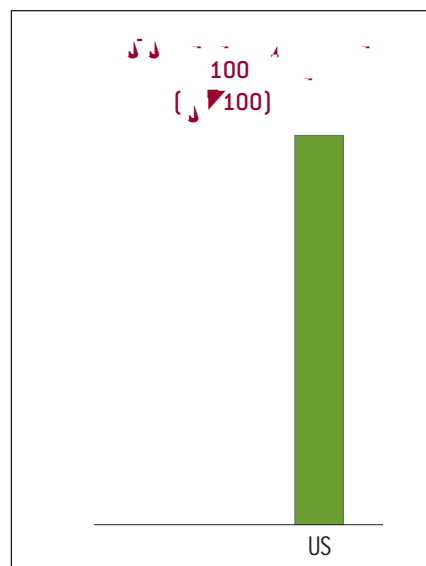


ch contributes to Europe's lagging growth performance, is two-fold. First, Europe invests too little in higher education. Total public and private spending on higher education in EU25 accounts for barely 1.3% of GDP, against 3.3% in the US. This translates into average spending of less than €10,000 per student in EU25 versus more than €35,000 in the US. Second, European universities suffer from poor governance, insufficient autonomy and often perverse incentives. Our own survey of European universities shows that both factors contribute to the EU's poor performance and that reform should take place on both fronts, because autonomy

Recently published international rankings indicate that the perfor-

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EUROPEAN growth has been disappointing for the last 30 years but policymakers have only recently started to realise that Europe's growth performance is intimately linked with the research performance of its universities.

Europe invests too little in higher education. It is generally known that the European Union (EU) spends less than two percent of its GDP on research and development (R&D), compared to more than 2.5 percent in the United States (US). But the gap between Europe and the US is even wider for spending on universities than for R&D. In 2001, total (public and private) spending on higher education in EU25 accounted for barely 1.3 percent of GDP, against 3.3 percent in the US. In other words, every year Europe spends two percent of GDP less than the US. In terms of expenditure per student, the contrast is starker still, with an annual spend of €8,700 in EU25 versus €36,500 in the US.

But the unsatisfactory research performance of Europe's universities also results from inadequate

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100', 'Top 200' and 'Top 500' columns, where the best university receives a score of, respectively, 100, 200 and 500, and the last one receives a score of 1. There are, obviously, fewer zero entries in a column as one moves from the Top 50 to the Top 500 as it is easier for a country to have universities appearing in the Top 500 than in the Top 50.

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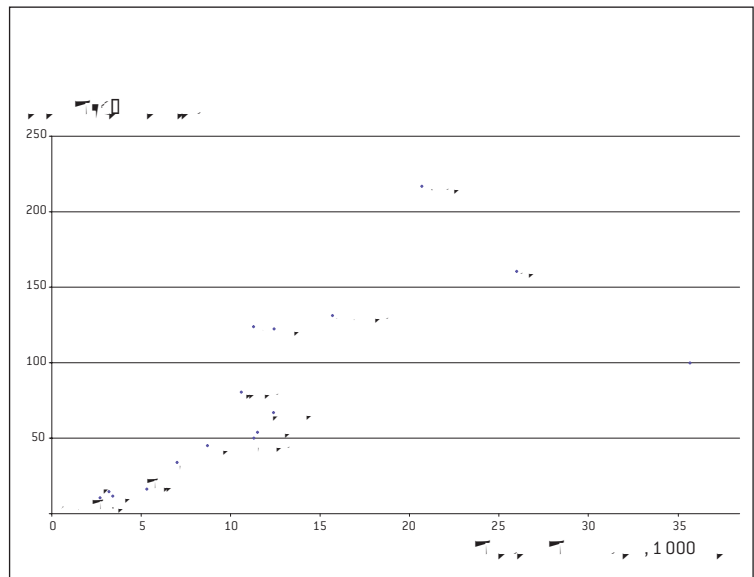
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and country performance (measured by the Top 500 performance values in Table 1), as shown in Figure 1.

