

A note on skill formation in higher education

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The State of Higher Education 2013

OECD Higher Education Programme (IMHE)



THE STATE OF HIGHER EDUCATION

2013

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EXECUTIVE SUMMARY

This report is the result of carefully culling through OECD publications relating to higher education. Many of the Organisation's in-depth studies and analyses over several years from various Directorates have revealed important information about higher education, yet this information is scattered and sometimes difficult to find among a wealth of data.

The impetus behind this publication was a motivation to provide an essential service to members of the OECD's Higher Education Programme. Sympathetic to higher education leaders under time pressure yet who can make good use of relevant and timely higher education data, the OECD Higher Education Programme seeks to support the essential work of its members working in the field.

This report is the first of what will be produced as an annual publication, with exclusive access for members of the Higher Education Programme. The topics chosen by the programme's Governing Board for 2013 are:

- higher education returns and financing
- higher education, skills and employer expectations
- lessons from the Feasibility Study on the Assessment of Higher Education Learning Outcomes (AHELO)

In addition, five articles were commissioned from experts in the field to share further information and spark debate among members.

Higher education is important in terms of public and private financial and non-financial returns. Given the level of investment, it is in everyone's interest to get it right. Some of the key aspects of getting it right involve priorities from within and from outside higher education:

- quality in teaching and learning for good student outcomes
- labour market relevance for the employability of students.

Chapter 1: Higher education returns and financing

KEY FINDINGS

The public and individuals benefit from higher education HE in financial and non-financial ways.

Higher education generates positive returns to the public in general, as well as to the people who obtain degrees. Although higher education is expensive, financial returns are much greater than returns for lower levels of education. In addition, society and higher education graduates enjoy a variety of non-economic returns, including lower crime rates, longer life expectancy, more life satisfaction and better health.

Higher education without a degree does not boost earnings.

Despite the many benefits of higher education, not everyone who enrolls in higher education achieves an advanced degree. Many people drop or fail out of higher education for various reasons and this can be very costly. Although there are some benefits to higher education participation, even if no degree is earned, drop-outs do not usually enjoy the same financial returns that degree holders can expect.

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Returns to higher education vary considerably by gender and field of study.

Net private returns to higher education are typically higher for men than for women. Nevertheless, women are likely to benefit more from higher education than men, including women who work in sectors with relatively lower salaries. This is because, in general, wages for women without higher education are significantly lower than wages for men without higher education.

Large differences in earnings by field of study appear in many countries, although internationally comparable data does not yet exist. Higher education degrees in science, technology, engineering, and mathematics typically lead to jobs with salaries 60% to 90% higher than salaries in arts, education and other humanities fields.

The share of public funding for HE is in decline.

Although the dollar amounts of public investment in higher education have increased in recent years, the share of the total cost covered by public funds is in decline. On average across OECD countries, 68% of higher education is publicly funded, down from 77% in 1995 and 71% in 2005. Most of the decline in the share of public investment is happening in non-European countries, where tuition fees are generally higher and enterprises participate more actively in financing higher education.

Countries increasingly rely on cost sharing to finance higher education.

Demand for higher education is high and rising in every country, including countries with near-universal rates of participation. At the same time, higher education costs are rising, in part because teaching in higher education may be less amenable to capital substitution than activities in other sectors.

As a result, cost sharing is increasingly used to address the need for revenue from non-governmental sources. Beyond the financial rationale, cost sharing is also seen as justified from the perspective of equity, given the large private returns of higher education, and because market values may help make higher education more responsive to students and society.

KEY POLICY RECOMMENDATIONS

Higher education institutions should help students succeed and graduate.

Higher education institutions should ensure that students are informed of the financial and non-financial risks of dropping out of higher education. Effective student support services can help students succeed and graduate.

Student aid is important to ensure cost sharing does not limit access.

