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Role of Member States and
the European Commission

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Higher Education Reform and the Renewed Lisbon Strategy:

Role of Member States and the European Commission*

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Abstract

Discussions on problems in higher education in Europe typically focus on rising enrolment rates, access, governance, underperformance in research and teaching, lack of internationalisation, the lack of private and public funding. Our proposals for reform are based on more autonomy for universities, higher tuition fees, more private funding, introduction of income-contingent loans, better governance, more competition and internationalisation. Taking a subsidiarity perspective, the role of the EU in reforming the higher education sector in Europe is providing mutual policy learning opportunities on higher education reforms across Member States and supporting the building of higher education infrastructure in Member States (through the Structural and FP Funds). But beyond the support to Member States policies, the EU should further develop the European dimension, through furthering the goals of the Bologna reforms, cross recognition of qualifications, funding and promoting intra-EU mobility of students, researchers and teachers. The EU should take more initiatives to facilitate global mobility and cooperation. Finally, consistent with the subsidiarity principle, the EU can develop “flagships” initiatives.

Keywords: higher education, enrolment, access, governance, research, teaching, funding, tuition fees, income-contingent loans, open market for the EU, Bologna reforms, mobility, competition, subsidiarity, flagships

JEL code: H2, H4, I2

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1. INTRODUCTION

In a recent survey ‘The Battle for Brainpower’, *The Economist* of 5 October, 2006 argues that talent has become the world’s most sought-after commodity. The greying of populations and the retirement of the baby-boom generation throughout the developed world, the increasing globalization and the shift towards ‘tacit’ jobs makes the shortage of young graduates a serious problem. No economy can afford to be complacent about the war for talent. Alongside the rapid progress of China and India with their huge pools of young talented people and notwithstanding the greying of China, greying Europe faces particular challenges if it does not want to struggle to find enough engineers, scientists, doctors, lawyers and managers.

During the last decade Europe’s annual growth in GDP per capita has been about 0.4 percentage points lower than in the US. If this continues for another decade, Europe’s GDP per capita relative to that of the US will fall back by a further quarter. Still, the investment rate and the capital-labour ratio are higher in Europe than in the US. Aghion (2006) therefore stresses that Europe’s problem is not insufficient saving and investment, but lack of competition, not enough R&D and too little investment in education. As secondary education was crucial to the post-war economy, so higher education has become essential for the development of the knowledge society, which demands increasing levels of supply of highly-educated, highly-skilled people. As Europe approaches the world technology possibility frontier and leaves the era of catching up behind, innovation becomes more essential and the returns on investing in higher education become even higher.

European universities have enormous potential. But European universities are not currently in a position to achieve their potential in a number of important ways. As a result, they are behind in the increased international competition for talented academics and students, and miss out on fast changing research agendas and teaching curricula, and on generating the critical mass, excellence and flexibility necessary to succeed. These failures are compounded by a combination of excessive public control, bad governance coupled with insufficient funding. Europe needs universities able to build on their own strengths and to differentiate their activities on the basis of these strengths.

Modernization of Europe’s universities, involving their interlinked roles of education, research and innovation, has therefore rightly been acknowledged not only as a core condition for the success of the broader Lisbon Strategy, but as part of the wider move towards an increasingly global and knowledge-based economy. Various policy communications have identified the main items for change¹. At the informal meeting at Hampton Court in October 2005 and the 2006 Spring European Council, R&D and universities were acknowledged as foundations of European competitiveness and stronger action at the European level was called for to drive forward this agenda for universities and research. In the National Reform Programmes based on the Integrated

¹E.g. European Commission (2005a) and Council of the European Union (2005).

Guidelines for Growth and Jobs, i.e., the renewed Lisbon Strategy, Member States refer generally to these issues. Nevertheless, few make them national priority. Yet these changes are crucial to regenerate Europe's growth capacity.

This paper will discuss the reforms needed to deal with the challenges ahead. It will investigate which policy actions are needed and at which level, to unleash EU's potential of its higher education system. Within a subsidiarity perspective, we will focus particularly on what role the EU can have in reforming higher education in Europe, relative to Member States. But first we start with characterizing the major challenges facing EU's higher education.

While the focus of our discussion is mostly on higher education, the interlinkages of education and research cannot be ignored, since universities, who are pivotal players in the higher education market, combine both activities.

Section 2 discusses the facts and challenges of higher education facing Europe today. They concern rising enrolment rates, the rising private returns to education, the importance of access for pupils from less privileged backgrounds, governance problems and the substantial funding problems of institutions of higher education, lack of internationalisation and underperformance in research and teaching. Section 3 puts forward our proposals for reform of higher education in Europe based on more autonomy for universities, higher tuition fees, more private funding, introduction of income-contingent loans, better governance, more competition among universities and a big leap forward in internationalisation. We argue that these reforms will help to address the challenges of European universities. Section 4 takes a subsidiarity perspective and asks what the role of the EU can be in reforming the higher education sector. Compared to Member States, the EU provides the scope for creating an enlarged open market for higher education and a EU wide level playing field for universities. Apart from a sustained effort in providing mutual policy learning opportunities, cross recognition of qualifications and furthering the goals of the Bologna reforms, the EU should take a leading role in promoting mobility of students, researchers and teachers and opening up of national funding schemes for applications from other Member States. The EU should also take more initiatives in the context of the renewed Lisbon Strategy to fund research and education infrastructure build up through the Structural Funds and the funds for 'Competitiveness for Growth and Development', invest in EU flagships and facilitate global cooperation. The European Investment Bank could be a crucial driver in the higher education market by making income-contingent loans available. Section 5 concludes.

2. CHALLENGES OF HIGHER EDUCATION IN EUROPE

The EU counts almost 4 000 higher education institutions (of which about 2000 are universities strictu sensu who combine education with basic research), over 17 million students and some 1.5 million staff - of whom 435,000 are researchers.

This system of higher education and research in Europe today faces *key challenges*²:

2.1. Increasing demand for higher education.

The active population of the EU (25-64 years) has lower levels of higher education attainment than its main competitors in the global economy. The average level of higher education attainment among the active population in the EU is 21%, significantly lower than in the US (38%) and Japan (36%). Figure 1 gives the graduation rates for various OECD countries.

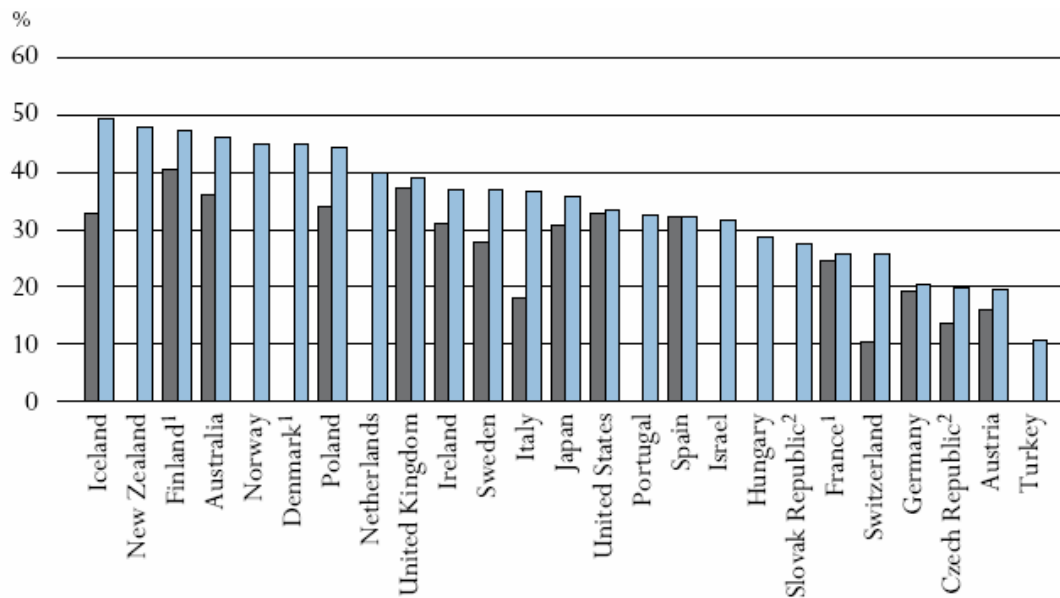
Furthermore, in comparison with its most important competitors, higher education institutions in the EU attract a lower proportion of secondary school leavers, implying that higher education in Europe is still not an attractive option for a significant part of pupils having completed upper secondary education. About 25% of young people aged 18-24 years were enrolled in higher education in EU 25 in 2002, a much lower share than in the USA (37.7%). In the USA, tertiary students start to study on average at an earlier age than in Europe. Almost 40% of 18-year-olds in the US participate in higher education, compared to about 15% in the EU