However, these aggregate data do not indicate how the money is split between higher education institu-





Country	Age (years)	Number of students (thousands)	Budget per student (1 000€)*	Public status <sup>†</sup>	Budget autonomy <sup>§</sup>	Building ownership <sup>§</sup>	Hiring autonomy <sup>§</sup>	Wage-setting autonomy <sup>§</sup>	Faculty with in-house PhD (%)
Belgium	284	21.7	11.3	0.5	0.4	1.0	1.0	0.0	63
Denmark	59	18.2	11.4	1.0	1.0	0.3	0.5	0.5	40
Germany	289	26.2	9.6	0.9	0.0	0.5	0.8	0.0	40
Ireland	259	16.3	12.7	0.5	0.5	1.0	1.0	0.0	49
Italy	444	44.9	10.1	1.0	0.9	1.0	0.4	0.0	24
Netherlands	217	21.4	20.5	0.8	0.8	1.0	0.8	0.2	33
Spain	342	44.8	7.0	1.0	0.5	1.0	0.5	0.0	69
Sweden	266	27.1	16.2	0.8	0.8	0.2	1.0	1.0	58
Switzerland	326	12.8	26.2	0.8	0.1	0.4	0.8	0.0	24
UK	242	14.6	24.5	0.5	0.9	0.9	1.0	0.8	8
	20	21.1	11.1	0.7	0.6	0.7	0.7	0.3	27

Source: Bruegel survey.

\* PPP adjusted. <sup>†</sup> 1 if public, 0 if private. <sup>§</sup> 1 if yes, 0 if no.

and very well funded universities. Comparing with the aggregate information on expenditure in Figure 1, one observes that the UK significantly favours top research performers since the universities in our sample (which belong to the group of top universities) have a budget per student about twice as large as the average for all universities in the country.

There is also a great deal of heterogeneity – albeit with some general trends – as far as university governance is concerned:

- State intervention is clearly pervasive, even when universities are not public.
- Wage-setting autonomy is rare, with Sweden and the UK being the prime exceptions.
- Building ownership by the university is commonplace (except in the Nordic countries and Switzerland).
- Hiring autonomy is prevalent, except in southern Europe.
- Endogamy (measured as the percentage of faculty trained in house at PhD level) seems to be negatively correlated with country size: it is high in small countries (Belgium, Denmark, Ireland and Sweden, but not in Switzerland which is highly

open to hiring scholars with PhDs from other institutions), and small in large countries (Germany, Italy and the UK, but not in Spain). This finding clearly reflects the absence of significant academic mobility between European countries.

A striking fact is thus the high variance in university governance across European countries, even among those which are performing well in terms of research. For example, among the three European countries with the best performance index, endogamy is high in Sweden but low in Switzerland and the UK, and universities are mostly public in Denmark, Sweden and Switzerland whereas they are mostly private in the Netherlands and the UK.

One dimension where there is little variance across European countries is the age of universities. Top European universities are old institutions: the average age of the 66 universities in our sample is nearly 300 years. It ranges from 220 years in the Netherlands to 450 years in Italy. The only outlier is Denmark where the average age is only 60 years. This suggests that European universities have much

accumulated knowledge, but may also be complicated to reform.

Our survey allows us to examine how budget per student and various measures of university governance correlate with research performance as measured by the Shanghai ranking. Table 4 shows that the research performance of a university is:

- positively correlated with the size of its budget per student: the higher

Characteristics	Correlation coefficient
Budget per student	+0.61
University governance:	
Public status <sup>†</sup>	-0.35
Budget autonomy <sup>§</sup>	+0.16
Building autonomy <sup>§</sup>	-0.01
Hiring autonomy <sup>§</sup>	+0.20
Wage setting autonomy <sup>§</sup>	+0.27
Faculty with in-house PhD	-0.08

\* Measured by the (logarithm of the) Shanghai ranking

<sup>†</sup> 1 if public, 0 if private. <sup>§</sup> 1 if yes, 0 if no.





while their neighbours in Ohio enjoy high autonomy. These differences are persistent over time and often go back to the idiosyncratic origin of American universities, which in turn reflect differences in the preferences of university founders (eg Benjamin Franklin founded the private University of Pennsylvania, whereas Thomas Jefferson was the founder of the public

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<sup>6</sup> Philippe Aghion, Leah Boustan, Caroline Hoxby and Jerome Vandenbussche, *Exploiting States' Mistakes to Evaluate the Impact of Higher Education on Growth*, mimeo, Harvard (2007).



Sixth, autonomy and funding are complementary: more autonomy increases the extent to which additional research funding improves performance.



What should be done to improve the performance of European universities?

1. European countries should invest more in their university

Bruegel is a European think tank devoted to international economics, which started operations in Brussels in 2005. It is supported by European governments and international corporations. Bruegel's aim is to contribute to the quality of economic policymaking in Europe through open, fact-based and policy-relevant research, analysis and discussion.

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