As cost sharing is used more widely, there is a need to adapt approaches to student aid. The introduction of generally available loans (loans that do not depend on the creditworthiness of the family), or means-tested student grants, paid for in part from tuition revenue, can help maintain access to higher education for disadvantaged students. It is important to ensure that repayment of such loans is income dependent, so as to remove the notion of risk that might deter risk-adverse students from low-income backgrounds from participating.

Chapter 2: Higher education, skills and employers' expectations

KEY FINDINGS

Higher education is increasingly relevant due to the shifting demand in skills.

Employment rates are highest among higher education graduates; graduates also tend to earn relatively high salaries and enjoy stable employment conditions. Higher education graduates have also been less affected by the rise of unemployment since the 2008 global financial crisis. This situation is driven in large part by the continued expansion of occupations requiring higher-level skills, while the share of employment for occupations associated with lower education levels is shrinking on average across OECD countries (OECD, 2013c).

Employment rates vary significantly according to gender and field of study.

On average across OECD countries and all education levels, only 65% of women are employed, compared with 80% of men. However, the gap between men's and women's employment rates is smallest among those with higher education degrees, where the difference is less than 10 percentage points on average.

Employment rates and earnings also vary significantly according to the field of study, with more stable and well-paid employment concentrated in science, technology and engineering fields and below average employment stability and earnings for arts and humanities graduates.

More women complete programmes in the humanities, arts, education, health and welfare fields, while more men complete programmes in mathematics, science and engineering. This further impacts differences among genders in terms of employment rates and earnings.

Higher education leads to higher proficiency in information-processing skills.

The recent OECD Survey of Adult Skills shows that people who attain higher education degrees usually demonstrate the highest levels of key information-processing skills such as literacy, numeracy and problem-solving in technology-rich environments.

Higher education graduates have opportunities to strengthen these skills, both during their studies and later, because they are more likely to access demanding jobs that help them maintain and further develop their skills.

However, the Survey of Adult Skills highlights striking differences between countries in the skills of tertiary degree holders. In a few countries, young adults with secondary education outperform tertiary graduates from other countries.

Skills evolve over the life cycle, and the best way to maintain skills is to use them.

The Survey of Adult Skills indicates that proficiency increases in increments from age 16 and peaks around age 30. While older adults generally show lower skill levels than their younger counterparts, the skill gap between generations varies considerably among countries. This reflects differences in the quantity and quality of education received by older generations, but also suggests that some countries are better than others at mitigating the effects of ageing and allowing people to maintain their skills over time.

Another key finding of the Survey of Adult Skills is that practice helps maintain or even improve skills: adults who engage more often in literacy- and numeracy-related activities and regularly use information and

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communications technologies (ICTs) at work have higher proficiency levels. The relationship is even stronger for the use of these skills outside work.

Employers expect a mix of skills from higher education graduates.

While employers want higher education graduates to arrive on the labour market “work-ready”, they are often reluctant to invest in developing transferable skills in their employees. Instead, employers expect higher education institutions to ensure graduates have the required academic and professional skills upon completing their degrees.

When asked to prioritise the skills that higher education institutions should focus on developing in a context of constrained time and resources, employers tend to identify discipline-specific professional expertise and generic academic skills as most critical. While they also highly value interpersonal skills, international orientation, strategic/organisation skills, and commercial/entrepreneurial skills, employers suggest that these types of skills could also be developed outside of higher education.

Research also highlights that employers do not expect higher education graduates to all have the same types or level of skills. Employers have different expectations and needs in terms of graduates’ skills, which can only be met by a mix of skills across the pool of higher education graduates. Employers also have different views of graduate employability: for example, employer perceptions of the employability of Bachelor’s, Master’s and Doctoral graduates vary across European countries. Overall, however, employers stress the importance of ensuring that higher education curricula and practices are relevant to labour market needs.

Partnerships with employers and quality workplace learning enhance employability.

Recent research points out that employers value the introduction of a period of practical experience in higher education programmes, for example through internships or dual programmes that combine work and study. Workplace learning has been shown to significantly increase graduates’ labour market success.