However, the EU is catching up. Despite low birth rates in the 1980s, the number of higher education students in Europe is increasing as a result of a growth in enrolment rates. The number of higher education students increased in the EU in the period 1997 to 2002 by 16% or on average by 3.1% per year, compared to an annual growth of 2.2% in the USA and only 0.1% in Japan.

Figure 1 shows the increase in tertiary graduation in most countries (between 2000 and 2004). But at the same time, it highlights the heterogeneity among tertiary graduation rates across countries, particularly within the EU. The Scandinavian countries and the UK reach the highest level of graduation rates while Germany, France, Austria attain the lowest levels.

² Most of the data come from OECD (2006), European Commission (2005b) and European Commission (2005c).

Figure 1: Tertiary-type A Graduation rates (2000, 2004)



1. Year of reference 2003.

2. Gross graduation rate may include some double counting.

Countries are ranked in descending order of the graduation rates for tertiary-type A education in 2004.

Source: OECD. Table A3.1. See Annex 3 for notes (www.oecd.org/edu/eqg2006).

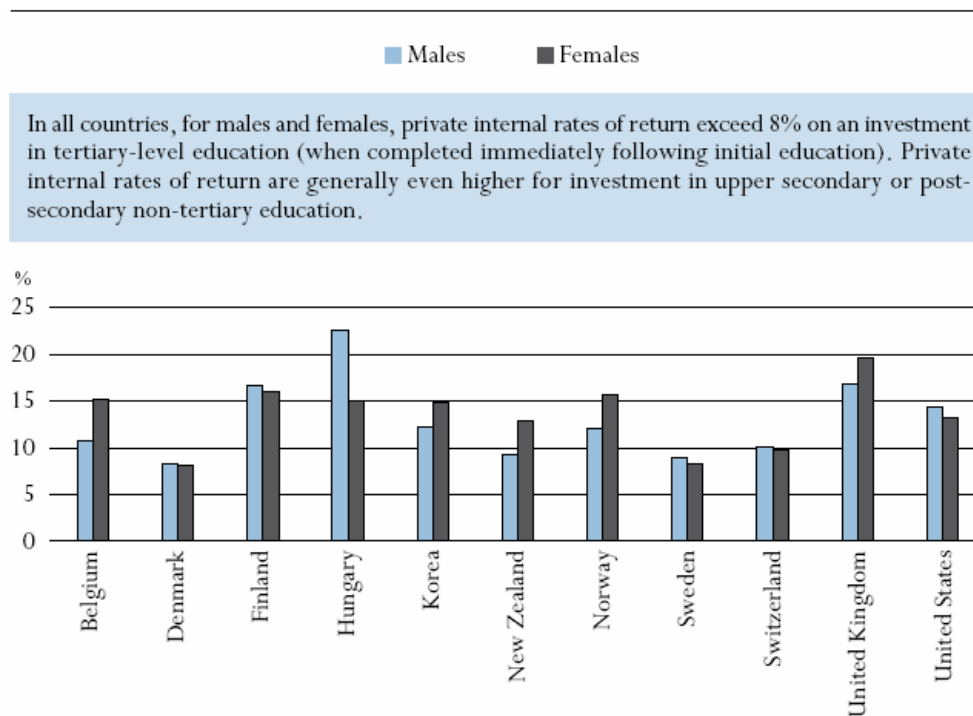
Note: A traditional university degree is associated with completion of 'type A' tertiary courses; 'type B' generally refers to shorter and often vocationally oriented courses. The graph shows the number of students of any age completing tertiary-type A programmes for the first time, in 2000 and 2004, as a percentage of the age-group normally completing each level.

While the EU produces more PhDs overall, it employs only 5.5 researchers per 1 000 employees, which is much less than the US (9.0) and Japan (9.7). The rapid growth of Asian universities, both public and private, is now also challenging Europe – and the US – in terms of the output of doctoral candidates in science and engineering (EC-RTD, Key Figures 2005). This will threaten the position of Europe as the most competitive and innovative economy in the world as stated in the Lisbon objectives. Of course, from the macroeconomic point of view, this new and growing supply of graduates and PhDs from Asia may benefit the ageing US and European economies.

Demand for higher education depends on interest in study and a variety of cultural reasons, but is also driven to a certain extent by the returns from education. Attaining higher levels of education can be viewed as an economic investment in which there are costs paid by the individual (including reductions in earnings while receiving education) that typically result in higher earnings over the individual's lifetime. Not only do graduates experience relatively low unemployment rates and good employment prospects, they also enjoy a fast rising skill premium despite a massive increase in the number of graduates. Investment in higher education is thus becoming more and more lucrative.

In this context, Figure 2 shows that the investment to obtain a university level degree, when undertaken as part of initial education, can produce private annual internal rates of returns as high as 22.6%, with all countries showing a rate of return above 8%. Costs of higher education (45 thousand euros) are much less than lifetime earnings, hence higher education is an excellent investment. From a lifetime perspective students will not be poor and can borrow more. Lifetime earnings in, for example, the Netherlands vary from 1.2 million euros for economics, medical, agriculture and technical university male graduates to 0.9 for behavioural and social graduates and 0.8 million euros for arts male graduates (Jacobs, 2002).

Figure 2: Private internal rates of return on obtaining a university-level degree from an upper-secondary and post-secondary non-tertiary level of education (2003)



Source: OECD, Table A9.6. See Annex 3 for notes (www.oecd.org/edu/eag2006).

While on average, the returns from higher education are considerable, the graph also shows heterogeneity in returns among countries. Countries differ significantly in the dispersion of earnings among individuals with similar levels of educational attainment. Also, as Table 1 indicates, graduate unemployment rates differ, with evidence that returns from higher education, in the form of expected employment rates, are lower in the EU.

Table 1: Graduate unemployment rates in 2003

	EU 25	USA	Japan
Unemployment rate of population aged 25-64 with tertiary education attainment	4.2	3.0	3.9
Unemployment rate of population aged 25-64 with less than secondary education	10.3	10.2	6.6

Source: EUROSTAT and OECD

2.2. Improving access to higher education

Access to higher education is highly dependent upon successful participation at earlier stages of education. Efforts to improve the quality of higher level education will clearly be in vain if standards at school level are deficient. Therefore upper-secondary completion rates and key competency levels at the end of lower-secondary education are important indicators of the degree to which pupils have been prepared and motivated for higher education after initial schooling. Completion of upper-secondary education is also increasingly important, not just for entry into the labour market, but also for the access it allows to higher education and for paving the way to participation in Lifelong Learning activities. This is why one of the five European benchmarks requires that, by 2010, 85% of 22-year-olds in the EU should have completed upper-secondary education. In 2004 the EU average was 76.4%, which is still lower than levels in the leading non-EU OECD countries.

