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Policy Brief

**The economics of knowledge:
Why education is key for Europe's success**

by Andreas Schleicher



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The opinions expressed in this article are those of the author alone.

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'The challenge for Europe is clear'

WHEN EUROPEAN UNION heads of state and government met at a summit in Lisbon in 2000, they set the goal of making Europe “the most competitive and dynamic knowledge-based economy in the world.” Today, it is worth remembering that the development of a modern “knowledge economy” reflects a larger transition from an economy based on land, labour and capital to one in which the main components of production are information and knowledge. Because of that, the most effective modern economies will be those that produce the most information and knowledge – and make that information and knowledge easily accessible to the greatest number of individuals and enterprises.

The time when Europe competed mostly with countries that offered low-skilled work at low wages is long gone. Today, countries like China and India are starting to deliver high skills at low costs – and at an ever increasing pace. This is profoundly changing the rules of the game. There is no way for Europe to stop these rapidly developing countries from producing wave after wave of highly skilled graduates. What economists call “barriers to entry” are falling. Individuals and companies based anywhere in the world can now easily collaborate and compete globally. And we cannot switch off these forces except at great cost to our own economic well-being.

Education pays off – always

The challenge for Europe is clear. But so is the solution: evidence shows – consistently, and over time – that countries and continents that invest heavily in education and skills benefit economically and socially from that choice. For every euro invested in attaining high-skilled qualifications, tax payers get even

more money back through economic growth. Moreover, this investment provides tangible benefits to all of society – and not just to the individuals who benefit from the greater educational opportunities. Faced with a rapidly changing world, Europe’s school systems will have to make considerable headway if they are to meet the demands of modern societies. Some of these changes will require additional

'The most effective modern economies will be those that produce the most information and knowledge.'

investment, particularly in the early years of schooling. But the evidence also shows that money is not a guarantee for strong results. Put simply, European school systems must learn to be more flexible and effective in improving learning outcomes. And, they must scale back the inherent class bias and sometimes catastrophically regressive way of funding existing educational opportunities – taxing the poor to subsidize educational opportunity for the rich – in existing systems. In short, if Europe wants to retain its competitive edge at the top of the global value-added chain, the education system must be made more flexible, more effective and more easily accessible to a wider range of people.

OECD studies show that money spent on obtaining university qualifications pays dividends higher than real interest rates, and often significantly so (see Table 1). The difference in the amount of money that someone with tertiary education (i.e., college level or higher) can expect to earn compared to

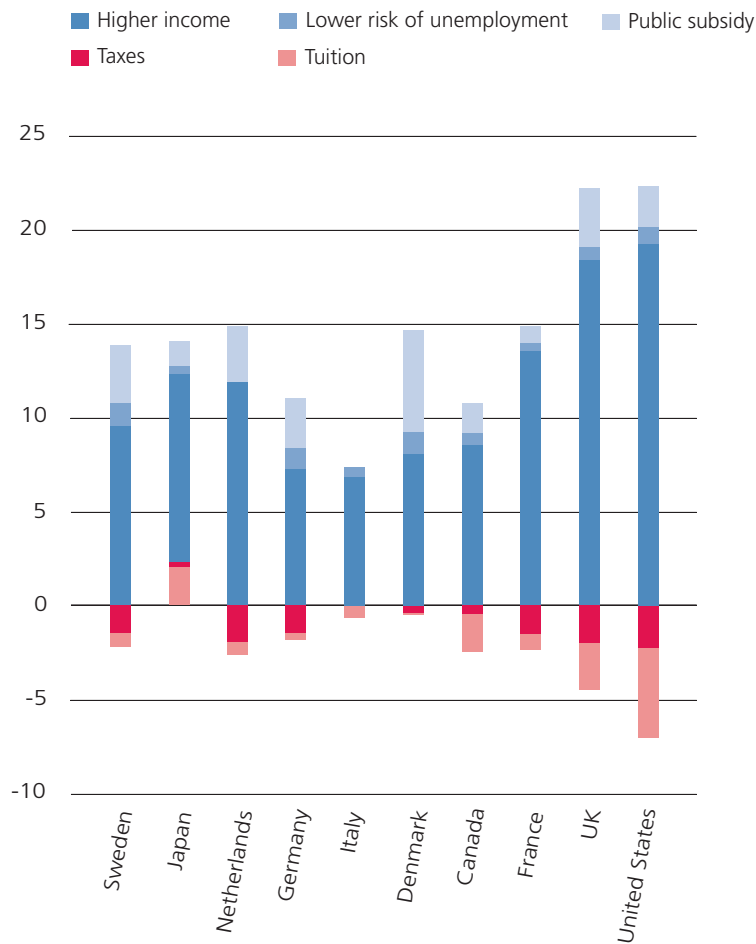
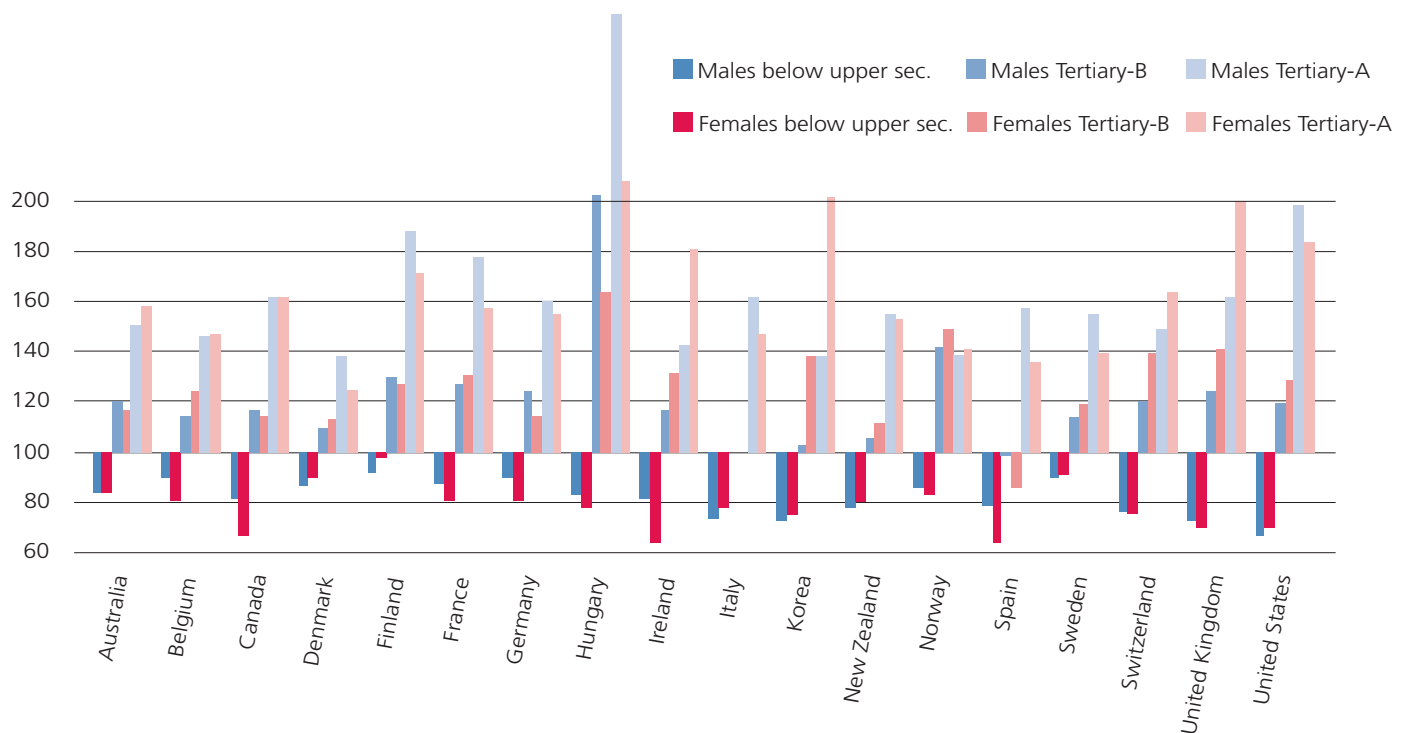