KEY POLICY RECOMMENDATIONS

Institutions have to balance higher education principles with labour market priorities.

Driving economic development is only one of the roles of higher education institutions and must be balanced with other priorities, including quality research and knowledge production. It is, therefore, important to ensure a balance between the priorities of the labour market and the relevance of the curriculum with a sufficient level of institutional autonomy to ensure academic freedom.

Institutions should keep students informed of labour market risks and opportunities.

There is greater demand for people with high-level skills in the labour market than there are higher education graduates; however, many students choose study fields that lead to poor employment prospects. Although it is difficult to predict changes in the labour market or to match short-term labour market needs with longer-term higher education outcomes, higher education institutions should help students become as informed as possible about how their study field choices will affect their options in the labour market. Institutions could also take steps to encourage women to enrol in high demand study fields, many of which also lead to a higher payoff.

Institutions should be differentiated to serve diverse niches and needs of society.

Employers do not want all graduates to have the same skills and levels of expertise. Higher education institutions should encourage creativity and originality in students and they should demonstrate their own originality by differentiating themselves from the competition. No university can be all things to all people; however, any university can develop a cachet of excellence in a chosen area or for a specific stakeholder group.

There are local measures institutions can take to open access to higher education.

Opening access to higher education is a priority in every country. This mandate may run counter to the priorities of the higher education sector where merit remains the first consideration; however, institutions should strive to open access as part of their mission in service to society and to diversify the student and faculty profiles.

In systems where potential students do not have the necessary skills to succeed in higher education after compulsory education, institutions should develop strategies to help improve compulsory education, i.e. through improving teacher education and curricular reform. Institutions can also offer remedial programmes and other appropriate student support services to help students develop the skills they need to succeed.

Institutions can contribute to gender equality in study fields, which will influence the labour market.

Higher education institutions can help promote gender equality across study fields by implementing career counselling and student guidance services.

Broader policy measures would also need to be considered to help increase women's participation in the labour market, including providing childcare subsidies with employment; increasing the availability of affordable, flexible, high-quality childcare services, especially for single mothers; providing maternity and paternity leave; and offering flexible working hours.

Higher education institutions can take steps to enhance the employability of graduates.

Higher education institutions must develop and maintain an active, open line of communication with a range of labour market stakeholders and employers in particular. Resources such as higher education alumni, buffer organisations and consortiums of higher education institutions can play a role in fostering a robust relationship with the labour market. Internally, ensuring that external stakeholders are actively involved on institutional governing boards can be crucial to institutions' relationships with the labour market.

The development of workplace training opportunities can strengthen ties between higher education and the labour market and enhance the employability of graduates. OECD research highlights several practices that help achieve these objectives, such as establishing permanent structures within institutions and single points of contact with employers and consistent monitoring of students' experiences during and after workplace training, with particular attention on the quality of training.

Institutions can play a significant role in helping individuals maintain and upgrade their skills throughout life.

By paying growing attention to the effective labour market insertion of their graduates, higher education institutions (HEIs) could contribute both to the productive use of skills in the economy and help prevent individuals' skill loss.

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Further, graduation should not be a farewell to higher education. With adult education programmes, higher education institutions can contribute to up-skilling or re-skilling higher education graduates later in their careers; work with employers to develop training programmes, train trainers and raise awareness about the need for at-work skill development; and support the government with programmes to help people maintain and recover skills as they age. Such programmes may mean rethinking tertiary admission criteria and delivering programmes in flexible ways to meet the needs of adult learners.

Chapter 3: Lessons from the feasibility study on AHELO

KEY FINDINGS

The AHELO concept emerged to fill an information gap.

The strong development of quality assurance systems is one of the most significant developments in higher education since the early 1980s. Yet while the fundamental question when it comes to quality is how effective higher education is at teaching and learning, none of the quality assurance indicators and proxies for quality directly measure learning outcomes. There is a clear need for a way to assess institutional performance in this area. Accordingly, the AHELO concept aimed to provide a direct evaluation of student learning outcomes at the global level and to enable institutions to benchmark the performance of their students against their peers as part of their improvement efforts.