2.3. Governance Problems in supplying higher education services

European universities often are smaller than their counterparts in comparable OECD countries. To this smaller scale, increasing objectives are projected. Policy-makers have been pushing universities to play a greater role as social actors, and to create 'social value added' by extending their role in society. Universities are required not only to play an active role in education, absorbing the increasing mass of incoming students at bachelor level, at the same time being asked to produce high quality basic research and turn this basic research into commercial applications. While in the EU about 2000 universities are also engaged in research and deliver postgraduate diplomas leading to Master and Ph.D. degrees, in the US, out of 4000 higher education institutions, only 500 deliver postgraduate education and only 150 universities are research universities. US universities thus seem far more specialized than in the EU and most of them only provide bachelor education. Some of these patterns of specialization may be related to stronger competition in the US market for higher education.

Beyond an often too small scale and insufficient focus, European universities suffer from bureaucracy and lack of autonomy. The over-regulation of university life hinders modernisation and efficiency. Ex ante control hinders universities' capacity to react swiftly to changes in their environment and to engage in international competition. Many parameters are fixed: subsidies per student are fixed, tuition fees cannot be varied, the number of places for each course is often fixed by the ministry of education, and applicants cannot be refused once they have passed their national exams. Nationally defined courses and employment rules for academic staff tend to inhibit curricular reform and interdisciplinarity. Inflexible admission and recognition rules impede mobility. Further details are given in Jacobs and van der Ploeg (2006).

While a number of EU countries have started off reforming their higher education sector (like Denmark, Ireland, the Netherlands and the UK), the governance of universities remains very centralized, state controlled in France, Greece and Italy, or at the level of regions (in Germany, Spain, Belgium).

2.4. Funding Problems

Universities have to cope with a wide range of disparate tasks while being faced with increasing budgetary constraints.

2.4.1. Funding for Higher Education

The EU-25 devotes a much lower share of its wealth to the financing of tertiary education than the US. In 2001, the EU spent 1.3% of its GDP on the financing of tertiary education compared to 3.3% in the US and 1.2% in Japan.

Although public funding of tertiary education is also higher in the US than in the EU, the most striking difference between the two regions concerns private expenditure. In relative terms, private expenditure on higher education is nine times higher in the US than in the EU. Table 2 indicates that the difference between the EU and the US is less marked when one considers all levels of education.

Within the EU, the Scandinavian countries have the highest share of tertiary spending in GDP (most of this spending being public). While Germany, France and the UK spend a bit more than 1%, Italy has an even lower share. Similar gaps show up in yearly spending per student. While the EU is spending on average 8,600 euro per student, the US is spending on average 20,000 euro. For example, the Ivy League universities now charge more than 40,000 US dollars including board.

This spending gap between the EU and its major international competitors can be correlated to the financing mode of higher education. In the EU most of the financing of higher education is public funding, where the State is seen as the provider of education services as public goods with education being mostly 'free' with low fees and low private funding through foundations and donations. While in the EU private spending on higher education represents on average 0.2% of its GDP, this is 1.8% in the US.

The percentage of funding for tertiary education coming from private sources varies widely across countries, from less than 4% in Denmark, Finland, Greece, Norway to more than 50% in Australia, Japan and the United States, and even above 80% in Korea. In some countries, tertiary institutions are now relying more heavily on private sources of funding than they did in the mid-1990s.

Table 2: Public and private expenditure on education as % of GDP, 2001

	Tertiary education		All levels of education	
	Public expenditure	Private expenditure	Public expenditure	Private expenditure
Belgium	1.36	0.21	6.11	0.44
Czech Republic	0.80	0.13	4.16	0.41
Denmark	2.73	0.04	8.50	0.28
Germany	1.12	0.09	4.57	0.98
Estonia	1.07	:	5.48	:
Greece	1.19	0.00	3.90	0.23
Spain	1.01	0.30	4.41	0.59
France	1.02	0.16	5.76	0.48
Ireland	1.24	0.20	4.35	0.35
Italy	0.81	0.20	4.98	0.32
Cyprus	1.21	0.79	6.28	1.31
Latvia	0.90	0.54	5.75	0.70
Lithuania	1.34	:	5.92	:
Luxembourg	:	:	3.84	0.001
Hungary	1.11	0.26	5.15	0.57
Malta	0.88	0.02	4.47	0.85
Netherlands	1.32	0.28	4.99	0.45
Austria	1.35	0.06	5.70	0.32
Poland	1.07	:	5.56	:
Portugal	1.09	0.09	5.91	0.09
Slovenia	1.33	0.45	6.13	0.85
Slovakia	0.83	0.05	4.03	0.12
Finland	2.05	0.06	6.24	0.13
Sweden	2.05	0.20	7.31	0.21
UK	0.81	0.30	4.69	0.81
EU-25 (1)	1.08	0.20	5.10	0.60
US	1.48	1.77	5.08	2.22
Japan	0.54	0.61	3.57	1.17

Source: DG Research

Key Figures 2005

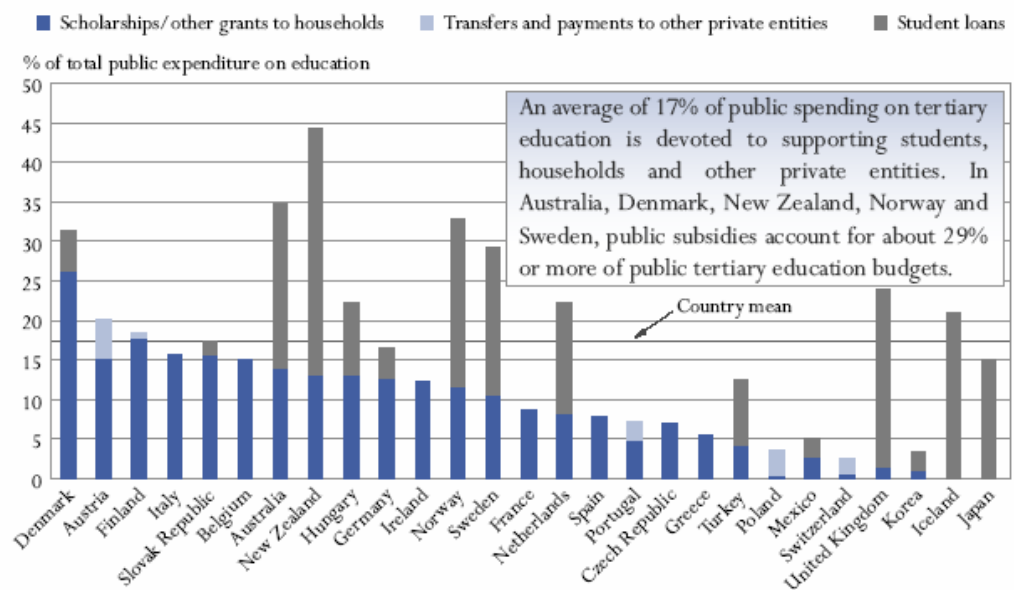
Data: Eurostat

Note: (1) The values for EU-25 are estimations.