Table 1: Investment in education gives higher returns than real interest rates

Private internal rates of return (RoR) for an individual obtaining a university-level degree (ISCED 5/6) from an upper secondary and post-secondary non-tertiary level of education (ISCED 3/4), Males

Table 2: Workers with high-level qualifications earn higher wages

Relative earnings of 25- to 64-year-olds with income from employment (upper secondary education=100)



'Europe's school systems will have to make considerable headway if they are to meet the demands of modern societies'

the amount someone with only secondary education (i.e., schooling that finishes at ages 16-18) can expect to earn grew on average by one percentage point per year between 1997 and 2003 in 18 of the 22 OECD countries with available data. Moreover, the earnings differential between workers with secondary and tertiary education ranged from around 25% in Denmark and New Zealand to between 50% and 119% in the Czech Republic, Finland, France, Germany, Hungary, Ireland, Italy, Portugal, Switzerland, the United Kingdom and the United States (see Table 2). Countries that give individuals one additional year of education can boost productivity and

raise economic output by 3% to 6% over time (see Tables 3 and 4). Meanwhile, people without basic qualifications face a significantly higher – and growing – risk of unemployment and poverty.

'The time when Europe competed mostly with countries that offered low-skilled work at low wages is long gone.'

Key Recommendations:

- 1) Create and maintain a system of diverse, **sustainable and high-quality educational institutions** with the freedom to respond to demand and accountable for the outcomes they produce
- 2) Ensure that the growth and development of tertiary educational systems are managed to **improve access, raise quality and enhance equity**
- 3) Implement financing and student-support policies which **mobilize public and private funding** in ways that better reflect the social and private benefits of tertiary education
- 4) Encourage universities to evolve so that their leadership and strategic management capacity matches that of modern enterprises, with appropriate strategic, financial and human resource techniques to ensure **long-term financial sustainability** and accountability requirements, and
- 5) Ensure that universities are governed by bodies that **reflect a much wider range of stakeholder interests** than the academic community

Table 3: Labour productivity and employment levels drive GDP per capita growth...

Average annual percentage change (1990-2000)