The AHELO feasibility study aimed at proving a concept.

While a number of higher education systems have developed assessments of learning outcomes at national level, the feasibility study on the Assessment of Higher Education Learning Outcomes (AHELO) has been breaking ground in attempting to develop such an assessment at the international level. The purpose of the AHELO feasibility study was to provide a proof of concept: is it technically and practically feasible to assess what students know and can do near graduation across different contexts?

The study comprised four strands of work and involved a mixed group of countries.

The study unfolded in four distinct strands of work. The first three strands consisted of developing and implementing assessments of learning outcomes in three different domains: Generic Skills, Economics and Engineering, while the fourth strand examined the measurement of value-added in higher education through a reflection on methodological approaches, data needs, and the pros and cons of different approaches.

Since the feasibility study tested the challenges of capturing higher education outcomes internationally, taking into account cultural and linguistic differences, it was important to cover quite different countries to provide a reasonably balanced picture in terms of geographic, linguistic and cultural diversity in each strand.

Instrument development paid careful attention to the reduction of potential bias.

An assessment instrument was developed for each of the three strands, through consultation with international experts in the discipline areas. Contextual instruments were also developed to identify factors that would explain observed learning outcomes, e.g. student context, faculty context, institution context. Once the instruments were developed, they were translated, adapted, pre-tested and revised to ensure that the resulting measures of learning outcomes would be valid, reliable and free of bias to the extent possible.

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A large-scale test of practical implementation.

Test instruments and contextual surveys were implemented from the beginning of 2012 until July 2012. Data was collected from almost 23 000 students, 4 800 faculty and more than 240 Institution Co-ordinators across all 17 participating countries.

Quality, validity and reliability of AHELO instruments.

The AHELO feasibility study produced many items that functioned well, despite some degree of differential item functioning for some of them. All three instruments also achieved reasonable levels of validity. Finally, the three instruments functioned reliably overall, meaning the results were consistent and stable across different testing situations.

Scoring was reliable in all three strands. Although variations were observed in scoring across countries, the scores were consistent in the rank orderings of the quality of the responses, which indicates that with appropriate training and scoring monitoring, student responses can be scored reliably across countries.

Analysis of the AHELO feasibility study results pertain only to the instruments tested, but suggests that it is feasible to assess student learning outcomes internationally.

Because of the limitations inherent to a feasibility study, the analysis pertains only to the instruments tested and cannot be generalised. However, it can be concluded from the outcomes that it seems feasible to assess student learning outcomes internationally.

Even more importantly, the feasibility study sparked debate.

A number of participants from different countries felt they got something extra out of the feasibility study because it brought about deep reflections on teaching and learning. This is perhaps the most important lesson from the feasibility study: that the assessment of higher education outcomes is not an end in itself, but rather a stimulus to deeper professional dialogue on desired learning outcomes and the teaching approaches needed to achieve them. The study was, therefore, a success for bringing the issue of learning outcomes to the forefront of the quality assurance debate. The questions raised throughout the process of the feasibility study are as much a part of its success as the actual findings.

Was AHELO worth the cost? It is too soon to tell.

Different stakeholders in the AHELO feasibility study have different opinions as to whether the exercise was worth the cost. The general consensus is that more data and analysis could still be gained from the feasibility study before a judgment on worth vs. cost can be made.

KEY RECOMMENDATIONS ON POLICY AND METHODOLOGY

Higher education institutions can take steps to increase the focus on learning outcomes.

Irrespective of the different viewpoints of stakeholders regarding the value or the feasibility of an AHELO, a clear outcome from the feasibility study lies in the increased attention on learning outcomes, which is unlikely to fade away. In this context, institutions are likely to face growing pressures to demonstrate their performance in this area. In anticipation, they can take steps to adopt a stronger focus on learning outcomes.