In addition, the nature of public funding for education varies considerably across countries and time. Governments rely more and more on (lump-sum) 'block grants' with both output and input criteria. Most countries fund on the basis of inputs such as number of enrolled students (Australia, Belgium, France, and New Zealand). Funding in Denmark stresses output, since universities receive funding on number of grade points that students receive (the so-called 'taxi-meter model'). The Netherlands and Sweden take intermediate positions. About half of funding in the Netherlands depends on the number of diplomas. A similar share of resources depends on number of grade points in Sweden. Germany and the UK differ as funds are allocated on historical grounds independently of the number of students or output criteria, but funding is based on negotiations and enrolment forecasts. However, the UK government puts a growing emphasis on output and performance in teaching and research.

Figure 3: Types of public subsidies for higher education (2002)

The chart shows different forms of public subsidies for education to households and other private entities as a percentage of total public expenditure on education, by type of subsidy. Public subsidies to households provide finance in the form of grants or loans that help pay for the direct or indirect costs of study. Such subsidies include: i) grants/scholarships; ii) public student loans; iii) family or child allowances contingent on student status; iv) public subsidies in cash or kind expenses such as housing or transport; and v) subsidies to permit low-interest loans from private lenders.



Countries are ranked in descending order of the share of scholarships/other grants to households and transfers and payments to other private entities in total public expenditure on education.

Source: OECD, Table B5.2. See Annex 3 for notes (www.oecd.org/edu/eag2005).

With respect to the types of funding (fees, grants, loans, sponsoring, etc.), Figure 3 indicates that there exists large heterogeneity. No tuition fees exist in Denmark, Germany and Sweden.³ Other countries have centrally determined tuition fees that may differ between various fields of study (Australia, France, Netherlands, and the UK). Typically, prices charged to students do not depend on costs. In recent years, governments (Australia, Belgium, France, Netherlands and UK) increased tuition rates to maintain resources per student in the face of increasing enrolment. This also happened in the US and New Zealand where institutions are free to set fees. Some countries (Netherlands, UK) have decreased student grants and increased loan facilities. In contrast, Germany, Sweden and Denmark, have increased grants and loan facilities. France only increased grants. New Zealand and Australia both substantially increased loan facilities. Conditions governing student grants have become tighter by linking grants/loans to academic progress in Denmark, Germany, Netherlands, and Sweden.

³ However, Germany has just announced promising new reforms: up to ten new 'elite' universities will get an extra 100 million euro for research, greater autonomy for the Länder governments with respect to finance, appointment of professors, management, etc., possibility of introducing tuition fees in 9 of the 16 Länder, and introduction of student loans from private and public banks.

2.4.2. *Funding for Research at Universities*

Within the Lisbon Strategy, the Barcelona European Council recommended that spending on R&D in the EU should approach 3% of GDP by 2010 and that one third of that should come from the public sector. This also has implications for higher education funding since universities are expected to be beneficiaries of parts of the additional funding for R&D.

R&D performed in the higher education sector is on the rise in Europe, Japan and the US. In 2003, higher education expenditure on R&D amounted to 0.44% of GDP in the EU as a whole, well above its 1997 level (0.38% of GDP). Within the EU, the three Nordic countries Sweden, Finland and Denmark showed the highest intensity of higher education R&D in 2003, with values above 0.60% GDP. Austria and the Netherlands were also above the EU average. On the other hand, most of the new Member States (except Lithuania and Estonia) were far below the EU average. In both the US and Japan, higher education expenditure on R&D amounted to 0.43% of GDP in 2003, compared to, respectively, 0.37% and 0.41% of GDP in 1997.

Business support for R&D in the higher education sector is substantially higher in the EU (6.6%) than in either the US (4.5%) or Japan (2.6%). In 2002, the differences between Europe and its competitors in the levels of government R&D funded by the business sector were even wider. In Europe growth can only be witnessed in the level of higher education R&D financed by the business sector.

2.5. **Underperformance in delivering quality education and research**

2.5.1. *Quality of University Education*

A signal of the difficulty of the university systems in the EU to deliver on their education goals, is the high dropout/failure rate as well as the longer duration of tertiary education. At present, too many enrolled students leave the European universities without an academic degree. According to OECD data survival rates in higher education in the 13 EU countries for which data was available amounted to only 66% in 2000, compared to an OECD average of 70% and a rate of 66% in the US, 79% in Korea and 94% in Japan.⁴ The high survival rates in East Asia relative to those in Europe and the US are also related to specific attitudes towards education.⁵ Survival rates in Europe vary widely between countries with highest rates in Ireland (85%) and the UK (83%) and relatively low rates in Sweden (48%) and Italy (42%).

⁴ Survival rates are calculated on the basis of the number of graduates divided by the number of new entrants at the typical age of entrance.

⁵ Education is among the most important values acknowledged by Asian families. This leads to an attitude favouring high private investment in education in terms of time and financial resources and a strong appreciation of formal degrees.

A tendency to uniformity and egalitarianism in many national systems has ensured that the average quality of European universities, while generally homogeneous, is comparatively good – at least academically. But there may also be deficiencies stemming from insufficient differentiation. Most European universities tend to offer the same monodisciplinary programmes and traditional methods geared towards the same group of academically best-qualified learners, but in many countries there is rapid rise in specialised master programmes.

2.5.2. *Research Quality*

In terms of total number of scientific publications, the EU outperforms the US and Japan. However, if one adjusts for population, European claimed leadership in publication disappears, as Table 3 suggests.

Moreover, in science, together with the numbers of publications, at least equally important, are the originality and the impact of scientific output upon the relevant research communities. Two among the most used proxies of such an impact are articles' citations and the shares in the top 1% of most cited publications. The US is well ahead with respect to both indicators. In particular, controlling for population, EU output is still less than half than the US one.

In the second and third column of the same table, the output (i.e., number of publications, citations, and top 1% publications) per population indicator is decomposed into two components: a measure of scientific productivity of university researchers (i.e., output per university researcher) and an index for the intensity of university researchers on population. Table 3 clearly shows that US leadership is due to the quality of research published rather than due to the sheer number of researchers.

In a different context, Alesina and Spolaore (2003) argue that countries with a large population may benefit from returns to scale and be more efficient in providing public goods and generate higher productivity. Within the context of the market for higher education and research, it is clear from the law of large numbers that in such countries the chances of a genius surfacing in research is larger than for a small country. This is why it is important to engender competition (as well as cooperation) on a European level between the top researchers and degree programmes. However, the evidence so far fails to support that the number of top universities per million inhabitants is an increasing function of the size of the population (Thissen and Ederveen, 2006). However, historical empirical comparisons neglect the potential of upcoming countries with a huge population like China and India. Given the intense competition to get into the top universities in China and India, one should not be surprised to see during the next few decades many more top universities in Asia.

Table 3: Publications and Citations weighted by population and University Researchers

	$\frac{\text{Publications}}{\text{Population}}$	=	$\frac{\text{Publications}}{\text{Researchers}}$	×	$\frac{\text{Researchers}}{\text{Population}}$
US	4.64		6.80		0.68
EU-15	3.60		4.30		0.84
UK	5.84		6.99		0.84
Germany	3.88		4.77		0.81
France	3.96		4.09		0.97
Italy	2.58		5.83		0.44
	$\frac{\text{Citations}}{\text{Population}}$	=	$\frac{\text{Citations}}{\text{Researchers}}$	×	$\frac{\text{Researchers}}{\text{Population}}$
US	39.75		58.33		0.68
EU-15	23.03		27.52		0.84
UK	42.60		51.00		0.84
Germany	26.82		32.98		0.81
France	25.81		26.68		0.97
Italy	16.89		38.25		0.44
	$\frac{\text{Top1\%publications}}{\text{Population}}$	=	$\frac{\text{Top\%publications}}{\text{Researchers}}$	×	$\frac{\text{Researchers}}{\text{Population}}$
US	0.09		0.13		0.68
EU-15	0.04		0.04		0.84
UK	0.08		0.10		0.84
Germany	0.05		0.06		0.81
France	0.04		0.05		0.97
Italy	0.03		0.06		0.44

Notes: Our calculations based on numbers reported by King (2004) and OECD (2004a). Number of publications, citations and top 1% publications refers to 1997-2001. Population (measured in thousands) and number of university researchers (measured in full time equivalent) refer to 1999.