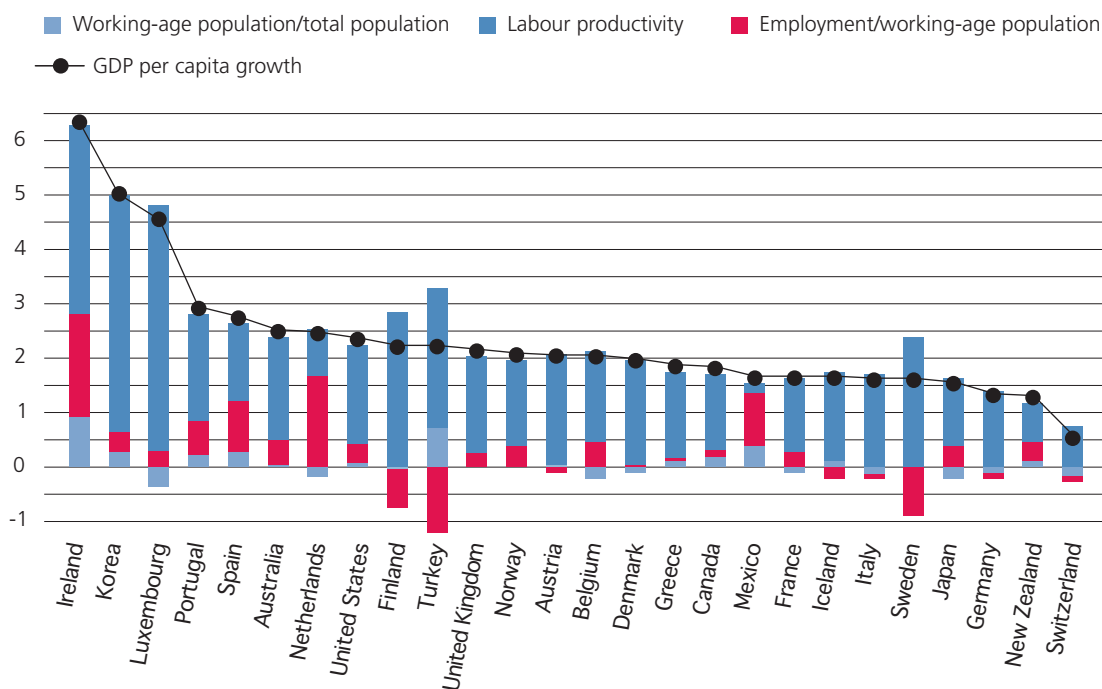
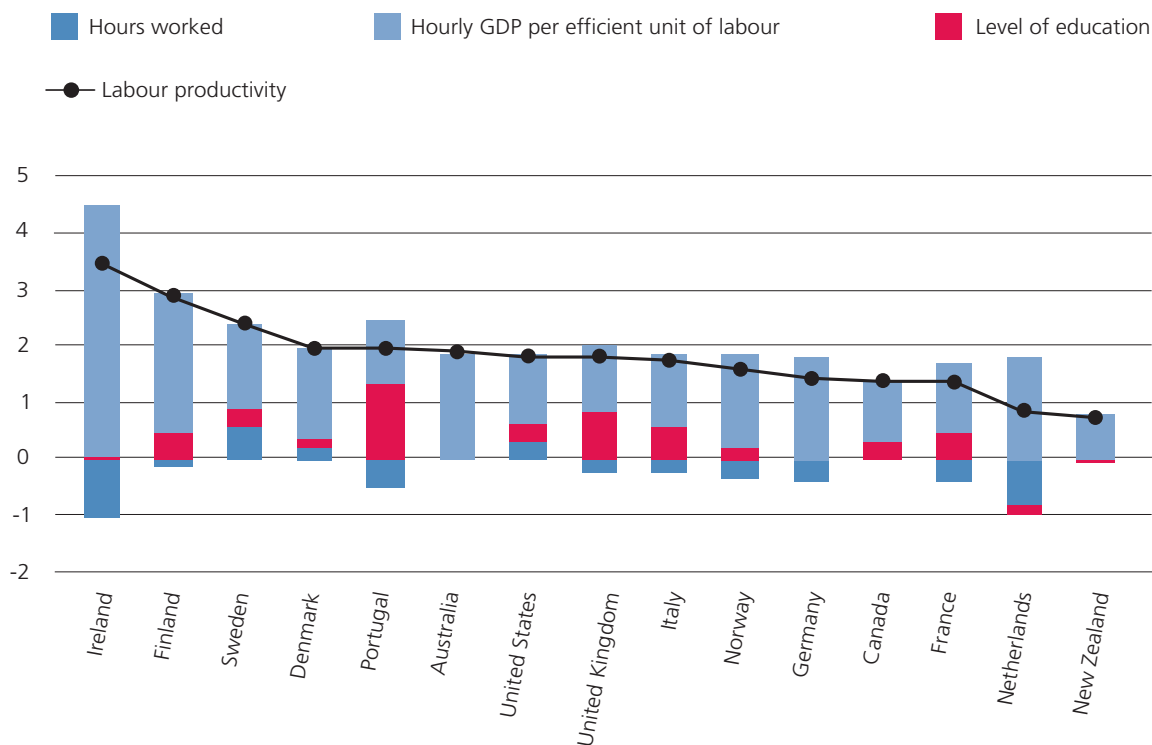


Table 4: ...and education drives labour productivity

Average annual percentage change (1990-2000)



Demand for education is up globally

OECD data also shows that more and more people are gaining higher educational qualifications around the globe (see Table 5). Today, almost all of the OECD's 30 members are producing more college graduates than they did in 1960, but the rate of increase has varied widely. In the 1960s, Korea had the same gross domestic product as Afghanistan and was ranked No. 21 out of 30 OECD countries in terms of the number of adults as a proportion of society with tertiary qualifications. Today, Korea is No. 3 among the 30 OECD countries in the ratio of 25- to 34-year-olds with educational qualifications as a proportion of society (for more on this phenomenon, see the box "The Korean 'Miracle'" on page 12). Some European countries – including Ireland, Portugal and Spain – improved their relative standing as well. But most of Europe's major economies – including France, Italy and the United Kingdom – only held their ground or,

'People who depend the most on post-school education and training opportunities – such as the unemployed or those with low-skilled jobs – get the fewest training opportunities.'

in the case of Germany, significantly fell. In Germany, growth in the number of people with high-skill qualifications has been so limited that Germany's relative position declined to No. 23 in the 1990s among the 30 OECD countries,

down from No. 14 in the 1960s (though Germany's strong vocational education system does help to make up for some of this gap).

A look towards the future suggests that differences in educational achievement between countries could widen in years to come. Traditionally, the United States has led in tertiary-level enrolment, and it remains strong. But in the Nordic countries, more than two-thirds of today's school-leavers now enter higher education institutions, leaving the U.S. behind in this indicator. France and Germany, meanwhile, boast little more than half of the tertiary-level enrolments per capita of the leading countries – a sign that France and Germany, which make up 35% of the European Union's 11.6 trillion economy, are no longer among the world's leaders in developing knowledge and skills.

One might imagine that with educational opportunities expanding like this, there will be massive inflation and ultimately a decline in the value of degrees and qualifications. However, the evidence points to the opposite. With the exception of Spain, earnings and other variables which tell us something about the labour-market value of education have risen faster than supply since 1998, the earliest point with comparable data. This suggests that demand for high skills is increasing faster than our current institutions can deliver them.

