Reforming European Universities: Scope for an Evidence-Based Process

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Abstract

Universities are key players in the successful transition to a knowledge-based economy and society. However, this crucial sector of society needs restructuring if Europe is not to lose out in the global competition in education, research and innovation. To allow a more evidence based process of reforms of higher education, this contribution reviews the trends in performance, funding and governance of European universities. It also brings on board some evidence on support for the reform process. The analysis shows that, while EU universities have improved their quantitative performance on teaching and research, it needs to further improve especially on the quality dimension. The link between governance, funding and performance is not obvious and needs still further data and research. Nevertheless, the preliminary evidence so far seems to suggest that society supports a multitude of university structures, to respond to a heterogeneous set of preferences. This calls for granting universities the space and thrust to develop autonomously their own strategies and structures. Public and private stakeholders should provide the funds for universities to develop their agenda, while holding them accountability for delivering results. Establishing a large, integrated market for higher education and research in Europe, would provide an environment for European universities to develop their comparative advantages, making them stronger players on the world scene.

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Keywords: university reform, governance, autonomy, funding, competition.

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1. INTRODUCTION

Universities are among the key actors in constructing a knowledge-based society. Through their teaching, they disseminate knowledge and improve the stock of human capital; through the research they perform, universities extend the horizons of knowledge; and by their other activities, they transfer knowledge to the rest of society, work with established industry and create new companies.

As Europe approaches the world technology possibility frontier and leaves the era of catching up behind, innovation and highly-educated people have become crucial drivers of its growth potential. If forces are indeed to be mobilised in Europe to create the most competitive economy and knowledge-based society of the 21st century, European universities have to play a central role. But most European universities do not seem currently to be in a position to achieve their potential in a number of important ways. In a still too fragmented European higher education and research area, universities are hampered by a combination of excessive public control, bad governance coupled with insufficient funding opportunities. As a result, compared with their counterparts in the US, Australia and perhaps soon also China, they are behind or falling behind in the increased international competition for talented academics and students, and miss out on fast-changing research agendas, innovative opportunities and teaching curricula.

Modernization of Europe's universities, involving their interlinked roles of education, research and innovation, has therefore rightly been acknowledged as a core condition for the success of a move towards an increasingly global and knowledge-based economy. Various policy communications have identified the main items for change, at the level of the EU and also in many European countries[3]. Spurred by the Bologna process, many countries have started designing a process of reforms. However, few countries make them national priority. Yet these changes are crucial to regenerate Europe's growth capacity. Perhaps, national governments rightly give priority to giving funds to primary and secondary education rather than to university education. But reform of the university system is not only a question of restructuring its governance or pumping more public money into the system. With a carefully designed social loans system of the type implemented in Australia, it may well be possible to raise private funds from higher tuition fees without sacrificing accessibility to higher education.

In this contribution we give a review of the evidence on the performance of European universities with respect to education, research and knowledge transfer (section 2). Having established the problems of European universities to deliver, particularly on the quality dimension, we examine two important drivers of university performance: governance and funding (section 3). With only limited evidence available on how governance and funding are linked to performance, the implications for the policy agenda reforming European universities remain tentative (section 4). We also provide evidence on the heterogeneous opinions and preferences of some of the stakeholders in the reform process (Section 5), before we conclude with a call for more data & analysis to support a more evidence-based reform process (section 6).

[3]E.g. 'Mobilising the Brainpower of Europe: Enabling Universities to Make their Full Contribution to the Lisbon Strategy', COM(2005) 152 of 20 April 2005 and Council Resolution of 15 November 2005.

2. PERFORMANCE OF EUROPE'S UNIVERSITIES

With universities being an important actor in delivering economic development, either through their education and/or through their research activities (see a.o. Sianesi & Van Reenen (2003), Van der Ploeg & Veugelers (2008) for a review of the theoretical and empirical literature on this), and with the public good nature of the services provided by universities, both in education and research, there is a clear case for policy to be concerned about how well their universities are performing, and to intervene if necessary. This holds particularly in those countries or regions that have moved closer to the world technological frontier, and want to become leading knowledge based societies (Aghion (2006)). This section takes a closer look at the performance of universities in Europe.

It is well recognized that European universities have several missions which are centrepiece contributions in a knowledge-based society: teaching, research and the transfer and exchange of knowledge with other parts of society. While education, basic research and transfer of knowledge are heavily interconnected within the university as institute, the academic literature, the statistics and the policy discussion mostly focus on one of these areas only. They thus ignore most of the time the multi-tasking challenge of universities having to balance the various activities which can be sometimes substitutes and other times complements. In the reminder of this contribution, we will therefore also often have to resort to a focused discussion of each of the activities of the university separately.

2.1. Performance of European universities on international rankings

By now a wide series of rankings abound, comparing the performance of universities across countries[4]. The most 'mediatic' representatives, and also the ones most criticised, are the Times Higher Education Supplement (THES), and the Shangai Jiao Tong University Ranking[5]. Both rankings, THES and Shanghai, paint a somewhat similar picture of Europe lagging behind especially at the top, and especially the larger continental European countries. Overall, the results from the rankings indicate the lower performance of Europe's universities relative to the US, especially at the top. Although these rankings are heavily criticized, they are nevertheless influential and are therefore interesting to examine in some more detail.

2.1.1. The Times Higher Education ranking of universities

The THES ranks top 200 universities across the world on the basis of peer review, recruiter review, international faculty, international students, student/staff ratios and faculty citations scores. The results reported in Table 2 indicate that the Top-50 includes almost only universities from countries with an Anglo-Saxon system of education. Continental Europe (excluding Switzerland) only has three universities in the Top-50 in 2005 and this has dropped to only two in 2006. When extending to the Top-200, the gap is less deep. Continental Europe manages to have 48 universities in the 2006 Top-200. This reflects that the performance gap of continental Europe is most acute at the top.

[4] For a discussion on the how to use rankings, see UNESCO, Berlin principles on ranking of higher education institutions, http://www.che.de/downloads/Berlin_Principles_IREG_534.pdf

[5] Other rankings are Center for Higher Education German, bibliometric ranking by Leiden and ranking web of universities by CSIC Spain.

Table 1: Number of universities per country in the THES 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

2.1.2. The Shanghai research ranking of universities

Shanghai ranks universities on a set of indicators, measuring their research performance. The indicators include (i) the number of alumni winning Nobel Prizes; (ii) the number of university faculty winning Nobel Prizes; (iii) the number of articles published in Nature & Science; (iv) the number of articles published in ISI WoS journals; (v) the number of highly cited researchers; (vi) size of universities. Brueghel researchers (Aghion et al., 2007) have aggregated these Shanghai rankings per country – see Table 2. The US completely dominates all European countries in the Top-50. Only the UK and Switzerland rival the US on a per capita basis. Nevertheless, the EU has many good universities in the second and third tiers. It suggests again that what Europe lacks most is top-class universities.

Table 2: Aggregate Shanghai Rankings

	TOP 50	TOP200	TOP500
Switzerland	97	228	230
UK	72	98	124
Canada	39	63	104
Australia	0	66	101
US	100	100	100
EU15	13	41	67
Germany	0	37	67
EU25	10	32	54
France	3	29	45
Japan	14	24	27

Source: Brueghel PB 2007/04, Why Reform Europe's universities)

Note: The best university in the Top-50 is given a score of 50, the next best university is given 49, and so on. For each country (or region), the sum of Top-50 Shanghai rankings that belong to this country is summed, and divided by the country's population. Finally, all the country scores are divided by the US score, as benchmark. This gives the Country Performance Index for the Top 50 universities. The same logic applies, respectively, to the Top-200 and TOP-500.
Selected countries are ranked according to their score on TOP-500.