Source: Dosi et al (2006)

2.6. Increasing international competition

European higher education remains fragmented - between and even within countries - into medium or small clusters with different regulations and, naturally, different languages. But European universities, when attracting students, faculty and funding, are increasingly being faced with an international competitive arena that becomes ever more agile.

Students increasingly travel abroad in search of the best study and research opportunities. In 2003, 2.12 million people studying in OECD countries were foreign students, *i.e.* enrolled outside their country of origin. This represented an 11.5% increase in total foreign students' intakes reported to the OECD since the previous year. In the UK 13% of students enrolled in higher education is foreign (on basis of country of residence or secondary education). Most notably, Australia, France, Germany, the United Kingdom and the United States receive 70% of foreign students in OECD countries. Students from China, India and Southeast Asia comprise the largest numbers of foreign students from partner countries.

This global competition among higher education institutes bears out most markedly when international ranking are being published in the press. The Times Higher Education (2006) ranking of the world's top 200 universities, for instance, considers peer review, recruiter review, international faculty, international students, student/staff ratios and faculty citations scores. Interesting is that Table 4 indicates that 41 and 42 of the top fifty universities in, respectively, 2005 and 2006 are from countries with an Anglo-Saxon system of education. Continental Europe (excluding Switzerland) only had three universities in the top fifty in 2005 and this has dropped to only two in 2006.

Table 4 also gives a summary of country scores in the 2006 rankings. We see that, apart from the elitist Ecole Normale Supérieure and the Ecole Polytechnique in Paris, no universities of continental Europe feature in the 2006 top 50. Heidelberg University was in the 2005 top 50, but dropped out of the 2006 top 50. Australia does again surprisingly well with six universities and the same can be said for New Zealand newcomer Auckland University. China with Beijing University, Tsing Hua University and Fudan University and the China University of Science and Technology and Nanjing University will rapidly catch up in the rankings. The same is true for Indian universities like the Indian Institutes of Technology, the Indian Institutes of Management and Jawaharlal Nehru University. Continental Europe has 48 universities in the 2006 top 200 and especially the Netherlands is catching up. Still, they need to do a lot better to keep up the competition with their US counterparts and the rise in the number of top institutes in China and India.

Table 4: Number of universities per country in the Times Higher Education (2006) top 50

Top 50	2005	2006
US	20	22
UK	8	8
Australia/New Zealand	6	7
Asia excl. Hong Kong and Singapore	4	4
Hong Kong/Singapore	4	2.5
Canada	3	2.5
Switzerland	2	2
France	2	2
Germany	1	0
Total	50	50

3. REFORMING HIGHER EDUCATION IN EUROPE

The previous analysis has shown that the EU needs to improve access to higher education, increase higher education attainment levels, and increase total investment in higher education, both public, but even more private. European universities also

need to catch up with the best universities in the Anglo-Saxon world. It is crucial to improve incentives and generate the funds to be able to compete globally. European universities have much less financial resources per student than in the US, are not competing much with their counterparts at home and abroad and are focused too much on the national rather than the global market.

Funding higher education will become increasingly more challenging due to the relentless operation of Baumol's cost disease⁶. If the EU has to make an effort to bridge its funding gap on higher education, be it public or private, this can only be realized if at the same time the governance of the higher education system is tackled. This is necessary to increase the efficiency of spending by these organizations, thereby delivering results. To attract more funding, universities first need to convince stakeholders - governments, companies, tax payers and above all students – that existing resources are efficiently used and would produce added value for them. Higher funding cannot be justified without profound change. Providing for such change is the main justification and prime purpose for fresh investment. Given the prevalence of overlong study durations, high dropout rates and/or graduate unemployment in Europe, investing more in the current system could be perceived as unproductive or even counter-productive. Yet combined under-funding and system rigidities are so acute in some countries of the EU that they impede the reform process at universities, who are consequently trapped in a vicious circle.

If Member States are to break this vicious circle, they need to combine more and better targeted funding simultaneously with reforms of the supply side, thus creating the necessary conditions to enable universities to improve their performance, to modernize themselves and become more competitive. This implies granting universities much more autonomy while at the same time demanding them to be more accountable for delivering results.

3.1. More performance-based funding

Most existing funding schemes suffer from 'ratchet effects' arising from budgeting and accounting procedures. University governors do not pursue cost-effective policies, because the government cream skims or even penalises cost savings. Universities are not very aware of how much each programme costs. They do not use rational cost-based criteria and allow for various cross-subsidies. Clearly, European universities have a need for more performance-based funding.

⁶ Teaching and research basically need to be done by highly qualified people and is more difficult to be replaced by technology. Productivity growth in universities inevitably lags behind that in the manufacturing, so the cost and price of university education inevitably rise over time. This is Baumol's cost disease applied to higher education (e.g., Jacobs and Van der Ploeg, 2006).

Both output and input funding have unintended side effects. Output funding has the unintended disadvantage that it induces grade inflation and reduces incentives to cut costs. Input funding does not induce grade inflation, stimulates efficiency, but leaves monopolistic practices intact. One thus has to strike a tough trade-off between, on the one hand, avoiding grade inflation and inefficiently run universities, and, on the other hand, curbing monopolistic practices. Countries that rely on substantial output funding therefore often have quality safeguarding committees or make use of external examiners. If there is a lot of uncertainty and efforts correlate little with performance, high-powered incentives become less attractive.

Governments should strike the right balance between core, competitive and outcome-based funding (underpinned by robust quality assurance) for higher education and university-based research. Competitive funding should be based on institutional evaluation systems and on diversified performance indicators with clearly defined targets and indicators supported by international benchmarking for both inputs and economic and societal outputs. Funding should be based on less malleable criteria.

It is also important to ‘move the post’ every few years, to avoid researchers and institutions to focus too much on the measurable targets only. More important, difficult to measure and unrewarded activities (e.g., pastoral care of students, refereeing articles or helping graduates to get a good job) may be crowded out by easy to measure activities (e.g., peer reviewed publications).

Outstanding quality can only emerge from an across-the-board ‘culture of excellence’. Excellence is never a permanent achievement. It always needs to be challenged. It can exist in a few entire universities, but much more widely in individual faculties or teams within institutions or networks. This requires concentration of resources.

3.2. More private funding

Free higher education does not by itself suffice to guarantee equal access and maximum enrolments. This casts the much debated issue of tuition fees in a fresh perspective, isolated from the discussion on access, which is better targeted through other instruments, such as income-contingent loans and scholarships (see section 3.3).

The debate on social and private returns from higher education has highlighted its role as an investment, benefiting both the individual (through higher income and status) as well as society as a whole (through higher employment rates, lower social costs and later retirement). If social returns exceed private returns, education causes positive external effects to society and the government should support education. Estimating macro-economic production functions where total output is explained by human as well as physical capital, one obtains macro returns to education at the lower end of the estimated micro returns, suggesting there is no strong case for social returns to be substantially higher than private returns (cf., Blundell et. al., 1999). However, empirical findings suggest that private returns to higher education are substantial (Jacobs and van der Ploeg, 2006). All this evidence suggests more scope for private

funding of higher education and in particular for asking students to pay higher tuition fees.⁷

How should fees be set?