No longer home to leading universities

It is indeed hard to assess issues of the quality of Europe's tertiary education, but the latest ranking from Shanghai Jiao Tong University, the most widely cited but not undisputed

Table 5: More people have university degrees

Approximated by the percentage of persons with ISCED 5A/6 qualification in the age groups 55-64, 45-55, 35-44 and 25-34 years (2003)

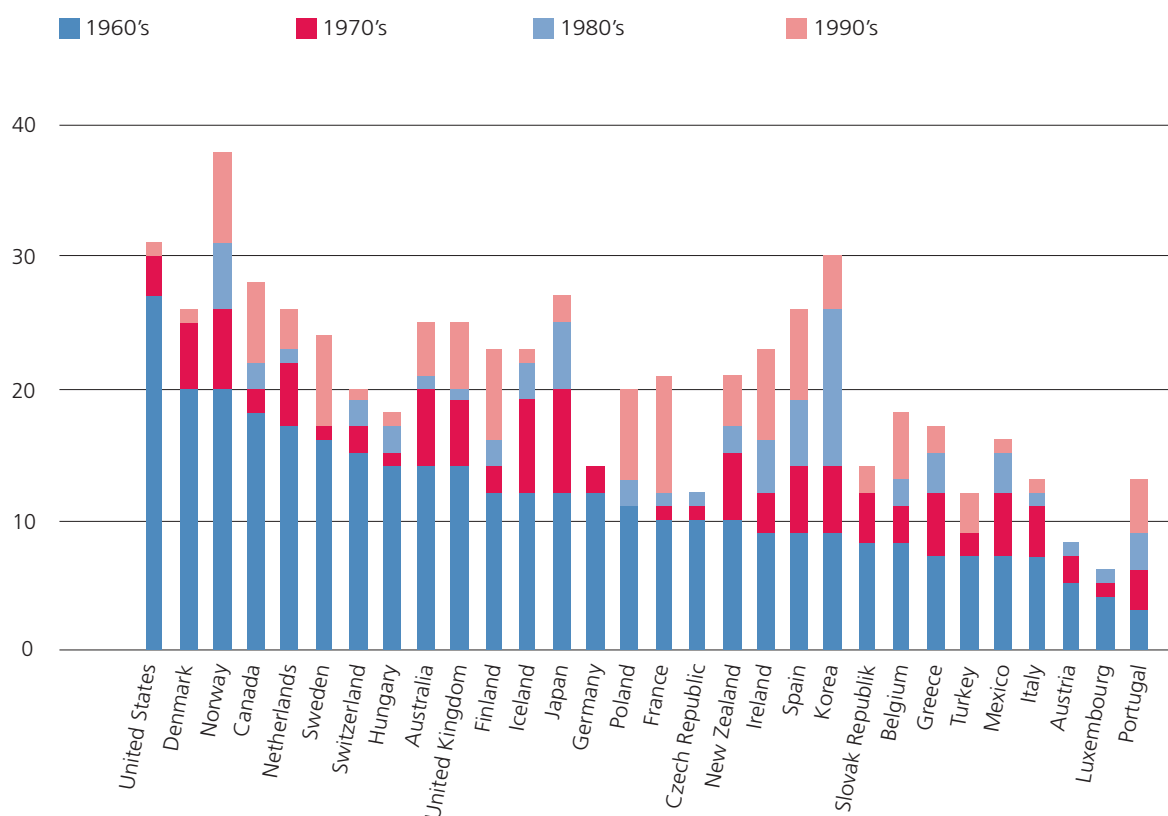


Table 6: Only two European universities make global top-20

Rank	University	Country
1	Harvard	USA
2	Cambridge	UK
3	Stanford	USA
4	California (Berkeley)	USA
5	MIT	USA
6	California Institute of Technology	USA
7	Columbia	USA
8	Princeton	USA
9	Chicago	USA
10	Oxford	UK
11	Yale	USA
12	Cornell	USA
13	California (San Diego)	USA
14	California (Los Angeles)	USA
15	Pennsylvania	USA
16	Wisconsin	USA
17	Seattle	USA
18	California (San Francisco)	USA
19	Johns Hopkins	USA
20	Tokyo	Japan

Table 5. Source: OECD

Table 6. Source: Institute of Higher Education, Shanghai Jiao Tong University

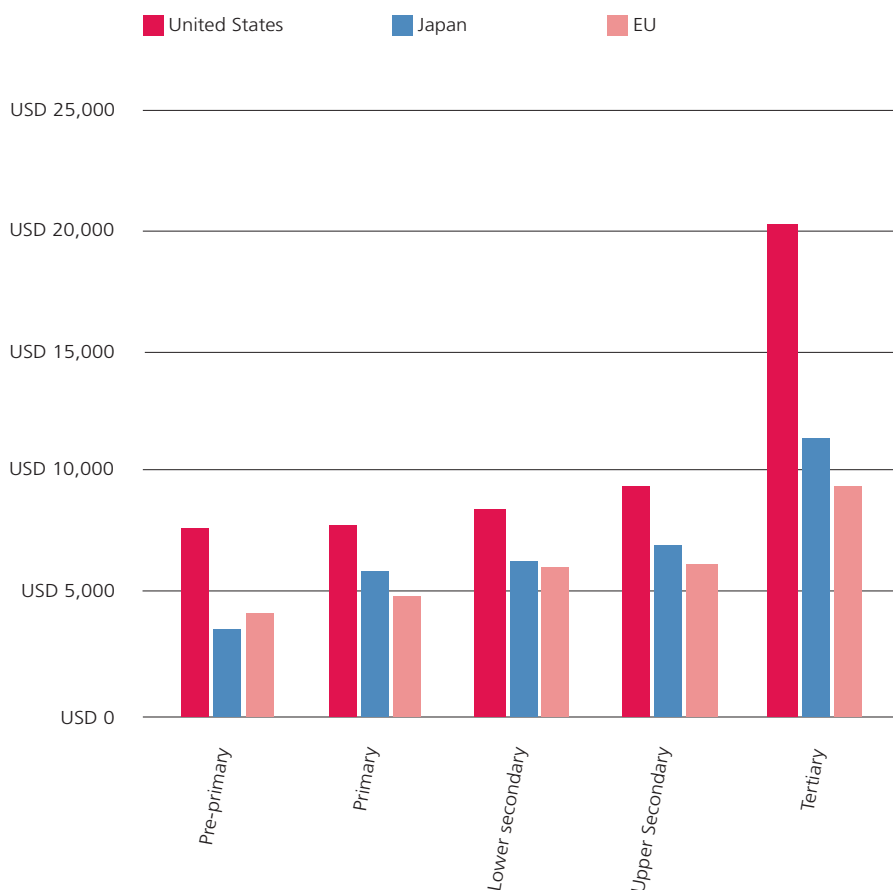
'Education and skills will be key for Europe to achieve its ambitious goals'

ranking of universities, finds that Europe may have boasted world-class universities before America even appeared on European maps but today it is running behind in the quality of the graduates it produces (see Table 6). Of the 20 top ranked universities, 17 are in the United States and only two are in Europe, according to the Shanghai study. What's more, nearly 40% of all foreign students in the world go to the U.S. to study – a sign that the U.S. remains the No. 1 choice for global consumers of

education. The results are not much more encouraging at the secondary schooling level, either. In the latest instalment of the OECD's Programme for International Student Assessment (PISA), which evaluates student performance in the principal industrialised countries covering 90% of world economic output, students in very few of Europe's most important countries performed much above the OECD average and many performed below it. Still, Europe does maintain some of the world's

Table 7: EU spends less on education per student at all levels

In equivalent US dollars converted using PPPs



'One element of Finland's success has been the capacity of policy makers to pursue reform'

What's so great about Finland?