Both rankings, THES and Shanghai, paint a somewhat similar picture of Europe lagging behind especially at the top, and especially the larger continental European countries. Although contrary to the THES, the Shanghai ranking is mostly based on publicly available information, it remains nevertheless controversial because of the weights attached to the various dimensions. It also focuses on research, remaining silent on teaching performance.

2.2. Performance of European universities on education, research and technology transfer

Rankings can be criticised for many things[6]. This section takes a look at the more standard official statistical evidence that is available to measure across countries the performance of universities on higher education and research including the quality dimension of educational and research performance.

2.2.1. Performance of Higher Education Enrolment and Graduation Rates[7]

(i) Proportion of EU population that graduate from higher education is relatively low

Table 3: Higher education attainment rates

(% of population aged 25-64 with completed tertiary education (2005)

US	JAP	EU25	FIN	DK	SE	UK	GE	FR
38.4	37.4	22.8	34.6	33.5	29.2	29.6	24.6	24.9

Source: EC-ENTR, European Innovation Scoreboard 2007

Table 3 indicates that on average the higher education attainment in the EU is around 23%, which is considerably below levels in the US and Japan. Nevertheless, within the EU there is an important heterogeneity. For example, Finland and Denmark, the best performing EU countries, come close to the US level.

(ii) Relatively few young people in EU enrol in higher education but enrolment is growing strongly

Furthermore, in comparison with its most important competitors, higher education institutions in the EU attract a lower proportion of secondary school leavers. This implies 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 the EU 25 in 2002, which is much lower than in the US (37.7%). In the US 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, which compares to only 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 growth in enrolment rates. The number of higher education students increased in the EU during 1997-2002 by 16%. This corresponds to an average of 3.1% per year, which exceeds the annual growth of 2.2% in the US and 0.1% per annum in Japan.

[6] For a discussion on the how to use rankings, see UNESCO, Berlin principles on ranking of higher education institutions, http://www.che.de/downloads/Berlin_Principles_IREG_534.pdf

[7] Unless noted else, the source of information used is OECD (2006) Education at a glance.

(iii) Graduation rates in EU are below OECD average

Improving the rate of participation in higher education of talented young people is a challenge in most countries, especially from socially disadvantage social groups. Furthermore, it is necessary not only to reach new categories of students, but also to make them succeed. 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.[8] 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%).

(iv) EU produces more mathematics, science and technology graduates than US but has fewer researchers in labour market

Table 4 shows that Europe produces significantly more graduates in mathematics, science and technology than the US and Japan. And the number of graduates in these fields in the EU is further increasing (by about 30,000 or over 4% in 2003). However, with a growth of over 30% per year, China overtook the EU in 2003.

Advanced graduates in Europe use their competencies and skills in a wide variety of economic sectors, but it seems that their *research* potential remains relatively under-utilised. In 2001 some 1.8 million full-time equivalent (FTE) personnel were employed in R&D in the EU of whom about one million were considered researchers. That leaves the EU with fewer active researchers in the labour market than the US. This situation is partly due to differences in the functioning of the labour market, but also due to the 'brain drain' from Europe to the US. About 400,000 Europeans with a scientific and technical education are currently living in America, of whom about 120,000 are employed as researchers (Source: EC-DG EAC).

Table 4: Number of graduates (ISCED 5 and 6) in mathematics, science and technology and number of researchers (in 1000) in 2001

Region	MST graduates		Growth per year in 2001-03 (%)	Researchers 2001	Number of researchers per 1000 labour force 2003
	2001	2003			
EU25	681	740	+4.2	1084	5.5
US	380	431	+6.5	1261	9.0
China	464	810	+32.1	743	1.0

Source: EC-DG EAC

(v) EU produces more Ph.D.'s than its major competitors

The EU19 as a whole outperforms the US and Japan in number of doctoral degrees awarded with Germany first and the UK second – see Table 5. The EU managed to increase its share further in 2004: almost twice as many Ph.D.'s each year graduated from European universities compared to the US. For S&E students these positive trends are even more outspoken.

[8] 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.

Table 5: Trends in shares of OECD doctoral degrees awarded

	Share in OECD total Doctoral Degrees Awarded		Share in OECD total S&E Doctoral Degrees	
	2000	**2004**	**2000**	**2004**
EU-19	47%	50%	50%	57%
US	30%	27%	27%	25%
JAPAN	15%	8%	15%	9%

Source: OECD, STI Scoreboard, various issues

However, as Table 6 illustrate, the US makes greater efforts to attract students from other countries than Continental Europe. Foreign students in the US represent 41 % of all doctoral degrees in S&E, which is only matched by the UK in Europe.

Table 6: Doctoral degrees earned by foreign students (2005)

	US	**UK**	**GE**	**JA**
Total Number of Doctoral Degrees **in S&E** by foreign students	11516	4100	2417	792
Foreign Doctorates as % of All Earned Doctorates **in S&E** in country	41.2%	42.0%	24.7%	10.3%

Source: NSF, Science and Engineering Indicators 2008

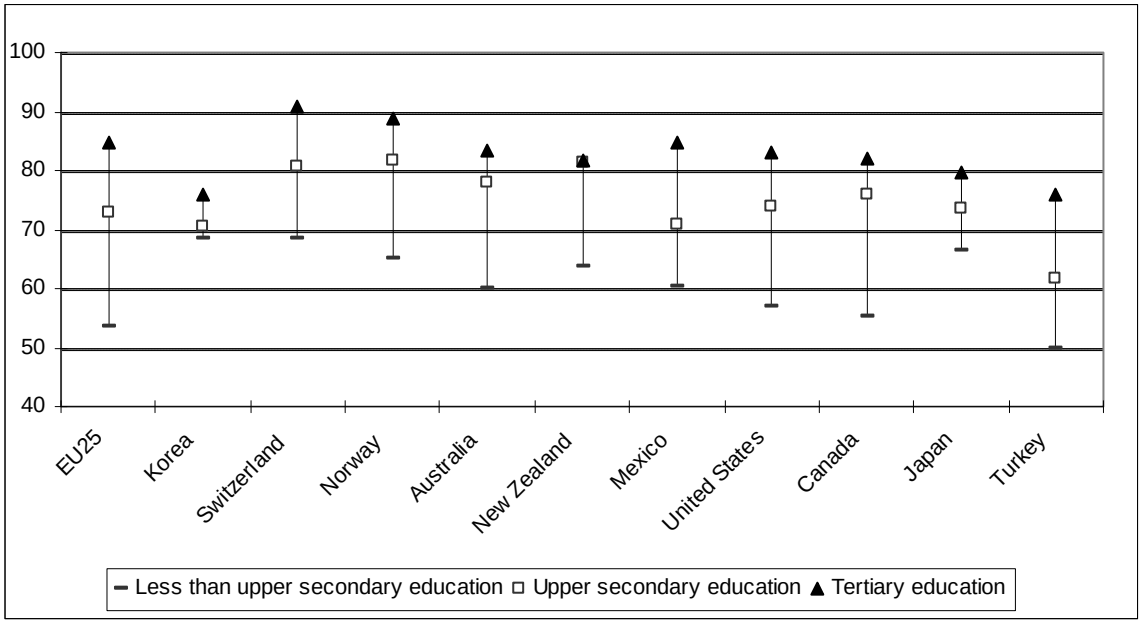
(vi) Tertiary Education leads to higher employment, lower unemployment and higher earnings, also in EU

We see from Figure 1 that the employment rate of holders of a tertiary education is significantly higher than for people achieving only lower levels of education. [9] In the EU the employment rate of people with tertiary education is 85%. On the other hand, the employment rate of people with less than upper secondary education is 54%. Almost all the countries in the comparison perform better than the EU as concerns the employment rate of people with low qualifications.