There is evidence that unobserved heterogeneity is at least as important as observable variations in attendance and inputs as class size and number of teaching assistants (e.g., Martins and Walker, 2006). Peer effects are important in higher education (e.g., Sacerdote, 2001; Willams and Zimmerman, 2003). Education is a ‘customer-input technology’, since students are both consumers and co-producers of education. Selecting and attracting the smartest students thus generates a positive feedback loop as it raises the quality and reputation of the institute and thus increases further demand. Having high-quality students improves academic excellence all round and makes it possible to attract much better employees/professors and funding from sponsors and the state.

Without peer group or reputation effects, profit maximizing universities set prices to a mark-up on marginal cost. The mark-up should be particularly high for courses with low price elasticity of demand (e.g., courses followed by local students or courses for which not many substitutes exist). Most students go to their local university, perhaps as they prefer familiar surroundings. The optimal tuition fees are higher for such students, because their price elasticity of demand is lower. If peer group and reputation effects matter, tuition fees are higher for the less able or less motivated students and lower for the smart students (cf., Rothschild and White, 1995). Hence, universities should award scholarships or give discounts to the brightest students, especially if they come from less privileged backgrounds. By selling below cost, universities induce permanent excess demand for their courses and can thus select the smartest students and pursue excellence.

Unfortunately, the European system with its sometimes not very helpful emphasis on equality, implicitly entails cross subsidies from the smart to the less able students. Europe thus still has a long way to go in this respect. Of course, the main problem with tuition fees in Europe is that they are set centrally and do not vary according to demand and supply or to meet the special needs of universities. Typically, fees are too low and too undifferentiated, thus encouraging ‘fun seeking’ students and an enormous mismatch of students to courses.

How to set government subsidies?

A government that maximizes utilitarian social welfare (graduate utility minus tuition subsidies), has no access to non-distortionary taxes and does not have any merit

⁷ Canada is an interesting testing ground, since provinces levy different fees. Evidence suggests that rising fees by about 2,000 dollar in the 1990’s reduced the probability of participation by persons aged 17, 18 and 19 relative to trend by amount 2 %-points; nevertheless university participation increased dramatically during this period (Johnson and Rahman, 2005). Unfortunately, this interesting study did not take account of factors like family income or parental education.

motives for intervening in higher education, would set subsidies equal to zero (Jacobs and van der Ploeg, 2006). The market outcome is efficient.

However, the government may support merit studies that are of interest to society as a whole and will not be provided by the market, while generating public benefits ('educational welfare'). Subsidies should be optimally targeted to fields of study that have the largest social returns. Furthermore, subsidies should be targeted towards the students that appear to generate most social value. Subsidies should be directed towards studies with a large social value, not a large private value. The mere fact that for some disciplines the marginal benefits are mainly non-monetary is not a reason for government subsidies. That will lead to over-investment in those disciplines. Students will take account of immaterial benefits themselves.

In general, public subsidy should be high for merit studies, zero for studies with only a market rate of return and negative for studies with rent seeking and signalling externalities. Clearly, subsidies should be low if the cost of public funds is high and high when the elasticity of student demand is low. It follows that, in contrast to current practice, subsidies should be differentiated by type of study and type of degree programme.

Clearly, the government has insufficient information about the preferences of individual students and the supply of courses and may wish to use vouchers rather than subsidies to universities. By giving students personal vouchers, which they can use to pay for their courses, the government encourages students to 'vote with their feet'. This fosters competition between universities.

3.3. Addressing accessibility through income-contingent loans

Empirical research suggests that the ability of the student and long-run background factors ('culture', 'family', 'environment') are the most important determinants of enrolment in higher education. Increasing enrolment in higher education of children from lower socio-economic backgrounds requires therefore first and foremost intervention in basic and secondary education (de la Fuente, 2006).

Universities should be accessible to all with sufficient academic capabilities. But this does not imply that higher education should be free from charge, neither does it imply that all should pay the same price, or should pursue the same quality of education. If the purpose of low fees is to guarantee access to universities, and not income equality, an income-contingent loan scheme is sufficient. From a lifetime perspective, the key problem of students is not poverty but insufficient access to credit markets.

To tackle student poverty as a barrier to education and to avoid students taking disruptive part-time jobs, students should be allowed to borrow for fees and cost of living. As the Australian experience indicates, income-contingent loans (ICL) can overcome problems of capital market imperfections with risk-averse students (Jacobs and van der Ploeg, 2006). ICL only require students to pay back principal and interest

if their incomes after graduation are high enough. ICL thus offer a combination of loans and social insurance. If income risks of graduates are pooled, fewer subsidies are needed to eliminate risk aversion.

Commercial banks and insurers are unable to write contracts based on future incomes, but the government can enforce contracts through the tax authorities and verify earned incomes. By selection and tracking of student performance and denying funds to non-performing students, the government can more easily eliminate the 'rotten apples'. In principle ICL feature no subsidies. Also, interest subsidies should be avoided as this only encourages excessive study and financial arbitrage if necessary with the help of wealthy parents. However, the risks of default may be borne by society.

Shifting from grants towards income-contingent loans and at the same time introducing selection at the gate of universities and afterwards are a more efficient and equitable use of scarce public funds. It can avoid subsidies going to the less diligent, less talented students from richer families rather than to the smartest students from poorer families.

3.4. More competition among universities

In response to scarcer public budgets, a rationalization of the supply side of the higher education market is taking place. The resulting increase in the scale of universities has however generated the danger of creating (local) public monopolies. In the Netherlands the enormous increases in scale and monopolistic practices, especially in institutes of professional higher education, have gone hand in hand with huge increases in overhead and capital expenditures leading to substantial falls in resources for teaching (Jacobs and van der Ploeg, 2006). Such monopolies are more harmful when government shifts to output financing. They then reduce quality ('grade inflation'), ignore demand of students and employers, and increase overhead costs. Monopolistic price setting may in addition drive up tuition fees and lower both quantity and quality of supply of education, especially if the price elasticity of demand is low. This may be less so if there are increasing returns to scale, but the larger scale have typically reduced rather than increased outlays per student.

Barriers to enter the market for higher education should be lowered by abolishing historical funding and barring cross-subsidies that hinder fair competition. Both private and public universities are better able to compete if subsidies are allocated directly to students through vouchers/grants. Students can spend the vouchers on the institution and courses of their preference. A level playing field can open national markets to the international environment, especially if students can get student loans for study abroad and can spend their vouchers abroad. Vouchers will engender competition between institutions. This need not necessarily lead to grade inflation, since the quality of the courses offered is an important way of competing in the market for higher education.

To make the higher education market more transparent, it helps if an independent authority publishes yearly performance criteria of universities. These criteria should cover dropout rates, average enrolment durations, average exam marks, student evaluations, quality of scientific publications, evaluations of independent scientific committees, graduate performance in the job market, etc.

3.5. Better internal governance of universities

Universities will not become innovative and responsive to change unless they are given real autonomy and accountability. In return for being freed from over-regulation and micro-management, universities should accept full *institutional* accountability to society at large for their results.

In many countries this would mean a new approach to policy making, with less *ex ante* checks and greater *ex post* accountability of universities for quality, efficiency and the achievement of agreed objectives.

For universities, this requires new internal governance systems based on strategic priorities and on professional management of human resources, investment and administrative procedures. Care must be taken not to base governance on the model used in commercial business enterprises. Governance should take account of the fact that universities consist of professionals. Too much external incentives can crowd out intrinsic motivation.