The success of Finland's education system has been attributed to many factors, including some that lie beyond the immediate realm of public policy. But those who attribute Finland's strong educational performance solely to cultural and contextual factors should be reminded that as recently as the mid-1980s secondary school students in Finland performed at little better than the OECD average level in the international science tests that were used at that time.

One element of Finland's success has been the capacity of policy makers to pursue reform in ways that went beyond optimising existing structures, policies and practices, and moved towards fundamentally transforming the paradigms and beliefs that underlay educational policy and practice until the 1960's. A key principle in the Finnish reforms was to link high expectations and strong support systems for schools in ways that encouraged and enabled teachers and school principals to assume responsibility for learning outcomes for each and every student. Extensive content-based prescriptions of what teachers should teach were replaced by a focused set of educational goals that communicated what students should be able to do, leaving it up to schools to craft a learning environment and establish the educational content that would serve their students best to reach these goals. Schools with integrated and individualised pathways replaced Finland's tracked school system. That helped to replace the mindset that when students failed, teachers had taught the right thing but had the wrong students, and it kept students with difficulties out of tracks where they would be given lower-performance expectations. Grade repetition was abandoned and with it the belief

that "more of the same" would make a difference for some students.

Insisting that teachers and schools solve problems rather than shift them elsewhere contributed to the development of a highly selective teaching profession on par with other professions in terms of the ability to diagnose a problem, apply evidence-based practices and develop a sense of professional pride. The education system also helped schools to make best practices universal, to encourage teachers and schools to consistently expand their repertoire of pedagogic strategies, to individualise learning for all students, to have schools adopt innovative approaches to timetabling and to deploy increasingly differentiated staffing models. And it fomented a professional ethos that accepts and assumes that every child comes to the classroom with a different knowledge base and skill set, as well as varying aptitudes and aspirations and that, as a result, every young person's needs must be assessed and their talents developed through diverse teaching strategies.

Finland also backed its schools up with strong support systems, helping to build networks of schools that could stimulate and spread innovation, collaborate with education authorities and each other and provide curriculum diversity, extended services and community support. The presence of this network helps to explain Finland's greatest success: its capacity to make strong school performance a consistent and predictable outcome throughout the education system, with less than a 5% variation in student performance between schools, according to the latest PISA data.

'France and Germany are no longer among the world's leaders in developing knowledge and skills'

best schools and schooling systems. Despite Europe's disappointing results overall, students in Finland topped the PISA assessment for the second time in 2003. This shows that excellence in student performance throughout an entire school system is an attainable goal, and at reasonable cost. But many of the world's most successful education systems – including Finland's – have something in common: they have all shifted policy away from control over the resources and content of education toward a focus on obtaining better outcomes (for more, see the box "What's so great about Finland?" on page 9). They have moved from "hit and miss" teaching practices to establishing universal high

standards. They have shifted from uniformity in the system to embracing diversity and individualising learning. They have changed from a focus on provision to a focus on choice, and they have moved from a bureaucratic approach towards devolving responsibilities and enabling outcomes, from talking about equity to delivering equity. Most important, they have put the emphasis on creating a "knowledge-rich" education system, in which teachers and school principals act as partners and have the authority to act, the necessary information to do so, and access to effective support systems to assist them in implementing change.

The cost of under-investment

Table 8: Investment in high-level qualifications

Expenditure on tertiary educational institutions as a percentage of GDP (2002)