Table 7 indicates that the unemployment rate of tertiary educated is somewhat higher in the EU as compared to the US and it varies across EU countries (ranging from 7% in Spain to 1.6% in Austria), but these figures are strongly correlated with the overall performance of a country's labour market. Expressing the unemployment rate of the tertiary educated relative to the unemployment rate of those with upper secondary education shows comparable outcomes for the EU and the US, but a considerable variance within EU countries. Italy, Spain and France combine above average unemployment rates of people with tertiary education with the smallest increment in employment probability when obtaining higher education. Finland and Germany enjoy the highest increment in the chance of getting a job after graduating from higher education.

[9] There is also a clear link between educational attainment and unemployment rates. The unemployment rate of the active population in the EU in 2003 was four percentage points lower for people with higher education level than for the population as a whole and 7.5 percentage points lower than for those with less than lower secondary education.

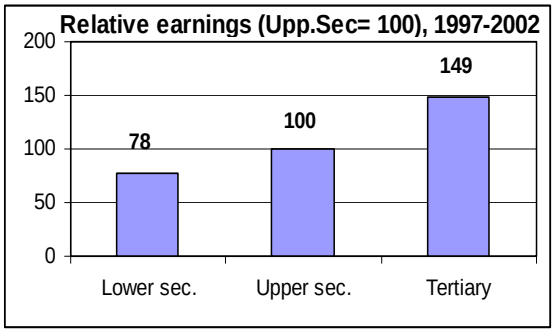
Figure 1: Education levels and employment rates for age group 25-64, 2002



Source: DG Education and Culture. Data: Eurostat (LFS), OECD (Education at a Glance)

Furthermore, Figure 2 illustrates that average earnings increase with education level. Indeed, average earnings are almost twice as high for those with higher education than for those with only lower-secondary attainment.

Figure 2: Education levels, earnings and lifelong learning participation of population aged 25-64 in EU25



Source: DG Education and Culture. Data: OECD, Eurostat Labour Force Survey

The high increment in employment rate and salary increments for tertiary education in the EU signals the high private incentives for EU individuals to start tertiary education.

Table 7: Unemployment rates for those with tertiary education
(among population aged 25-64, 2002)

Country	Unemployment rate of tertiary relative to upper secondary	Unemployment rate of tertiary educated
Belgium	0.55	3.1
Denmark	1.06	3.6
Germany	0.49	4.3
Spain	0.78	7.4
France	0.77	5.0
Italy	0.83	5.3
Netherlands	0.89	1.7
Austria	0.51	1.6
Finland	0.47	4.0
Sweden	0.60	2.6
United Kingdom	0.64	2.4
EU25 average	0.53	4.2
Switzerland	0.92	2.2
Japan	0.73	3.9
United States	0.52	3.0

Source: EU, EEA: Eurostat. Others: OECD, Employment Outlook 2004 and Education at a Glance (2004)

2.2.2. Performance on Research

(vii) Europe has caught up with US on quantity of publications, but quality still lags behind

Table 8 indicates that the EU has been catching up with the US on number of publications and has managed to bypass the US, currently having a larger share of total S&E publications than the US. But perhaps even more striking is the growth of Asia, and particularly China. In 2005 China ranked fifth in the world behind the US, the UK, Japan and Germany. In 2006 (not shown in NSF 2008), China indeed became the world's second largest producer of scientific knowledge behind the US (Source: SOOS, KULeuven).

Table 8: Share in world scientific publications

	1995	2000	2005
US	34%	31%	29%
EUROPEAN UNION	35%	35%	33%
JAPAN	8%	9%	8%
Rest of WEST*	6.5%	6.2%	6.8%
ASIA	13.6%	17.0%	20.6%
C/SAMERICA	1.7%	2.4%	2.9%
Rest of World**	1.2%	0.6%	0.3%

Source: NSF, S&E Indicators 2008
* RoWest= Canada and other Western Europe; **RoWorld is the residual;

When correcting for the number of researchers as input, the EU shows up with an above OECD average publication-per-researcher rate, larger than the US – see Table 9. Within Europe, especially the UK has a high rate. But also countries like Sweden and Denmark, who

have specialised in Clinical & Biomedical research (the most publication-active scientific area), have an above average publication-per-researcher rate.

Table 9: EU performance on scientific publications

US	JA	EU25	FIN	DK	SW	UK	GE	FR
Share in total S&E Publications (Total=OECD) 2003								
36.1	10.2	38.8	0.9	0.9	1.75	8.3	7.6	5.5
S&E Publications per researcher relative to OECD average (1=OECD=0.164) 2003								
0.96	0.54	1.17	0.77	1.23	1.30	1.86	1.01	1.01
Share of Clinical & Biomedical in S&E Publications relative to OECD average (1=OECD=44.6%) 2003								
1.06	0.91	1.02	1.10	1.21	1.16	1.04	1.01	0.91

Source: OECD, STI 2007

(viii) In terms of quality of produced research, the EU is still catching up with US

But when assessing the quality of publications, as measured by citations, the evidence is less favourable for the EU. Although the EU has been catching up with respect to citations too, this has been at a less impressive rate than on numbers of publications. The share of the EU in total citations is much lower than the US share. A US publication received in 2005 on average 5.3 citations, a UK publication 3.5 citations, a German one 3.7 citations, and a French one 3.1 citations (a Chinese publication 1.25) (Source: SOOS, KULeuven);

This gap in quality is not only apparent in citations, but also in the number of publications in the top tier journals. While the EU outperforms the US in the Bottom 50 percentile, the share of the US in TOP1 articles is almost double the EU's. Nevertheless we see a catching up of the EU in this TOP1 percentile, but only slowly.

Table 10: Trends in publications shares across the quality distribution

	Share in articles in TOP1 citation pc			Share in articles in TOP10 citation pc			Share in articles in BOTTOM50 citation pc		
	1995	2000	2005	1995	2000	2005	1995	2000	2005
USA	62	60	55	50	45	42	32	28	26
EU	25	26	29	32	35	34	33	35	34
ASIA10	5	6	7.5	7	9	12	14	17	21

Source: NSF, S&E Indicators 2008

Note: Top1: 99th percentile of citations received (>21); Top10: 90th percentile (>6); the Bottom50 contains the publications with 0 or 1 citations; 1995 are all 91-93 articles cited by 1995 articles; 2000 are all 96-98 articles cited by 2000 articles; 2005 are all 2001-2003 articles cited by 2005 articles.

Table 11: EU performance on quality per researcher

US	EU-15	UK	GE	FR
Citations/researcher relative to the US				
100	47.1	87.4	56.5	45.8
Top 1% publications/researchers relative to US				
100	30.8	76.9	46.1	38.5

Source: On the basis of Dosi et al. (2006)

Even when normalising with respect to number of researchers, the citations gap remains substantial, as the Table 11 (adapted from Dosi et al., 2006) demonstrates. Again, the UK performs much better than its continental European counterparts.

2.2.3. Performance on Knowledge Transfers to Industry

(ix) No sufficiently reliable cross-country data yet available to measure performance of universities on knowledge transfer

Assessing European universities on how well they are doing with respect to industry science links, particularly in comparison with the benchmark US, is challenging. No good internationally comparable data exist, yet. Only recently, a number of surveys have been conducted across EU countries to assess universities' performance on patents, licensing and start-ups, but these surveys are for the moment still with limited participants and therefore cannot be considered as representative across countries[10].

