All higher education institutions in the United Kingdom are legally private independent bodies with a charitable status, most of which are publicly funded.
7. In Northern Ireland, funding is made directly to TEIs by the Department for Employment and Learning, and not via an intermediate agency.
8. 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.

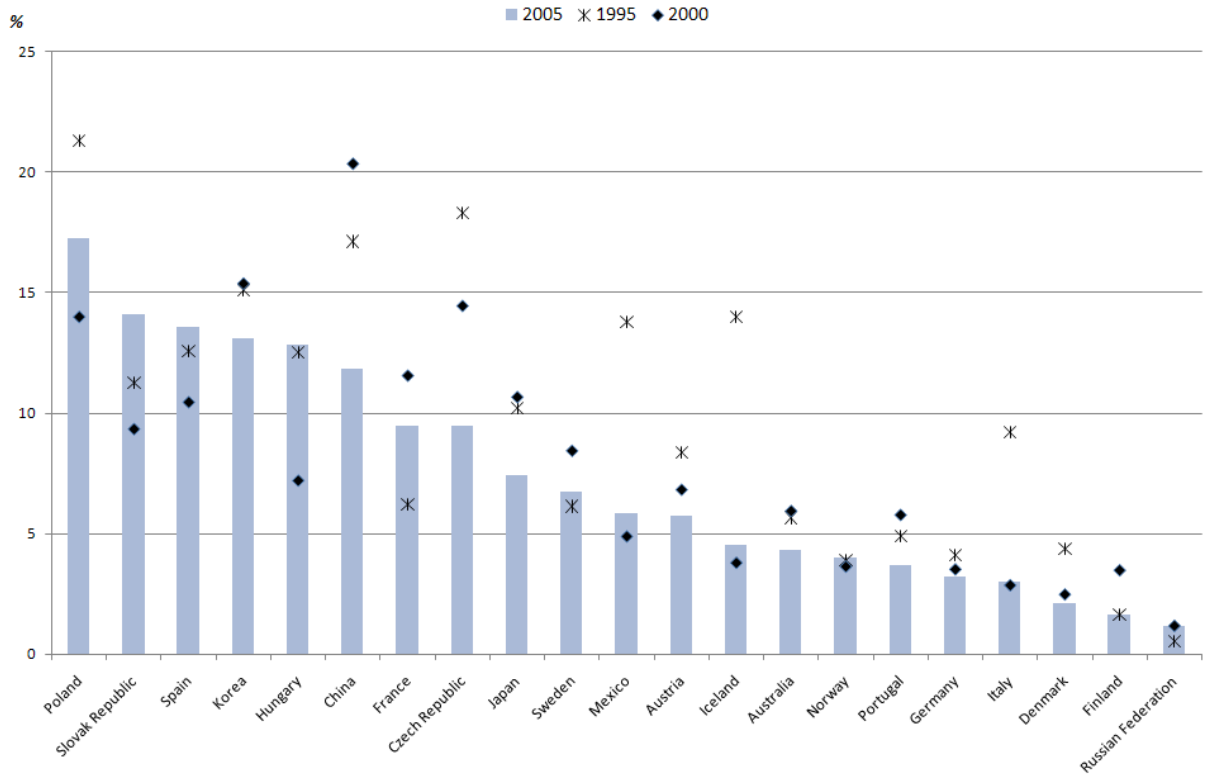
Source: Derived from information supplied by countries participating in the project. The table should be interpreted as providing broad indications only, and not strict comparability across countries.

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: p. 19) 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: p. 623) notes that short-term research and less risky research may reduce the likelihood of 'scientific novelty'. Furthermore, Geuna and Martin (2003: p. 296) 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: p. 256), 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 Iceland, the Czech Republic, Mexico, Italy and China 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 Mexico and Iceland 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 *etc.*) 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, *etc.*) 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[1], 2000[2] and 2005[3]

As a percentage of all types of R&D costs



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

Note: 1. 1998 instead of 1995 for China, 1997 for Sweden, 1996 for Korea and the Slovak Republic, 1993 for Austria, 1992 for Italy.

2. 2001 instead of 2000 for Sweden; 1998 for Austria.

3. 2003 instead of 2005 for Mexico, Portugal and Sweden; 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 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 Program (the 21st COE) and the *Global Centers of Excellence Program* (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 will 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: 480) 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.[42] 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.[43] 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 review 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 undergraduate 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.

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

42 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, United Kingdom: 45).

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

for impact assessments. Enhanced attention has therefore been given to evaluation 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[44] arise when assessing the impact of research activities:

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 are 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), 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.

44 From OECD, 2006a: 179.

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	Yes, in some cases (for decisions on accreditation)[10]
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; *m* : Information not available; *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 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 project. However for most multi-year research projects, external evaluation is conducted every year.
5. Accreditation procedures are part of the research evaluation, but a systemic and comprehensive system of research evaluation was under construction at the time this Table was prepared
6. Approximately 40 indices are used to assess research quality.
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 during the accreditation process. Please see Table 6.2 (Chapter 6) for more information.
9. Reports of the quality monitoring process are not publicly available in Northern Ireland.
10. The reports of the quality monitoring process are available for represntatives of accreditation expert teams as well as for TEIs assessed. TEIS can make these reports widely publicy available at their own discretion.