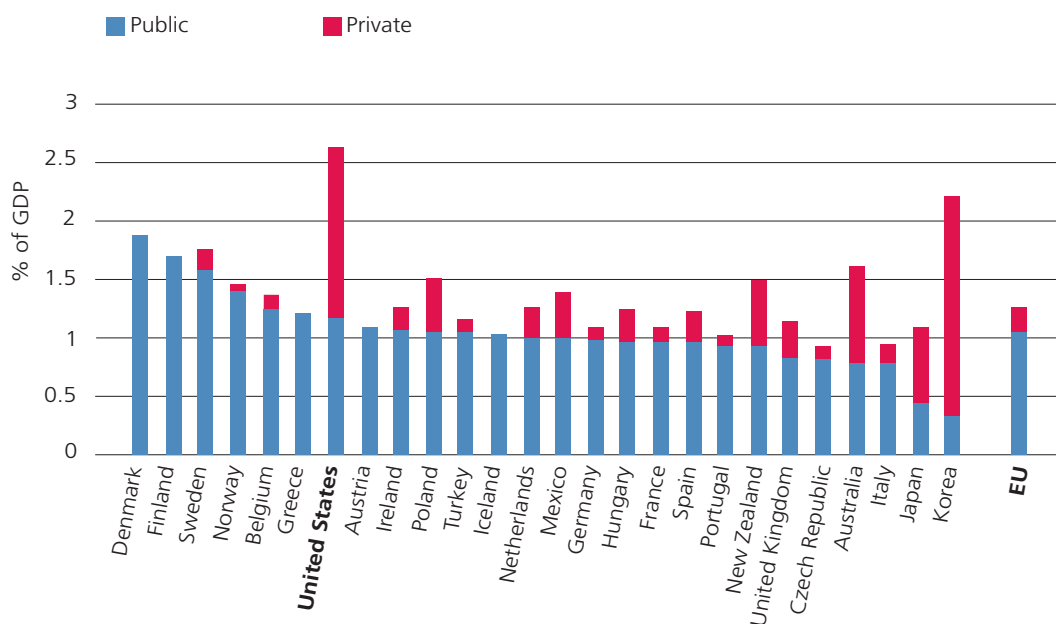
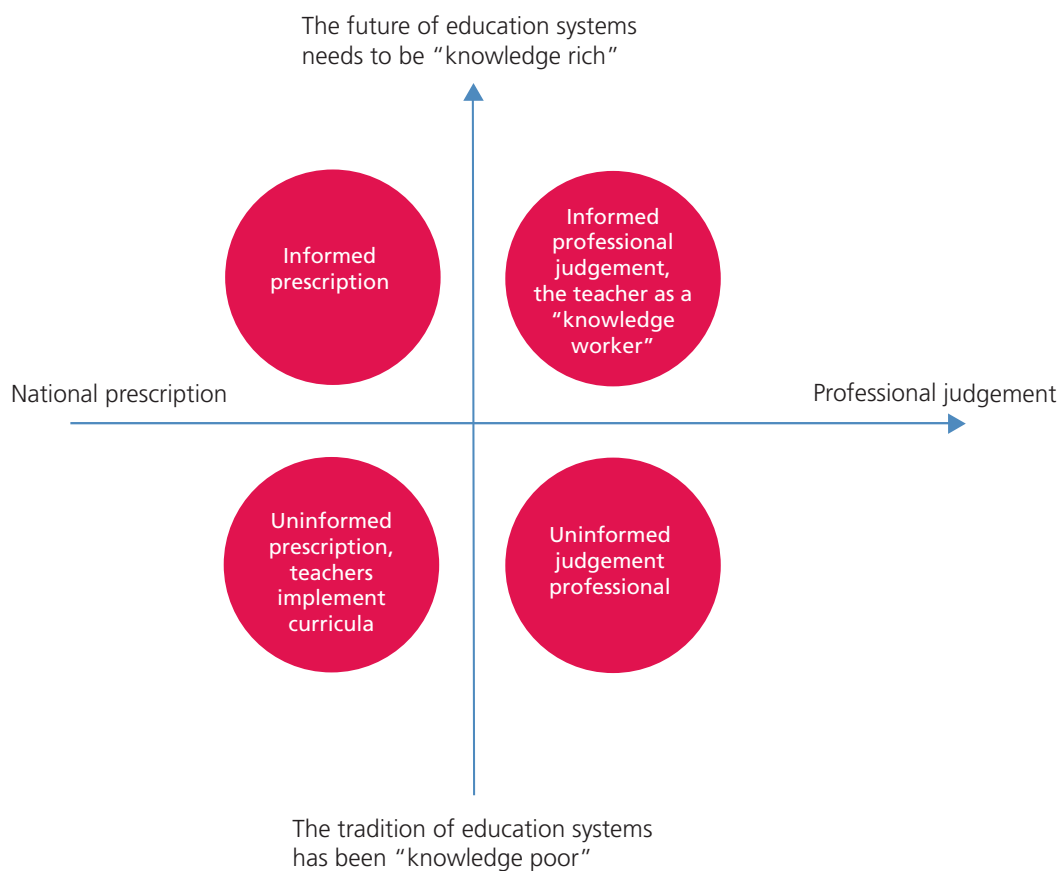


Table 9: One challenge – different approaches



As is, the U.S. outspends Europe on tertiary-level education by more than 50% per student, and much of that difference is due to larger U.S. contributions from tuition-paying students and the private sector (see Table 7). Nordic countries, meanwhile, have dramatically

'Europe's universities will have to evolve so that their leadership and management capacity matches that of modern enterprises.'

increased the number of students studying in tertiary and other education largely through massive public spending on higher education (see Table 8). Early on, they saw this investment as something that would pay high dividends to both individuals and society. But the U.S., Australia, Japan and Korea have also improved access to higher education, mostly by making students pay for part of the costs. In contrast, most continental European countries are holding back their universities by neither making the required public investment nor allowing universities to charge tuition fees. European countries tend to argue that charging fees for university education would be unfair or inequitable, but many of the very same countries charge fees for childhood and other

'The OECD's PISA study reveals that social background plays a larger role in determining a student's performance in countries such as Germany, France and Italy than in the U.S.'

primary education, where equity really is at stake.

Educators have to learn, too

No doubt, education is a knowledge industry in Europe, in the sense that education is concerned with the transmission of knowledge. But European education is far from being a knowledge industry in the sense that it does

not allow itself to be transformed by knowledge concerning its own practices. In other fields, people enter their professional lives expecting their profession to be transformed by ongoing research and acquired knowledge. Not so for education. There is, of course, a large body of research about learning, but much of it is unrelated to the kind of real-life learning that is the focus of formal education. Education in Europe continues as a cottage industry, with

The Korean 'miracle'

International comparisons show nations how things are. But more importantly, they also show nations how things could be – and the pace of change that is possible.

In the 1960s, Korea had lower national income than Mexico and all South American countries. Less than a third of the adult population had completed secondary school, putting Korea near the bottom of all 30 OECD countries when it came to educational qualifications.

Today, 97% of Korean 25- to 34-year-olds have high-school education, the highest rate among the principal industrialised countries. Korea can compare itself with the best performing countries in the world – not merely in terms of quantitative educational output, but also in terms of the quality of learning outcomes and equity in learning opportunities at school.