Despite these caveats, Table 12 provides a summary of the performance of European ASTP and American AUTM affiliated institutions in 2004 on five indicators. Interesting to note is the lower level of research funding in the European ASTP sample as compared to the American AUTM sample. To correct for the gap in funding, performance is scaled relative to per million PPP$ of research expenditures, thus measuring the efficiency of institutes in generating output per dollar spent. The comparison is based on combining results for universities and non-university institutions even though there are marked differences between them, because AUTM only provides full details on all types of institutions combined[11]. Within the European ASTP sample, the limited number of observations precludes any analysis comparing individual countries.

The results show that the American AUTM affiliated institutions perform better that the European ASTP institutions on the two patent indicators: patent applications and patent grants per million of research expenditures. Conversely, the performance of the European ASTP members is better for three indicators: invention disclosures, licenses executed (although not on license revenues (not reported) and the number of established start-ups. These results suggest that the American AUTM institutions are substantially more successful in patenting, particularly for patent applications, but that the European ASTP members are more successful at establishing start-ups, although there is no information about the future success of ASTP start-ups, which would be a superior measure of performance.

With none of these surveys yet sufficiently representative, we can only conclude that the EU needs better data to assess the performance of its universities on technology transfer.

[10] Proton and ASTP, two associations of Technology Transfer Offices (TTOs) in Europe, are currently carrying out surveys among their members. ASTP surveys are comparable to the American AUTM-surveys.

[11] The average research spending in 2004 by European universities is 96.7 million PPP$, compared to an average of 316.1 PPP$ for non-university organisations, which mostly consists of government research institutes.

Table 12: Comparison of ASTP and AUTM performance in 2004

	ASTP	AUTM	ASTP relative to AUTM
Average research expenditures (million US)	*153.2*	*215.7*	
1. Invention disclosures per million	0.56	0.40	**1.40**
2. Patent applications per million	0.14	0.33	0.42
3. Patent grants per million	0.06	0.09	0.67
4. Licenses executed per million	0.13	0.11	**1.21**
5. Start-ups established per million	0.02	0.01	**2.00**

NOTE: ASTP results are limited to respondents that provide data for both the indicator and for research expenditures. The number of eligible respondents is therefore 59 for invention disclosures, 59 for patent applications, 49 for patent grants, 55 for license agreements, and 61 for start-ups.

Source: Arundel & Bordoy (2006), ASTP report;

2.3. Summing up

A closer look at the standard official statistical evidence thus shows a nuanced picture on Europe's performance of universities on higher education and research. Overall the statistical evidence indicates that Europe has made improvements, especially in quantitative terms (number of graduates and number of publications). It also illustrates the heterogeneity within Europe, with a number of countries, particularly the Nordic countries, even outperforming the US on a number of indicators. At the same time, it shows the need for further improvements of the European higher education system, particularly on the quality of education, research and transfer dimensions.

3. DRIVERS OF PERFORMANCE: FUNDING AND GOVERNANCE OF EUROPE'S UNIVERSITIES

What explains these differences in performance of universities between the EU and other international competitors like the US, and among EU countries? Two components always show up in the discussion: funding and governance. These two dimensions will be discussed in sections 3.1 and 3.2, respectively. But beyond funding and governance, also size might matter. 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 is larger than for a small country. This is why it is important to engender competition (as well as cooperation) on a European level. 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 countries with huge and rapidly growing populations like China and India.

3.1 Funding

3.1.1. Funding Higher Education

(i) Total investment in higher education in the EU is below key competitors, especially private funding

Table 13 compares the public and private spending on higher education across countries. ***Total investment*** in higher education in the EU is about 1.3% of GDP, which is on a par with Japan, but below the levels of the US (2.7%). The three best performing EU countries are again the Nordic countries (Denmark, Finland, Sweden), who invest 1.8% of GDP in higher education albeit clearly below the levels of the best performing OECD countries. The UK is no positive outlier with respect to spending on higher education.

Table 13: Spending on tertiary education as percentage of GDP, 2003

	US	JA	EU19	FIN	DK	SE	UK	GE	FR
Total	2.9	1.3	1.3	1.8	1.8	1.8	1.1	1.1	1.4
Public	1.2	0.5	1.1	1.7	1.7	1.6	0.8	1.0	1.1
Private	1.6	0.8	0.2	0.1	0.1	0.2	0.3	0.1	0.2

Source: OECD, Education at Glance (2006)

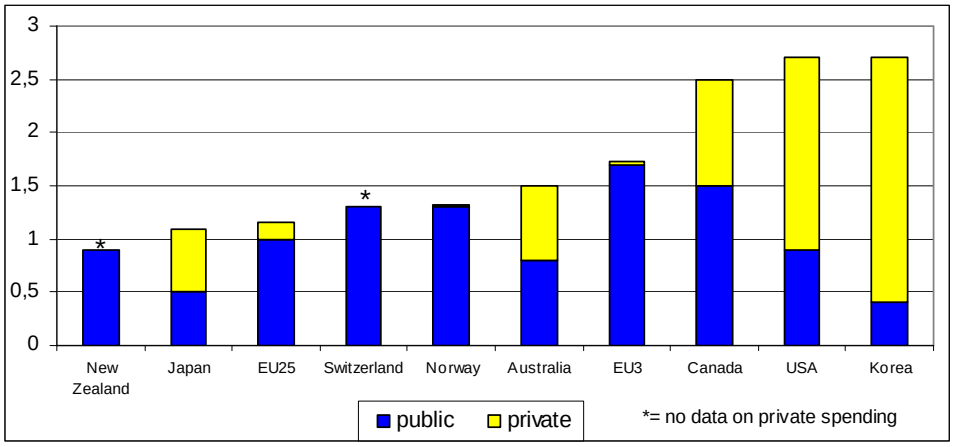
Table 14: Funding per student across EU universities

	Size *	Budget per student**
Belgium	21.7	11.3
Denmark	18.2	11.4
Germany	26.2	9.6
Italy	44.9	10.1
Netherlands	21.4	20.5
Spain	44.8	7.0
Sweden	27.1	16.2
Switzerland	12.8	26.2
UK	14.6	24.5

Note: * Average number of students per institute (000); **= in PPP 000 euro
Source: Brueghel PB 2007/04, Why Reform Europe's universities

Differences between countries in levels of ***total investment per student*** are also large as indicated in Table 14. In 2001 the EU25 spent on average 8,600 Euro per tertiary student, which is only slightly lower than in Japan. In the USA, however, investment per tertiary student is at over 20,000 EUR, more than twice the EU level (Source: EC-DG EAC, 2006). Also within the EU, ***spending per student*** varies substantially across countries. The Bruegel study reports that the best funded students are to be found in Switzerland and the UK, which also have the smallest institutes. On the other extreme, Spain and Italy have large, but not well funded universities. Germany is also less well funded per student. Sweden and the Netherlands have universities of average size and are relatively well funded per student.

Figure 3: Total investment in tertiary education as percentage of GDP, 2001



Source: DG EAC on the basis of OECD (Education at a Glance, 2004)
EU averages and non-EU countries are ranked in descending order by spending as a % of GDP
EU3= Denmark, Finland, Sweden (3 best performing EU countries)

Figure 3 illustrates that differences across countries in spending becomes even more pronounced when the public versus private source if this funding is considered.