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Lessons from the feasibility study design can inform future assessment efforts.

The design of the feasibility study deliberately sought to confront the challenges associated with diversity and, as more countries joined, the final set of participants encompassed even more diversity than originally planned. Overall, this diversity proved to be a source of added richness to the feasibility study. Efforts to bring together diverse experts to define learning outcomes and develop the instruments paid off and the proof of concept was successful.

The feasibility study chose institutions as units of analysis. While this proved to be a reasonable approach and the volunteer institutions seemed highly motivated, a follow-up survey of participating institutions would be useful to probe deeply into which aspects and data are most useful and attractive to them.

The feasibility study process also affirmed the importance of seeking input from key stakeholders and the value of consultative processes. These consultations brought invaluable perspectives and any future development would only be enhanced by even greater involvement of all stakeholder communities.

The study design adopted an artificial distinction into three separate strands of work. In many ways, the discipline strands proved more straightforward to implement. However the relative merits of adopting a discipline-based versus generic skills approach in the future needs to reflect further consideration of the relevant learning outcomes for different institutions and how they would want to use the results for improvement.

The goals of an AHELO have important implications for instrument design.

An interesting finding from the study was the existence of trade-offs in item types. Overall, constructed-response tasks were engaging for students and brought about key insights for pedagogy, but this came at the cost of lower reliability of these items. By contrast, multiple choice items were highly reliable, but leveraged less value for teaching and pedagogy. A direct implication is that for any future AHELO, the balance of different item types should reflect the aims of the assessment, with more emphasis on constructed response tasks wherever the focus is on quality improvement and more emphasis on multiple choice items if the aim is to develop accountability measures.

International consensus on assessment frameworks is essential to the instrument development process.

A major challenge was to demonstrate that an assessment framework could be agreed upon across diverse country and institutional settings. This process went smoothly in the discipline strands, where it proved easier than expected to get agreement amongst discipline experts (including in Economics) on what AHELO should cover and measure. By contrast, the Generic Skills framework was only developed late in the process, thus limiting the scope for expert consensus. A lesson from this experience is that establishing international consensus on the assessment framework should be an essential upstream part of the instrument development process. Another lesson is that what might have seemed at the time as a reasonable short-cut may not have been the most cost-effective approach after all. This underlines the importance of developing completely new, tailor-made instruments for any future AHELO.

Further analysis of the feasibility study results will be needed to unpack all findings.

While the AHELO concept proved feasible overall, the feasibility study exercise highlighted that there are methodological and practical challenges that would need to be addressed and overcome for any future full-scale endeavour. These include the development of an internationally-valid framework to assess learning outcomes related to the acquisition of generic skills, the analysis of the various contextual factors that

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influence how well or poorly some items functioned, the design of strategies to bolster student participation, and a close scrutiny at cost structures to assess the national and institutional costs of such an endeavour.

by

Peter Coaldrake

Sustaining funding for universities

In many countries there has been a shift over the past decade in the share of higher education funding borne by students. This can be seen most dramatically with the recent U.K. reforms, but student fees have also increased significantly in Australia, Portugal and Austria. In many Asian countries – as well as in the OECD member countries Chile, Israel, the U.S. and Canada – private contributions to higher education are already high (more than 40 per cent of the share).

While some countries remain predominantly public in higher education provision, notably the Nordic and some other European nations, the labour-intensive nature of higher education means that productivity growth in the sector tends to lag behind other areas, and maintaining adequate levels of public funding will be an increasing challenge in the future.

Ensuring the best distribution of university resources and activities

Improving the participation of under-represented groups in higher education (for example those from lower socio-economic backgrounds) is a chronic challenge in most countries. This is related to resourcing issues, with the increasing transfer of cost share to students and families potentially exacerbating existing inequalities in access to higher education.

Extending higher education across significant numbers of the population, for example to more than one third of the 25-34 year old age group, also develops tensions with the need to maintain elite research-based universities. This can lead to significant disparities in resourcing and development of hierarchies of reputation, particularly as development of a few “world class” universities is pursued as an aim of national development (for example in China). In turn, this can entrench elite access to research-based education and potentially limit the public and private benefits of higher education expansion.