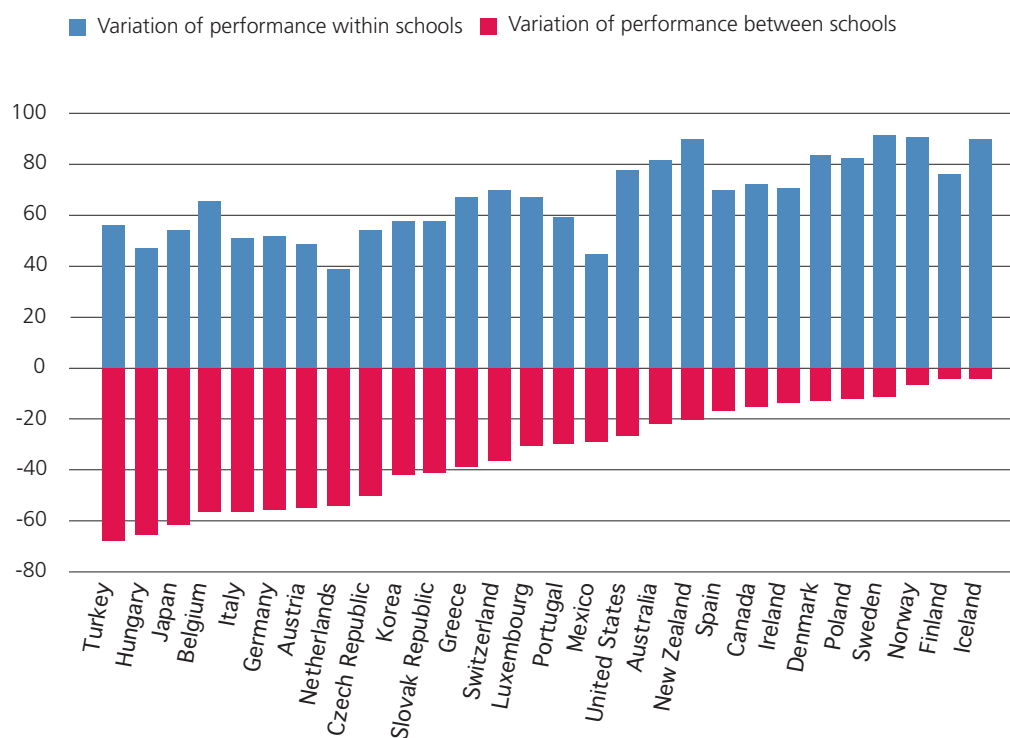
Many factors helped Korea do better than other countries that started from a low base. Perhaps most importantly, society and educators in Korea never tolerated the kind of systemic and

structural barriers that have hindered learning and reinforced inequities in other countries. When demand for education began to outpace supply, students were not sent home. Instead, class size and schooling hours were extended. Parents were ready to complement public provision with high levels of private investment into learning beyond school. The incentives driving these reforms forward was a plethora of merit-based learning opportunities, where progress depended on what children were able to do, not where they came from. Good labour-market signals that put qualifications first offered a high degree of social mobility to the skilled, enabling them to return their educational investment to society and the economy.

In the meantime, Korea has not become complacent. It continues to push forward vigorous educational reform, constantly measuring its achievements against the best-performing nations and investing a higher share of national income into education than any other OECD country (see Table 8).

Table 10: Variation in the performance of 15-year-olds in mathematics

OECD (2004), *Learning for tomorrow's world: First results from PISA 2003*, Table 4.1a, p.383.



practitioners working in isolation and building their practice on folk wisdom about what works. Central prescriptions for what teachers should do, which still dominate European schools, will not transform teachers' practices in the way that professional engagement in the search for evidence of what makes a difference can. Building this kind of evidence base for improved practice is a more sure way to raise performance levels than searching among the current practices of other countries, even though there are lessons to be learned there, particularly for the poorer performing countries. Over the last century, European countries that tried to preserve their systems, jobs, culture and traditions by keeping the rest of the world out have all stagnated. That does not mean that Europe cannot do anything to prepare for this new competition and new world. Rather, it

means that Europe will have to find ways to move up the value chain. People with high skills and the capacity and motivation to continue learning throughout their lives will be the key to this.

Europe's universities are unlikely to catch up unless our governments succeed in creating and maintaining a system of diverse, sustainable, and high-quality institutions with the freedom to respond to demand and the accountability for outcomes they produce (see Table 9). Europe must ensure that the growth and development of tertiary educational systems are managed in ways that improve access and enhance quality. And we must implement financing and student support policies which mobilise public and private funding in ways that better reflect the social and private benefits

'Success will go to those individuals and countries which are swift to adapt, slow to complain and open to change'

of tertiary education. Beyond that, Europe's universities will have to evolve so that their leadership and management capacity matches that of modern enterprises. Appropriate strategic financial and human-resource management techniques should be introduced to ensure long-term financial sustainability and meet accountability requirements. And the university system itself must be governed by bodies that reflect a much wider range of stakeholder interests than the academic community.

'The task of European governments will be to ensure that European countries rise to the challenge.'

Some argue that giving schools greater freedom will lead to greater differences between schools and thus to larger disparities in learning outcomes. That is certainly a risk, but comparative evidence shows that it can be contained. Finland, for one, provides schools with considerable discretion in establishing their learning environment and managing their resources, but it manages to contain quality differences between schools to within 5% of the overall performance variation among students (see Table 10). The result is that parents can rely on high and consistent standards throughout the entire school system. By contrast, some of the most centralised education systems show some of the largest performance differences between schools.

This shows that equality of inputs to schools

does not automatically translate into equality in educational outcomes. In the past, education systems could claim that they achieved equity when all schools were operating in the same way. Now equity must be assessed by the extent to which schools achieve equitable outcomes.

What about social mobility?

Here lies perhaps the biggest disappointment in Europe's education systems. Many of them make ambitious claims when it comes to securing equity in learning opportunities. But the OECD's PISA study reveals that social background plays a larger role in determining a student's performance in countries such as Germany, France and Italy than in the U.S. This means that – despite the nominal emphasis on equality and equity in the educational system – Europeans from difficult socio-economic backgrounds don't receive the same educational opportunities as children from rich and middle-class families. In many countries, the data suggest that European schools reinforce existing socio-economic inequities. The policies we pursue, in other words, are giving us outcomes different from the stated objectives of those policies – a situation on which we would all be well-advised to reflect.

International comparisons show that overall variation in student performance and performance differences between schools tend to be greater in countries with rigid selection practices at an early age between types of programme and school. They also show that the effects of social clustering are larger in school systems with differentiated types of schools

than in systems in which the curriculum

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does not vary significantly between schools. The German school system, for example, divides kids as young as 10 years old into vocational or academic tracks. In the end, German children with parents in white-collar, high-skilled occupations have a four-fold higher chance of enrolling in the tracks leading to universities than those with parents from blue-collar or low-skilled occupations, even if the students display the same level of educational performance at an early age.