Public investment in higher education in the EU25 amounted to 1.1% of GDP in 2003, which is not too different from the US levels. The EU contains the three OECD (and probably world) leaders in terms of public investment in higher education as a percentage of GDP, which are the three Nordic countries: Denmark (1.8%), Finland (1.7%) and Sweden (1.5%). Outside the EU only Canada (1.5%), Norway and Switzerland (1.3% each) come close to these levels.

In addition, the nature of public funding for education varies considerably across countries and time. 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 '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.

Private investment in higher education in the EU amounts to less than 0.2% of GDP compared to a weighted OECD average of 0.9%. Private investment in higher education in the US is more than ten times higher (1.8% of GDP) and in Japan about four times higher (0.6%) than in the EU. Even in the three leading EU countries – Spain, the Netherlands and the UK (0.3% each) – private investment in higher education is only one third of the OECD average. The OECD country with the highest private spending on higher education is Korea (2.3%).

The differences in the level of private investment are a result of differences in tuition fees (most EU countries do not have tuition fees), in the share of private institutions, in philanthropic funding and in the level of funding provided by enterprises. No tuition fees exist in Denmark, Germany and Sweden. Other countries have fixed but positive 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 (Belgium, 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. Conditions governing student grants have become tighter in some countries by linking grants/loans to academic progress (Denmark, Germany, Netherlands, and Sweden).

3.1.2. Funding on Research in Higher Education

(i) No clear evidence of underfunding of research at higher education institutes compared to the US

Table 15 presents comparative figures on types of spending on R&D. R&D performed in the higher education sector is on the rise in Europe, Japan and the US. In 2004, higher education expenditure on R&D amounted to 0.40% of GDP in the EU as a whole, 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, with values above 0.60% of GDP. In the US, higher education expenditure on R&D amounted to 0.36% of GDP in 2003, similar to the 1997 rate.[12]

Table 15: Spending on research in higher education

US	JAP	EU25	FIN	DK	SE	UK	GE	FR
Expenditures on R&D by Higher Education Sector, as % of GDP								
0.36	0.42	0.40*	0.69	0.61	0.87*	0.40*	0.41	0.41
Total Expenditures on R&D as % of GDP (2004)								
2.68	3.13	1.81*	3.51	2.48	3.95*	1.88*	3.13	2.16
Share of Higher Education Sector in total R&D								
13.6	13.4	22.1*	19.8	24.4	22.0*	21.4*	16.3	19.1
Higher Education Sector R&D financed by industry								
5.0	2.8	6.5*	5.8	3.0	5.5*	5.5*	12.8	2.7*

Data are for 2004, unless * (=2003)

Source: OECD, STI indicators 2007

The overall R&D deficit of the EU (1.8%) with respect to the US (2.7%) and Japan (3.1%) is mostly due to the private sector. This is why the share of universities in total R&D expenditures is much higher in the EU than in the US. Surprisingly, business support for R&D in the higher education sector is higher in the EU (6.5%) than in the US (5.5%), and in Japan (2.6%).

3.1.3. Summing up

- Total investment in higher education in the EU is below the level of key competitors. In particular, funding per student it is almost half the level of that in the US,

[12] While the overall size of R&D funding for the higher education sector in EU does not compare badly with respect to the US, there are marked differences between the EU and the US in who allocates funds and in which way. The US funding system is based more on competition. Unfortunately, it is hard to document with hard data.

- The nature of public funding for education varies considerably across countries and time, where the Scandinavian countries have relatively high funding.
- Differences across countries in spending become even more pronounced if the public versus private source if this funding is considered. The gap in private funding is particularly important.
- The differences in levels of private investment are a result of differences in tuition fees (most EU countries do not have tuition fees), in the share of private institutions, in philanthropic funding, contributions by alumni and in the level of funding provided by enterprises. This is why US universities are much better funded than their EU counterparts.
- There is no clear statistical evidence supporting less funding of research at higher education institutes in the EU as compared to the US, although the way most of the research funding in the US is allocated may be different.

3.2. University Governance

Universities are not just collections of individuals as teachers and/or researchers. But they also exist as *institutions* within the research landscape, with university leadership setting out the missions, strategic goals and structures in which their staff operate and interact with their environment. University governance systems can be characterised across countries along two important dimensions: (i) ***autonomy*** and (ii) ***accountability***. Autonomy captures the extent to which institutions are free to manage their resources and to shape their activities. Accountable systems provide incentives by allocating resources on a performance basis and by evaluating outcomes. Unfortunately there is little data available to characterise and internationally compare the governance structure of universities. The OECD (2007) has developed a series of indicators bases in its surveys of its member countries measuring autonomy (financial autonomy, staff policy autonomy with respect to hiring/firing and wages, student selection and course content) and accountability (evaluation mechanisms and funding rules). A summary of these indicators in presented in Table 16.

The US has the highest scores on all dimensions of autonomy. In Europe, the better performing countries, i.e., UK, Finland, Sweden and Denmark, also score high on autonomy, although there are some differences depending on the type of autonomy. On accountability, there is much more variance among the well performing countries with the UK high on both dimensions of accountability while the US (like Japan) is low on financial accountability (consistent with their high budget flexibility). Finland is high on financial accountability, but not to strong on evaluations.

Table 16: Governance characteristics of universities in OECD countries

	US	JAP	UK	SE	DK	FIN	GE	FR	GR	IT
Autonomy										
Selection of students	7.8	6.6	6.7	8.9	7.0	7.1	2.8	2.8	10	3.7
Budget flexibility	8.5	8.2	6.8	6.2	6.2	7.7	7.2	6.8	7.9	7.0
Staff Policy flexibility	10	10	10	10	10	7.5	7.5	1.8	4.9	7.9
Hiring/Firing	10	10	10	10	10	10	10	0.9	3.8	10*
Wage/ non-wage conditions	10	10	10	10	10	5	5	2.7	5.9	5.7
Course content	10	10	10	5.5	10	10	5.5	10	10	5.5
Accountability										
Evaluation Mechanisms	6.6	6.2	7.7	6.5	4.6	4.0	6.9	5.6	6.5	6.8
Funding Rules	3.6	3.9	5.5	4.6	5.3	6.2	5.2	6.6	4.8	5.9

Source: Oliveira Martins et al., OECD (2007)

Box: Trends and Status of governance in higher education in the EU

The majority of countries are implementing or in the process of introducing reforms of higher education. There is no predominant model for higher education governance in Europe: diversity remains the hallmark of European higher education. Although concrete policy actions vary from country to country, there are some common themes: increasing public funding for higher education, granting autonomy to institutions in the management of financial resources, promoting the direct link between results and the amount of public funding allocated, and encouraging the diversification of funding sources and creation of partnership with business.

In most countries, HEIs have an advisory or supervisory body that includes or is composed solely of external stakeholders. But these bodies have often limited strategic planning responsibility. In about two-thirds of the countries in Europe the responsibility for goal setting and strategic planning is undertaking by governance bodies composed solely of internal stakeholders.

Autonomy in terms of financial management is a key trend. Only five countries in the EU remain with strict financial controls per budget heading. Elsewhere, block grants exists, with serious autonomy on how to spend grants. In seven countries (including Denmark and France) a significant amount of public funding is associated with a performance contract. Nevertheless, whether or not the qualitative objectives included in these contracts are met, has still little influence on the amount of funding allocated in the following contract, for the moment. Almost all European countries use standarised funding formulas for the allocation of public funds. The use of performance indicators is becoming increasingly common. Most of the time, this includes the number of students enrolled at an institution and research activities. However, in most countries, only a small proportion of funds are allocated on performance indicators. In Italy and Ireland for example, performance is taken into account for a maximum of 5%. The UK (England) is indisputably one of the countries where the amount of funding allocated to institutions depends most on their performance in terms of students' results and the quality of research. In Denmark funding for teaching depends only on students' results.