A pivotal area of university management is personnel management. Human resources are a core determinant of quality in higher education and research. Universities must therefore work to enhance their human potential, both qualitatively and quantitatively, by attracting, developing and keeping talent in the teaching/research career. Excellence can only emerge from a favourable professional environment based in particular on open, transparent and competitive procedures. Vacancies for professors and researchers should be advertised publicly, and internationally. Compensation should reward quality and achievement in the performance of all tasks. Mobility across national border and between university and industry should be nurtured.

4. WHAT IS THE ROLE OF THE EU?

The agenda mapped out in section 3 is by now, in essence, fairly established in the policy debate on higher education reform in Europe. Action is primarily needed from the public authority and universities, but the students will have to become much more critical and vote with their feet if they are unhappy with the degree programme being offered. On the side of public authorities, Member States (and not the EU) are primarily responsible for the organisation of their higher education. The higher education landscape in Europe is and needs to remain in the future diverse with respect to languages, culture, systems and traditions, thus keeping policy competence in higher education mostly decentralized.

But alongside the fundamental local, regional and national roots of universities, the European framework is becoming increasingly important. Our actions suggested for the EU, take full account of the principle of subsidiarity, thus recognizing that the Commission is not a direct actor in the modernization of universities. Competence should only be shifted to the EU level if good arguments suggest that this will indeed improve welfare.

There are advantages of scale and of organizing policy at the EU level. The Commission first can play a catalytic role by providing political impetus, policy learning and coordination opportunities and targeted interventions in support of reform and modernization at Member State level. In addition, the European dimension offers the potential benefits of larger scale operation, greater diversity and intellectual richness of resources, plus opportunities for cooperation and competition between institutions in a European wide integrated higher education market. A more integrated higher education market spurs competition between European universities and thus boosts quality of education and innovation in Europe.

There is therefore a case for increased mobility of students studying in other Member States. This can be aided with special EU grants and loans and by standardization and harmonization of types of degrees. It is also desirable to have increased mobility of professors and especially young researchers, since this leads to exchange of information and ideas and will benefit the quality of teaching and research. Furthermore, competition for research funds at the EU level will lead to a higher quality of research projects.

4.1. Coordinate policy and provide mutual policy learning opportunities

The Commission can support a new political impetus for higher education reform via coordinated interaction with Member States through the open method of coordination, identifying and spreading best practice and supporting Member States in their search for more effective university regimes through voluntary cooperation. Beyond providing a forum for coordination and mutual learning among Member States, the EU can also offer added value, by providing supporting surveys and studies analysing the characteristics of best practices. Furthermore, designing and providing a standardized set of relevant indicators to measure higher education performance in terms of funding and outputs will help to assess progress on reforms.

4.2. Towards an internal market for HE in Europe

An enlarged market for higher education is crucial in order to create more opportunities for citizen choice and mobility, as well as to break national monopolies or tight oligopolies at local supply level.

4.2.1. *Cross recognition and standardization*

An EU internal market for higher education requires sufficient compatibility between the different national regulations. Cross-recognition of qualifications and competencies demands a minimum level of organization at the European level in the form of common references and basic standards.

One area of standardization is quality assurance. Quality depends primarily on a 'culture of quality' and on an internal quality assurance within universities. But the accountability of universities to society also requires an external system of quality assurance. Europe's universities need quality seals with international credibility. Obviously, this will facilitate international mobility of students and faculty. In particular, the EU should take the lead in evaluating indicators by which quality of various types of degree programmes can be judged. Such indicators for higher education are essential for a better match between students and courses and for students being able to judge the best place for them to go to.

4.2.2. *Bologna reforms*

Work in the context of the Bologna process is bringing about a convergence in the structure and length of degree programmes towards the Anglo-Saxon degree system.

- This convergence will engender competition between a larger number of shorter degree programmes. If students are unhappy with a particular degree programme, they will vote with their feet and go to another programme. The reforms boost international exchange and fuel competition.
- It makes the European system compatible with systems of higher education found in UK, US, Canada, Australia, New Zealand, India, Pakistan and much of Asia and Latin America. This enhanced transparency encourages European universities to compete on a global scale.

A major effort should be made to implement the core Bologna reforms in all EU countries: comparable qualifications (short cycle, Bachelor, Master, Doctorate); flexible, modernized curricula at all levels which correspond to the needs of the labour market; and trustworthy quality assurance systems. This requires targeted incentives from the national authorities responsible in order to ensure proper take-up of the reforms rather than mere superficial compliance with the standards. Curricula in specific disciplines or professions should be renovated, drawing on comparisons and best practice at European level. There is already some evidence that the Bologna process seems to act as a stamp of quality in the sense that programmes that have been restructured according to the Bologna guidelines have attracted more students, especially if they were the leader in their country (Cardosa et. al., 2006).

4.2.3. *Mobility of students*

The Bologna reforms in themselves will not create the conditions for increased intra-university mobility of students. Students, particularly bachelor students seem to have a

strong preference for selecting higher education services in close geographic proximity to home (see Kelchtermans & Verboven (2006)). Students may thus need to be stimulated to go abroad, eg by mobility subsidies. In addition, national grants/loans should be fully portable within the EU.

The EU already has about twenty years of experience with the ERASMUS programme for promoting students to spend three to twelve month a year at another university in the EU. Since the inception of this programme, more than 1.2 million students have participated in such exchange visits while remaining enrolled in their university at home (i.e., 'credit' mobility). Most of them went to the UK and Ireland (probably to do with the English language and the efficient course structure), but Spain, Germany and Italy are becoming increasingly popular. The number of students going abroad to study full-time at a foreign university ('diploma' mobility) is much smaller.

Temporary exchange students from the old Member States mainly go for the cultural experience while those from the New Member States value academic quality and learning a foreign language. Also students who take a full-time course abroad are much more motivated by the quality of education (Thissen and Ederveen, 2006). It therefore seems sensible to make more funds available especially for those students completing a full Bachelor, Master or Ph.D. degree at universities in other Member States, since these are the students that care most about the quality of higher education and may be the ones that spur competition among European universities. They are also the ones that are more likely to work and stay abroad after migration (Oosterbeek and Webbink, 2006).

If fees are low and the host country puts up most of the cost of university education (as is the case in most of Continental Europe), there is a possibility of free riding and thus a case for action at the EU level. As mobility increases, it also increases the incentive of universities to raise tuition fees for foreign students. If these students come from the EU, this can only be done by raising fees for home students as well.

4.2.4. Mobility of researchers/teachers

The recent Directive on the recognition of professional qualifications⁸ has made it simpler and quicker to have qualifications for professional practice recognized across national borders. Procedures for academic recognition should also be reviewed to ensure quicker and more predictable outcomes (in particular, by publishing universities' recognition policies). In addition, full portability of pension rights coupled with the removal of other obstacles to professional, international or inter-sectoral mobility is needed to foster staff and researcher mobility. But perhaps the

⁸ European Parliament and Council of the European Union (2005), the Directive will be implemented from October 2007.

most important endeavour to increase staff mobility is to increase the attractiveness of the EU higher education landscape.⁹

4.2.5. *Opening up of national funding schemes*

Beyond mobility of students and staff, free mobility of funds can also contribute to improving the internal market for HE. If Member States would open up their funding schemes to other EU or non-Europeans, this would give the opportunity to leverage the efficiency of their funding by drawing on capacities beyond geographic borders. It would enhance competition for funds and thus generate better quality.

4.3. **Provide funding**

The Commission should urge national decision makers to close the funding deficit in their higher education. However, the mix of public and private funding and the mix of basic, competitive and output-related funding is likely to remain different between countries, reflecting the diversity of cultures, economies and university traditions within Europe.