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[45] 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: p. 12). 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: p. 16). 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 patens has fallen at the same time as the sheer number of university patens 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: p. 126).

Butler (2007: p. 572) 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 tertiary education institutions, 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.

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 (2000), 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;

45 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

Tertiary education institutions have for some years now been the focus of intense policy interest, with most OECD countries showing substantial policy reforms. These have often focused on funding mechanisms, both for institutions, and for students. However there are also policy issues related to research and innovation performance, and these are discussed below. This final section provides pointers for future policy aimed at enhancing the role of tertiary education in research and innovation. It draws on the features of tertiary education activities discussed above, and from country experiences documented in the Country Background Reports and Country Review Reports.

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.

A variety of skills are needed 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 institutes should focus on providing their students with flexible and transferable skills and competencies.

Maintain adequate research infrastructure

Research infrastructure, instruments and equipment needs 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 tertiary education institutions, 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.

Research and innovation policies require a long-term perspective

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 higher 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.

List of acronyms

CDH	Careers of Doctorate Holders
CRCs	Co-operative Research Centres
EPO	European Patent Office
ERC	European Research Council
GERD	Gross Domestic Expenditure on R&D
HERD	Higher Education Expenditure on R&D
HRST	Human Resources for Science and Technology
ICT	Information and Communication Technologies
IPRs	Intellectual Property Rights
ISCO	International Standard Classification of Occupations
MNEs	Multi-national Enterprises
PCT	Patent Co-operation Treaty
R&D	Research and development
RAE	Research Assessment Exercise
S&E	Science and Engineering
S&T	Science and Technology
SMEs	Small and Medium-sized Enterprises
TEIs	Tertiary Education Institutions
TTOs	Technology Transfer Offices

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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.[46] 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 is 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

46 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 that of 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, 2000) 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 undergraduates. 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 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 undergraduate 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, computing science, physics, humanities and the social sciences are more 'peripatetic', while health, technical and educational sciences are rather 'indigenous'. Secondly, 'peripatetic' staff is 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 more competitive and stresses that the academic labour market is increasingly internationalized. 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

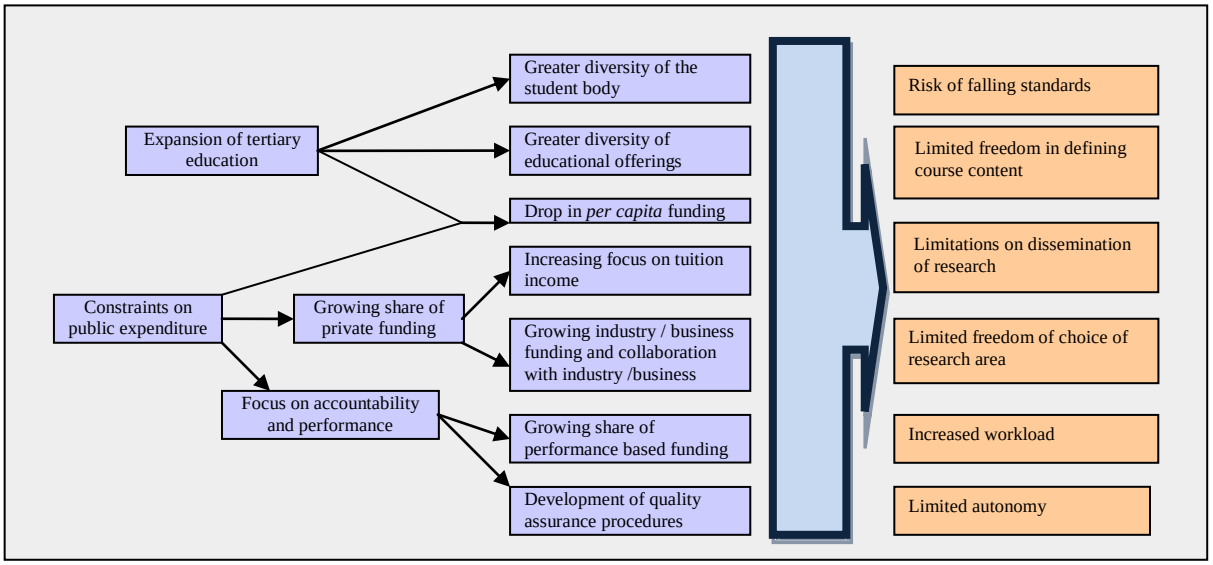
Academia in virtually all reviewed countries continues to be held in high regard as a career and, in most countries, there are many more qualified aspirants than posts available. The great majority of academics see their profession very positively with unique comparative advantages such as professional 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.[47]

[47] 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.

Figure 8.1. Contextual trends affecting academic work and potential challenges



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, 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).

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.