Public funds for research are allocated via various mechanisms. All countries have at least part of these funds allocated on a competitive basis for specific research projects and programs, next to basic research grants. The calculation of these basic grants varies markedly across countries. In the Flemish Community of Belgium, publications and citations count for an increasing share of basic funding for research. The vast majority of European countries have implemented incentives to support higher education institutions in their search for private funding and in developing partnerships with the private sectors, with tax allowances for donors the most common. Only in the Flemish Community of Belgium, France, Finland, Sweden and the UK, a regulatory framework exists which authorises institutions to own the intellectual property rights of the results of research conducted by their staff and allowing institutions to create companies and supporting partnerships with the private sector in the area of research.

A common neglect in the reform process, are the policies concerning academic staff. Only very few countries are working on reforms to provide institutions with more room to manoeuvre in terms of staff. The Netherlands and the UK have a high level of autonomy through the whole process of recruitment of personnel. In most countries at least parts of the process are regulated or supervised. Also, in terms of salaries and promotions, regulation and supervision are common. Another a common weak point is the lack of professional management experience on the part of academic experts in senior-level positions. The authority of the Chief Executive has been reinforced in many countries. Although academic competences continue to be the main qualification for this post, managerial expertise and leadership skills are considered important assets.

Among the continental weak performers, France, Germany, Spain and Italy, there is also a large dispersion in governance characteristics. The common theme, nevertheless, seems to be

low levels of autonomy, but relatively high levels of accountability. This is consistent with the complaint of overregulation in these systems. Nevertheless, the dimensions of (lack of) autonomy are different, with Germany and Italy particularly restricted with respect to students, course contents and wages, France on selection of students and both hiring and wages, Spain restricted in both hiring and wages. The following Box further details the status and trends in governance in EU countries.

Table 17: Governance characteristics of European universities

	Public Status	**Budget autonomy**	**Hiring autonomy**	**Wage-setting autonomy**
Belgium	0.5	0.4	1.0	0.0
Denmark	1.0	1.0	0.5	0.5
Germany	0.9	0.0	0.8	0.0
Italy	1.0	0.9	0.4	0.0
Netherlands	0.8	0.8	0.8	0.2
Spain	1.0	0.5	0.5	0.0
Sweden	0.8	0.1	0.8	0.0
Switzerland	0.8	0.1	0.8	0.0
UK	0.5	0.9	1.0	0.8

Source: Bruegel survey, Aghion et al (2007)

Also, the Brueghel study (Aghion et al (2007)) reports scores on various dimensions of autonomy, on the basis of survey responses from universities appearing in the Shanghai ranking, for a number of European countries (excluding US and France, but including Switzerland). Apart from budget autonomy, hiring autonomy and wage-setting autonomy, the figures reported in Table 17 also include a measure of ownership of universities (public versus private). In most countries, universities are publicly owned[13]. Only the UK has most private universities. On autonomy, the results confirm the OECD data, with a large heterogeneity among countries[14]. Switzerland, not in the OECD list, but one of the top performing countries, has a high autonomy with respect to hiring, but not on budgets and wages. Among the three European countries with the best performance index, the practice of appointing people from within the own group ('endogamy') is high in Sweden but low in Switzerland and the UK. Swedish and UK universities can set wages but Swiss cannot, and universities are mostly public in Sweden and Switzerland whereas they are mostly private in the UK. They also found a high degree of heterogeneity between countries in terms of size of universities in the Top-500: Southern Europe (Italy and Spain) has very large (more than 40,000 students on average) universities, while the UK and Switzerland have small (10-15,000 students) universities.

3.3. Linking Governance to Performance

Section 3.2 has documented the high variance in university governance across countries. There are also a lot of differences in different dimensions of governance across countries.

[13] Belgium scores average on public ownership, but most of its private universities rely nevertheless mostly on public funding and are therefore subject to similar public control as their publicly owned peers.

[14] The divergence in Italy's score on hiring policy can be explained, beyond measurement errors, by differences in time period and sampling methodology (official procedures and perceived impact of procedures).

Furthermore, different dimensions of autonomy and accountability not necessarily correlate. As a consequence, each system can be characterised as a relatively unique bundle of governance characteristics.

All this makes governance a very interesting candidate to consider for explaining the heterogeneity in performance of European universities. Nevertheless, since both the least performing countries shows a wide divergence in governance, as well as the best performing systems, a crude bird's eye view already suggests that the link between governance and performance will be complex and bodes badly for the quest for a unique optimal governance model.

The Bruegel study (PB2007) report some first interesting findings on the relationship between their set of proxies for governance and research performance, as measured by the Shanghai ranking of their set of surveyed universities. First, these results indicate that it is important to correct for other determining factors, besides governance. Size, age and budget per student all positively affect research performance. But once these factors are included, the only governance indicator that turns out to be significant is budget autonomy. Perhaps, the most important finding of the study is that the positive effects of having larger budgets per student are higher when the institutes enjoy a higher degree of budget autonomy, suggesting policy should tackle simultaneously funding and governance. But clearly, more research is needed to pin down the drivers of university performance. At this stage, the most important conclusion that can be drawn from the available evidence is that more research is needed to pin down the drivers of university performance. Nevertheless, a few policy implications for the reform agenda might be put forward.

4. THE POLICY AGENDA FOR HIGHER EDUCATION REFORM IN EUROPE

The previous analysis has shown that the EU needs to improve its access to higher education, improve its higher education attainment levels and the quality of its education and research. For this it needs to increase total investment in higher education and research. Funding universities will become increasingly more challenging due to the relentless operation of Baumol's cost disease. Productivity growth in universities inevitably lags behind that in 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). On the plus side, the ongoing technical progress in the rest of the economy makes society much richer all the time and it is thus able to afford the escalating costs of higher education. Teaching and research need to be done by highly qualified people and is difficult to be replaced by technology.

If the EU has to make an effort to bridge its funding gap, be it public or private, this can only be realised if at the same time the ***governance*** of universities 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 investments.

4.1. Increasing total investment in higher education

While public investment in higher education in the EU is at the same level or even slightly higher than in key competitor countries, levels of private investment are clearly lower. A major effort will be needed to locate the necessary public and private financial resources to bring the EU countries closer to the standards of key competitors.

The debate on social and private returns from higher education has highlighted its role as an investment, benefiting both the individual as well as society as a whole. If ***social returns*** exceed private returns, education causes positive external effects to society and the government should support education. Although positive external effects may be substantially larger for secondary and especially primary education, they are nevertheless likely to prevail also for certain types of university education. For basic research, the public good characteristic is well known.

But beyond the need for a sufficiently large ***public investment*** in universities, there is also an issue of how to best invest public money. 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.

Beyond the case for public spending, the empirical evidence suggests that ***private returns*** to higher education are substantial, also in continental Europe.[15] All this evidence suggests more scope for ***private funding*** of higher education and in particular for asking students to pay higher tuition fees, particularly for those degrees where private returns are substantial. With the private and social returns differing across the various types of higher education (Bachelor, Master, Ph.D. and across disciplines), the private versus public funding share can also be differentiated (Aghion et al., 2007).

Free higher education does not by itself suffice to guarantee equal access and maximum enrolments. This casts the much debated issue of higher 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 for the brightest students from backgrounds with not much money. The experience with social credits in the form of an income-contingent loan system of the type used in Australia suggests that this need not jeopardise accessibility of higher education (Barr and Crawford, 2005; Jacobs and van der Ploeg, 2006). Since peer effects are important in higher education, it is crucial to attract the best students regardless of background. Europe would therefore benefit from shifting attention from scholarships for the poor to scholarships for the brightest regardless of background.