Compared to the funding from Member States, the funding available at the EU level for education and research at universities is negligible. Nevertheless, it can play a catalyzing role for enhancing the use of national resources and stimulating the quality of higher education in the EU. The mechanisms within the Financial Perspectives 2007-2013 include not only the Funds for “Competitiveness for Growth & Employment” programmes (the 7th EU Framework Programme for R&D, Lifelong Learning Programmes & Erasmus, Competitiveness and Innovation Programme), but also the Structural & Cohesion Funds. And also the European Investment Bank can provide an important financial impetus for higher education in Europe.

4.3.1. *Structural Funds*

Structural and rural development funds offer possibilities to stimulate the modernization of higher education via sectoral measures. These possibilities should be fully developed, since they represent the bulk of funding available at EU level.¹⁰ The Structural Funds can provide funding for the improvement of universities’ facilities and resources, the fostering of partnerships between the academic and business communities and the support of research and innovation relevant to regional

⁹ In March 2005 the European Commission adopted a European Charter for researchers and a code of conduct for the recruitment of researchers that aims at increasing the attractiveness of research careers and improve mobility and working conditions of researchers across Europe (European Commission, 2005d).

¹⁰ While the 7th FP, CIP and LLL& Erasmus represent 8.5% of the total EU budget 2007-2011, the Structural Funds represent 35%. The Framework Programme Budget (in total 48081 million Euro for 2007-2011) is split into Cooperation (64%), Ideas (incl ERC (15%)), People (Marie Curie Programme (9%)), Capacities (Research infrastructures, SMEs, Regions of Knowledge, Research Potential, Science in society, International Cooperation), 8% and Joint Research Center 3%.

or Member State economic development objectives. The Structural Funds' system of decentralised management enables regional specificities to be taken into account. Member States, regional authorities and universities should take full advantage of these opportunities to improve synergies between education, research and innovation, particularly in the EU's less economically developed Member States and regions.

4.3.2. *Funds for "Competitiveness for Growth & Employment"*

A considerable part of overall student mobility within Europe is supported through Community programmes such as Erasmus, which has funded more than one million students since its inception in 1987/88. The next phase of the scheme (2007-2011) has the ambitious target of three million students to have studied abroad with an Erasmus grant by 2011. This implies that 375,000 students will be participating in the final year of the programme.

Funding students through direct scholarships, like Erasmus, should increase in importance. These scholarships should be extended to fund "diploma mobility" and to enable graduates to obtain Master and Ph.D. degrees in other Member States as well. The Marie Curie funds offered for international mobility of post-docs and other academics should be increased. But just as important is a drastically reduction in the bureaucratic nightmare that one has to go through to apply for these scholarships.

The administration of this mobility funding should be targeted to individuals rather than to institutions granting such scholarships, so that students can vote with their feet. Similarly, more funding in the FP should be allocated to individual researchers to cover their salaries. This type of funding for researchers, when portable across institutions within the EU, will allow the researchers to vote with their feet and select the best institutions to pursue their research projects, thus instigating more EU wide competition by universities for research talent¹¹.

4.3.3. *European Investment Bank loans*

Finally, higher education is also a priority sector for the European Investment Bank and further expansion of its provision of income-contingent loans is desirable. Organizing income-contingent loans for education at EU level could entail the added advantage of offering more risk-spreading opportunities and coordination on recovery ex post, when graduates are moving across EU and may be tempted not to pay back their loans.

¹¹ The VICI scholarships awarded by the NWO are an example of a portable, individualized funding scheme *within* the Netherlands. Its ambition to select each time the brightest of scholars and allow them to go the best institutions within the Netherlands, is however hampered by the small scale of the Netherlands market.

4.4. Building capacity at EU scale and the use of flagships

In a number of areas where critical mass needs to be built beyond the level of the individual Member State, the EU should support the building of EU wide capacity. A main priority should be European postgraduate/doctoral schools and networks of worldwide calibre in their dual function as the peak of higher education and the first career stage for researchers. The Commission should examine the possibility of providing more support to such schools and their students/researchers, provided they meet the subsidiarity criterion. Specific support may be envisaged for joint or even 'European' doctorates and quality assurance or accreditation at the doctoral level. The Marie-Curie programme for career development and mobility of researchers or the European University Institute in Florence already are cases at this level.

In basic research, the European Research Council, will provide an arena for selecting bottom-up research projects and researchers on the basis of EU-wide excellence. When its reputation for selecting quality is established, it may serve as a flagship on which national or regional selection bodies can anchor.

The proposed European Institute of Technology could become another example of EU-wide scale building, with its ambition to develop in public-private partnership, a flagship in the knowledge triangle of education, research and innovation based on excellence, interdisciplinarity and networking between academic centres and between academia and business in targeted disciplines.

4.5. The EU as a facilitator of global cooperation

The development of extensive cooperation, mobility and networks between European universities over the past decades has created the right conditions for broader internationalization. Most universities now have experience with multilateral consortia. This should be used to extend international cooperation beyond the EU dimension.

By launching the Erasmus Mundus programme the EU has started to promote mobility with third countries. More structured international cooperation through bilateral/multilateral agreements with the EU's neighbouring countries and worldwide, should be developed at EU level, supported by the necessary financial means.

An important prerequisite for international 'brain circulation' is to simplify and accelerate legal and administrative procedures for the entry of non-EU students and researchers. Concerning admission and residence of third country researchers, the recently adopted 'researchers' visa' package needs to be transposed into national law as soon as possible.

5. SOME CONCLUDING REMARKS

Universities are key players in shaping the future of Europe. They are also key players in the successful transition to a knowledge-based economy and society. However, this crucial sector of the economy and of society needs in-depth restructuring and modernization if Europe is not to lose out in the global competition in education, research and innovation.

Implementing this necessary restructuring and modernization requires coordinated action from all parties involved:

- Member States need to take the necessary measures with respect to universities, including aspects such as management, granting real autonomy and accountability to universities, funding mix and access to higher education. In particular, they should only subsidize courses whose social benefit exceed the private benefit and make much more resources available for fundamental research. Funding should be based less on inputs or outputs and more on academic excellence. They should also allow universities to set fees independently and to differentiate them by type of student and type of course. The Member States and/or the European Investment Bank should provide student with income-contingent loans and cover default out of general funds.
- Universities, for their part, need to make strategic choices and conduct internal reforms to extend their funding base, attract the best students and faculty, enhance their areas of excellence and develop their competitive position. They should clearly state their mission and act accordingly. A wider differentiation of objectives should be allowed to arise, with institutions specializing in research or undergraduate, graduate or post-graduate education. In any case, they must aim to compete with the best institutions elsewhere in the world, if their objective is to pursue excellence.
- The Commission can contribute through improving the internal market for higher education, promoting policy dialogue and mutual learning, through financial support to Member States and to universities in their modernisation activities, to promote mobility of students and researchers. The Commission can also take the lead in developing and implementing a set of quality indicators for institutions in the EU according to a multitude of criteria. They may also engender transparency of the EU market for higher education and to take action to demolish the power of monopolistic universities if it is used to the detriment of students.
- Last but not least, students should adopt a different mindset and choose the degree programme that best suits their needs. Clearly, this need not be the university closest to their family home and may well be a top university abroad. They also need to fund a greater part of their own education and thus be encouraged to demand the highest quality.

Perhaps, the most important driving force for modernizing higher education in Europe emerges from competition. Increased competition, combined with more mobility and further concentration of resources, will lead universities to offer a more open and challenging environment to the most talented students and researchers, thereby making them more attractive to Europeans and non-Europeans alike. European universities face huge opportunities from reforms.

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