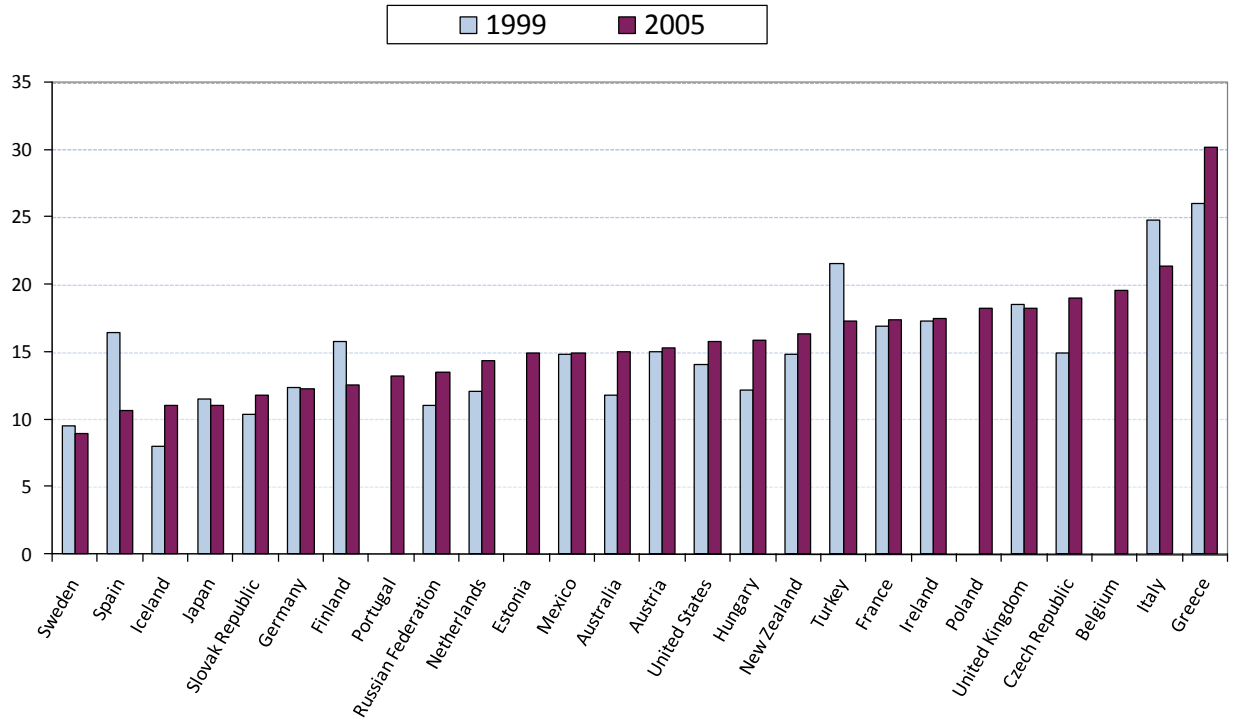
8.3.2 New expectations and demands on academics

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.

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; 2007).

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).

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, 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.

> *"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 p. 79).*

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 the chair 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.[48] 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 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).

48 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."

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 p. 321).*

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.[49] 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

49 See Enders and de Weert (2004b) for a review of the attractiveness of the academic workplace in a range of European countries.

academic work, careers outside academia are more attractive in terms of salary and terms of employment.

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 is 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 discretion of TEIs
United Kingdom[8]	TEI	Salaried employee	At 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 includes both tertiary teaching staff and researchers involved exclusively in research activities. Both full-time appointment and part-time position staff are considered. Academic staff does 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 private TEIs. Public institutions do not exist at this level of education and most of the students are enrolled in government dependent institutions.
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. PhD and post-doc 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 the share of 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.[50]

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 that 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

50 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 of 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 is 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 is 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 perspectives (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 masters level than at undergraduate 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 *et al.*, 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 quality new 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)	Polytechnics: 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[14]	No, promotion is possible upon fulfilment of given requirements
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.

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 private TEIs. Public institutions do not exist at this level of education and most of the students are enrolled in government dependent institutions.
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 undergraduate degree is needed; to reach levels B or C of the Associate Professor category, holding or being a candidate for a Masters degree is necessary; and a PhD 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 Masters 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 of 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 indeed. 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 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). 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 the polytechnic sector), 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; 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.[51] 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

51 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.[52] 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.

52 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 more strict for non-universities than for universities.
3. Issues covered in this table refer to publicly-subsidised private TEIs. Public institutions do not exist at this level of education and most of the students are enrolled in government dependent institutions.
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.

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.

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. 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 (United States, Canada, Australia, New Zealand, Denmark, France, Sweden and Japan). 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, New Zealand, Japan 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 (see above) might indicate that relative salaries of academics are low. For instance, research in Poland (Dąbrowska-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 the non-university sector, 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 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 p. 94).

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, Sweden, the Netherlands, England, the United States and Japan. 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 the Netherlands and Germany 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 undergraduate 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. On the contrary, 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 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 underperformance by academics are limited in some countries

The literature on possible responses to the underperformance 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 underperformance. 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 the professors 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 Program (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 postgraduate degrees, and for the preparation or completion of postgraduate 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 undergraduate 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, 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 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 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 (Masters 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 academic 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, and between 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 and between these 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.

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