And to mobilise more private funding from industry for research, a clear regulatory framework would need to be put in place.

[15] 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.

4.2. Improving governance

At this stage there is relatively little hard data and analysis on the link between governance and performance, and the evidence not in favour of a unique optimal model. Hence, European policy makers should be careful not to impose a standardised, micro-managed governance model on their universities. While it could be argued that society through its government could enforce a number of objectives on universities (e.g., with respect to selection of students or curriculum design) in return for public funding, but beyond this universities should be given sufficient degree of freedom to develop their own strategies. The government should rather try to nurture the heterogeneity of its institutions, allow for experimentation and learn from it. This calls for granting universities the space and thrust to develop autonomously their own strategies and structures.

Public authorities should guide the university sector as a whole through a framework of general rules, policy objectives, funding mechanisms and incentives for education, research and innovation activities. In this way they can develop their own strategy, specialization and structures to respond to their heterogeneous environments. While some progress has been made in some countries on financial autonomy, in the area of staff policy, the restrictions on hiring and wage setting are still, despite reforms, too restrictive, especially in continental Europe. Universities will not become innovative and responsive to change unless they are given real autonomy on pivotal instruments.

In return for being freed from the stifling blanket of 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. 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 and transparent procedures.

4.3. More competition among universities

Public and private stakeholders should provide the funds for universities to develop their own structures while holding them accountability for delivering results. 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.

To unlock the reform process, perhaps the most important driving force for modernizing higher education in Europe emerges from competition. Increased competition for students, faculty and funding, combined with more mobility of students and faculty and allocation of resources through open, competitive criteria, 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. The competitive arena for universities will only be a forceful driver of change if it is of a sufficiently wide international level.

Universities operating in segmented local markets will not have sufficient incentives to rise to the global challenges.

In response to scarcer public budgets, a rationalisation of the supply side of the higher education market has taken place in Europe. The resulting increase in the scale of universities has, however, generated the danger of creating (local) public monopolies. In the Netherlands the rapid increases in scale and monopolistic practices have gone hand in hand with huge increases in overhead and capital expenditures leading to substantial falls in resources for teaching. Such monopolies reduce quality ('grade inflation'), ignore demand of students and employers, and increase overhead costs. Monopolistic price setting drives up tuition fees and lowers quantity and quality of supply of education, especially if the price elasticity of demand is low.

Competition for talents and brains is a global game, which is already removing the barriers within Europe and establishing a large, integrated market for higher education and research in Europe. This will provide an excellent environment for European universities to develop their comparative advantages and make them stronger players on the world scene.

5. MOBILISING SUPPORT FOR HIGHER EDUCATION REFORM

5.1. Tasks for stakeholders

Implementing this necessary restructuring and modernisation of higher education systems in Europe requires coordinated action from all parties involved:

- **Public policy makers** 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. 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. They should provide student with income-contingent loans and cover default out of general funds.

- The **European Commission** can contribute perhaps most importantly through improving the conditions for competition among universities to take place at international level. An internal market for higher education and research: the European Research and Higher Education Area should improve the mobility of students, researchers and funds. It also has a role in supporting the reform process, by promoting policy dialogue and mutual learning, through financial support to Member States and to universities in their modernisation activities. 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. And the European Investment Bank can assist in offering income-contingent loans to students.

- **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.

- **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.

- **Faculty** need to be supportive of the change process, being responsive to the new strategies and structures of their universities, and at some instances, even instigating changes. By being more mobile and selecting the best universities to work for, they will provide a strong incentive for universities, competing to attract the best of talents, to change their strategies and structures accordingly. Faculty need to be aware that they are accountable towards their employers, funders or other related public or private bodies as well as, on more ethical grounds, towards society as a whole, for the efficient use of public and private money spent on them.

- **Industry** should be providing more funding for the private benefits they get out of universities. At the same time, they can become more actively involved in the reform process, while nevertheless respecting universities' autonomy and specificities.

How likely is it that all of these stakeholders can be mobilised in the reform process? And how strong will be the support for the details of the reform agenda. Some of the aspects of reform (e.g., higher tuition fees, student selection or more private sponsoring) may be very controversial in some countries among stakeholders and the public at large. The next section takes a look at some empirical evidence on support from stakeholders for the reform process.

5.2. Perspectives of stakeholders on the reform process

The European Commission carried out in February 2007 a Flash Eurobarometer Survey, interviewing almost 6000 randomly selected faculty of universities across all 27 Member States on their opinions of the higher education reform process in their countries[16]. The main results are reported in Tables 18 and 19. Although faculty are only one part of the stakeholders involved, they are nevertheless pivotal as they are the ones who have to deliver the education and research services for the knowledge-based society.

5.2.1. Confidence in the involvement of stakeholders in the reform

Surprisingly (or not), faculty seem to have most confidence in their own university leadership (and even more in their own faculty leadership). This could be considered as good news, since this reflects a healthy level of trust inside universities, which is needed to deal with changes. However, this could also be reflecting a common coalition against change, which is bad news if it is concentrated in the bad performing systems. The least confidence is enjoyed by the private sector. But also national or regional authorities score low on confidence. This is particularly worrisome as this is the level of public policy competence that is most relevant for instigating the reforms.

[16] This represents about 5% of total number of faculty in higher education institutions. For most of the reported EU-15 countries the number of observations are at least 200. The exception is Greece, with a low response rate (N=56), which makes the Greek results very fragile.

The survey results reveal an interesting divergence across Member States in opinions (the tables only report the outlier EU-15 countries). Thrust in university leadership is particularly low in France, a country where changes to the system are high on the policy agenda. On the other extreme, i.e., Italy and Greece, have an above average trust in their university leaderships' involvement in reforms. Hopefully this supports the right direction of change. On the contrary, Greeks have very little confidence in the involvement of their politicians. The UK is also an interesting case with faculty having a below average confidence, both in their university leadership and their politicians.

Table 18a: Confidence in the stakeholders of the reform process

	Full Confidence	**Some Confidence**	**No confidence at all**	**DK/NA**
Your own faculty	59%	34%	4%	3%
University Leadership	42%	44%	7%	6%
National university association	34%	49%	9%	7%
European university association	22%	50%	15%	14%
Professional association	18%	56%	19%	6%
European Commission	17%	51%	26%	6%
National or Regional Authorities	12%	64%	19%	5%
Private Enterprises	9%	52%	32%	7%

Table 18b: Involvement of university leadership in reforms: % full confidence

GR	AT	IT	FI	EU-27	DK	PT	BE	IE	UK	FR
52%	50%	50%	49%	42%	36%	32%	29%	24%	18%	14%

Table 18c: Involvement of national or regional authorities in reforms: % no confidence

DK	FI,SE	BE	PT	IT	NL	EU-27	AT	DE	UK	GR
5%	8%	12%	13%	15%	16%	19%	21%	21%	22%	46%

Table 18d: Confidence levels by faculty characteristics

	Total	**Young**	**Deans**	**Economics**
% full confidence in university leadership	42%	39%	48%	40%
% no confidence in national/regional authorities	19%	15%	22%	17%

Source: Eurobarometer 198 on Higher Education Reform, The Gallup Organisation

The data also allow differentiating the results according to individual characteristics of the faculty like age, gender, position, field, experience and type of institution[17]. But no strong differences emerge on these dimensions. Interestingly for the political economy of the reform process, deans seem to have an even stronger confidence in their rector and board than the average faculty. This suggests even stronger consensus inside the university leadership than between the university leadership and their faculty.