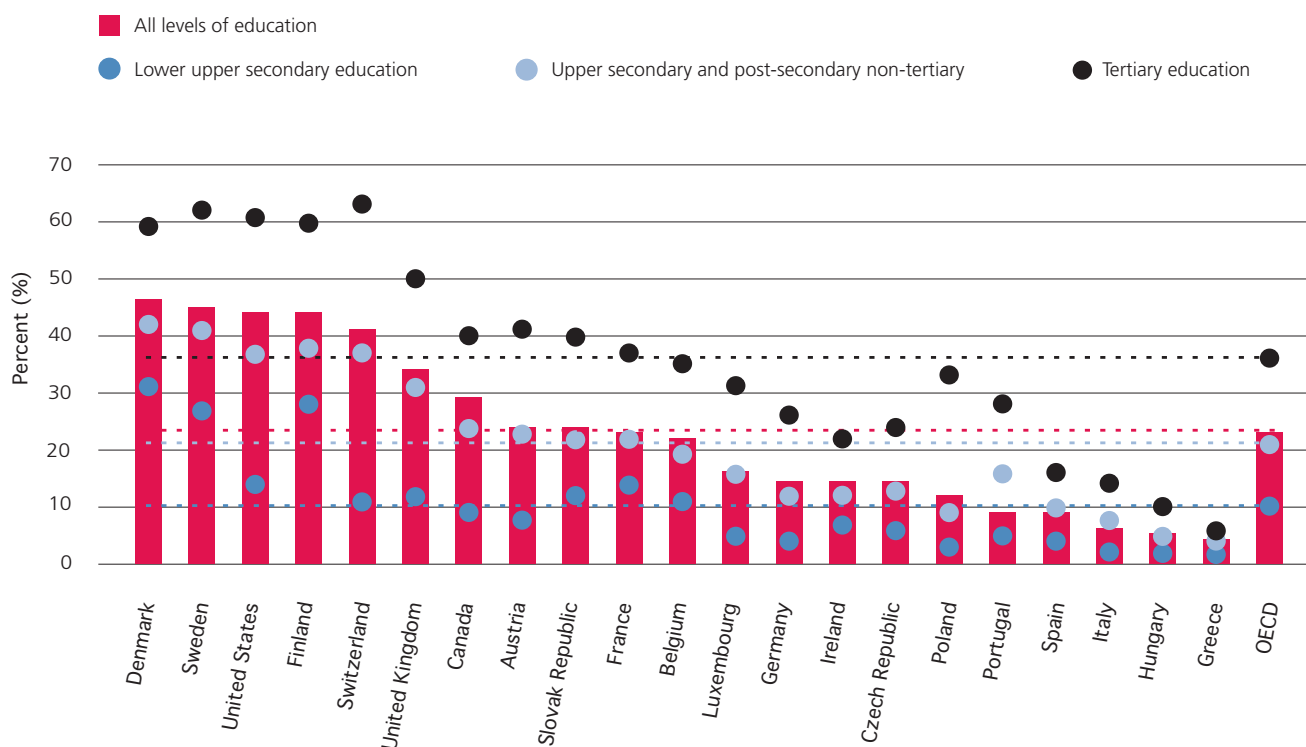
To be sure, problems such as these are

entrenched so deeply in national traditions and ideology that it is very difficult to change them. Germany’s policymakers have been pursuing educational reforms successfully on many fronts, but they have shied away from tackling the inequality built into their educational system. While some officials claim they need to wait for conclusive evidence of socio-economic disparities that will take at least a decade to collect, kids are being left behind. Many other countries show similar patterns. France, for one, refuses to publish PISA’s evidence on social inequality between schools.

Towards equality in life-long

Table 11: Training often goes to those who need it least

Participation of the labour force in non-formal job-related continuing education and training 2003



learning

Europe's capacity to compete in the global knowledge economy will depend on whether its higher education institutions can meet the fast growing demand for high-level skills. But that, in turn, will hinge on significant improvements in the quality of schooling outcomes and equity in learning opportunities. It is quite clear that initial education alone is not enough to meet the rising and, more importantly, changing demand for skills. Promoting "lifelong learning" therefore has become a goal of European education policies, and rightly so.

However, lifelong learning remains far from a reality in most countries (see Table 11). More than 40% of the labour force in Denmark, Finland, Sweden, Switzerland and the U.S. enrol in job-related education and training each year. By contrast, fewer than 10% of employees in Greece, Hungary, Italy, Portugal and Spain receive such training each year. What's more, policy makers who promote lifelong learning as a substitute for strong primary education are making a mistake. The reality is, people who depend the most on post-school education and training opportunities, such as the unemployed or those with low-skilled jobs, get the fewest training opportunities. People who have not completed upper secondary education are on average less than half as likely to be found in post-school education and training programmes in most European countries – and less than 25% as likely to be found there if they don't have adequate tertiary education. In all OECD countries, employees in upper-tier service industries are more likely to get training than

people working in other sectors. More generally, adult education and training are most common in large firms, the public sector and in sectors such as business services, banking or finance; usually for full-time or established workers in a firm; more prevalent for management and senior posts than for non-executive or unskilled jobs; more frequent for young and mid-career workers than for older workers; and more likely to increase in line with an individual's previously existing level of qualifications. More worrying still is the sizeable proportion of young people with low levels of education who are neither in work nor in education. More than 10% of 15- to 19-year-olds in France, Italy, the Slovak Republic and Turkey are in this tragic situation.

Leading the way

International comparisons show the challenges that lie ahead for Europe. But they indicate that these challenges, which are also faced in other parts of the world, are being successfully addressed by countries as different as Finland, Canada and Japan. And the efforts of those countries are beginning to provide insights into the policy drivers associated with success. Education and skills will be key for Europe to achieve its ambitious Lisbon goals. The world is indifferent to tradition and past reputations, unforgiving of frailty and ignorant of custom or practice. Success will go to those individuals and countries which are swift to adapt, slow to complain and open to change. The task of European governments will be to ensure that European countries rise to this challenge.

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