5.2.2. Support for the Reform Agenda Item.

The Eurobarometer also surveys the perceptions of faculty on two major issues of the reform agenda: funding and governance – see Table 19. The most contentious issues seem to be the

[17] The sample of teaching professionals surveyed includes 28% females, 18% younger than 40, 21% rector and deans, 53% full professor, 12% in economics&business, 44% in the hard sciences, 16% with more than 30 years of teaching experience and 61% from institutes that offer all degrees (bachelor, master, phd).

private/public funding mix, the effects of more competition among universities, and student fees. There is relatively little disagreement among teaching professionals on the improvement of the internal governance of their university and neither on the issue of student selection.

Table 19a: Support for the reform agenda items

	%disagree	%agree	%DK/NA
1. Universities should be allowed to select and refuse students	13%	83%	4%
2.1.Universities should be publicly funded and not seek more private funding	40%	53%	7%
2.2.More private funding would help universities to gain extra income and perform better	22%	73%	6%
2.3.Student fees are acceptable as a source of extra income for universities	26%	68%	6%
3.1.Universities need more autonomy from public authorities	19%	75%	6%
3.2.Partnerships with business will reinforce universities	21%	73%	6%
3.3.Universities are in need of better internal management	12%	80%	9%
4. Competition between universities will improve quality	28%	68%	4%

Table 19b: Support for the reform agenda items by faculty characteristics (%disagree)

	Total	Young	Rector/Deans	Economics
1. Universities should be allowed to select and refuse students	13%	17%	10%	9%
2.1.Universities should be publicly funded and not seek more private funding	40%	46%	42%	44%
2.3.Student fees are acceptable as a source of extra income for universities	26%	30%	18%	14%
3.1.Universities need more autonomy from public authorities	19%	20%	14%	17%
3.3.Universities are in need of better internal management	12%	12%	11%	11%
4. Competition between universities will lead to improvement of quality	28%	32%	22%	22%

Source: Eurobarometer 198 on Higher Education Reform, The Gallup Organisation

Again, there are no strong differences across individual characteristics. Economics faculty members are more supportive of selection and student fees and somewhat more supportive of competition than other faculty members, although on the competition item the strongest support comes from the hard sciences. Rectors and deans are somewhat more supportive of autonomy, not surprisingly, but also of student selection and charging student fees. They favour somewhat less competition.

However, when differentiating according to countries, the results show again wide country heterogeneity on a number of issues. The divergence in opinions across countries can be explained by differences in the current performance of the higher education system and the process of reforms currently going in the country. But they might also reflect differences in preferences.

On the issue of student selection, there is a widespread divergence across countries. For example, student selection is no issue of disagreement in the UK and Finland, almost no issue in Germany, but in Sweden and Belgium it is a contentious issue. Similarly, for charging student fees there are large differences across countries, with especially the Nordic countries (Finland, Sweden, Denmark) strongly against. The issue of a larger share of private funding

splits opinions everywhere. Support for public funding is highest in the UK, Sweden and Austria while more private funding is most supported in Spain.

Table 19c: Support for the reform agenda items, by country (%disagree)

1. Universities should be allowed to select and refuse students

UK	FI	DE	EU-27	NL	FR	AT	IT	ES	SE	BE
1.6%	2.5%	8.3%	13%	17.3%	19.2%	19.5%	21.5%	21.9%	32%	38%

2.1. Universities should be publicly funded and not seek more private funding

UK	AT	SE	DK	DE	EU-27	IT	FR	ES
24%	26.5%	26.9%	27.5%	32.3%	40%	42.4%	45.2%	59.2%

2.3.Student fees are acceptable as a source of extra income for universities

ES	DE	EU-27	BE	FR	UK	GR	FI	SW	DK
18.6%	23.1%	26%	27.6%	28.8%	34%	46.5%	58.4%	62.3%	66.7%

3.1.Universities need more autonomy from public authorities

GR	DE	PT	EU-27	IE	BE	NL	ES	AT	FR	IT
5.4%	12.7%	14.3%	19%	18.8%	20.7%	21.5%	21.9%	25%	26.4%	26.6%

3.3.Universities are in need of better internal management

GR	IT	ES	PT	EU-27	DK	FR	SE	BE	UK	NL
1.8%	3.6%	4.2%	7.5%	12%	15.2%	16.4%	16.5%	20.7%	22.4%	27.7%

4. Competition between universities will lead to improvement of quality

PT	ES	DE	EU-27	FI, IT, SE	NL	BE	IE	DK	FR	UK
18.8%	19.2%	27%	28%	28%	37.4%	40.9%	41.6%	42.6%	45.6%	48%

Source: Eurobarometer 198 on Higher Education Reform, The Gallup Organisation

On the need for more autonomy for universities, there is less divergence across countries. In most countries there is a strong support for more autonomy, as is the need for better governance structures. This holds especially in the Southern countries (Italy, Spain, Portugal and Greece), which are also in need of better governance structures. Unfortunately the Eurobarometer did not go into the details of the governance issue, on types of autonomy and management practices. On these details, opinions might be more heterogeneous;

Another splitting issue across and within counties is the support for more competition among universities. On the impact of competition on quality, opinions are spilt in France, but also in the UK, the country which perhaps has been the most exposed to competition. Support for competition is larger in Portugal and Spain.

6. CHALLENGES FOR RESEARCH INTO THE ECONOMICS OF HIGHER EDUCATION REFORM

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

We have argued that, while EU universities have improved their quantitative performance with respect the number of graduates and publications, it needs to further increase higher education attainment levels and improve the quality of its research. We have also highlighted the problems European universities face on governance and on the size and the nature of their

funding. The link between governance and performance is not obvious and needs still further data and research. Also the (inter)linkages between governance, funding and other performance determining factors need further research, preferably also bringing in historical and cultural factors. Differences in perspectives on reforms abound in the EU, across countries, predicting a heterogeneous process and outcome of reforms. But also within countries, there are items on the reform agenda which are contentious, which may lead one to predict a difficult political economy process of reforms even though inside universities trust levels are high.

All this implies that we know as yet very little on what the best governance and funding structure should be. Perhaps the most important conclusion for policy making at this stage is to invest more in data & analysis to support a more evidence-based reform process aided by experimentation and evaluation.

Nevertheless, the preliminary evidence so far seems to suggest that society supports a multitude of university structures to respond to a heterogeneous set of preferences. This calls for granting universities the space and trust to develop autonomously their own strategies and structures. Public and private stakeholders should provide the funds for universities to develop their agenda while holding them accountability for delivering results. Increased funding cannot be justified without profound change. Providing for such change is the main justification and prime purpose for fresh investments. 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 countries 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 modernise themselves. Probably, the most important driving force for instigating change in the system and break the vicious circle is competition for students, faculty and funding. While this competition eventually will take place on a global scale, the removal of barriers within Europe, thereby establishing a large, integrated market for higher education and research in Europe, would provide an environment for European universities to develop their comparative advantages. This would enable and encourage them to become stronger players on the world scene.

Within a more integrated European Higher Education Area, universities are able to build on their own strengths and differentiate their activities on the basis of these strengths. While institutions share certain common values and tasks, not all of them need the same balance between education and research, the same approach to research and research training, or the same mix of services and academic disciplines. This would allow the emergence of an articulated system comprising world-renowned research institutions, plus networks of excellent national and regional universities and colleges which provide shorter specialised education. Such a system would mobilise the substantial pool of knowledge, talent and energy within universities and would merit – and be in a position to generate - the increased investments needed to make it compete with the best in the world.

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