Developing appropriate quality assurance and regulation of higher education and research

The need for better quality assurance is driven by a number of factors. These include the imperative for greater efficiency and effectiveness in use of public funds; the demonstrated potential for both public and private providers of higher education to push the boundaries of acceptable practice; and the need to assure domestic and international students of the bona fides of what is being provided (particularly as they are being asked to shoulder a greater share of the cost of provision in many countries).

Higher education globally is undergoing both *harmonisation* (through, for example, the Bologna Process, the emulation of leading – particularly U.S. – models, and increasing internationalisation of staff and students) and *diversification* (new providers and forms of provision, growth of previously underdeveloped national systems and development of professional accreditation). Developing quality assurance and regulatory frameworks that encompass this changing scene is proving difficult. Further, the complex nature of higher education means that the development of straightforward metrics of quality is elusive, if not impossible.

It is increasingly being recognised that universities need a level of operational autonomy to function at the highest international standards, but the balance between that autonomy and the needs of governments cannot be objectively determined. Aligning institutional strategies with national goals is an on-going endeavour, and development of quality assurance with “teeth”, that is, with consequences for those found to be in breach of acceptable standards, is also a potential source of conflict.

Managing internationalisation

Over the period 1995-2009, the number of tertiary students studying outside their own country more than doubled, a phenomenon driven in large part by demand from Asia and China in particular. In some countries – notably Australia, Canada, New Zealand, the United Kingdom and the United States – what has become seen as a services export sector for English speaking education programmes has developed, which is given additional incentive by the pressures on public funding for domestic students.

Among many E.U. countries, international students from other E.U. countries are treated no differently from domestic students when it comes to tuition fees, and significant proportions of foreign students studying in those countries are European. However, the presence of international fee-paying Asian students, including in research programmes, is growing in importance.

Student mobility is greatly influenced by national policies relating to immigration, border controls, and quality assurance. Increasing attention is being directed to areas such as student safety and human rights. For research students in particular, the role of university rankings is also significant.

Beyond foreign student recruitment, internationalisation encompasses the development of overseas campuses and joint ventures, student and staff exchange, development of longer term relationships between institutions and countries in education and research, and deeper cross-cultural education.

Dealing with new forms of higher education provision

Most universities have been experimenting with the possibilities offered by the increasing power and reach of information and communications technologies, incorporating them to varying extents to enhance administration, teaching and research. Some universities have offered online postgraduate programmes and others, particularly the open universities in countries such as the U.K. and Australia and a number of for-profit providers in the U.S., have developed fully online degree programmes at undergraduate level.

However, there have been recent developments, particularly in the United States, that propose fundamentally new “business models” for higher education. The most prominent has been the offering of massive open online courses (MOOCs) by prestigious universities, prompting speculation that online technology could deliver higher education anywhere and anytime at scale and very low cost. While these ventures have yet to mature, they are developing rapidly and there is a great deal of entrepreneurial activity aimed at finding new and more effective models of delivery.

Another important development is the push for lower cost higher education providers. There are many models being experimented with, including competency-based education where certification is separated from teaching and students can progress when they feel able to demonstrate what they know (Western Governors’ University); separation of teaching from research; the offering of part or all of degree programmes by non-university providers; and a combination of technology-based and stripped-down campus-based education

EDITORIAL: MAJOR CHALLENGES FACING HIGHER EDUCATION AROUND THE GLOBE

(such as that espoused by Clayton Christensen as “disruptive innovation”¹). Established universities will need to be able to demonstrate more explicitly the value they add as these new alternatives become more widely encouraged by governments and others concerned about the rising costs of higher education.

1. Christensen, C., M.B. Horn, L. Caldera, and L. Soares (2011), *Disrupting College: How Disruptive Innovation Can Deliver Quality and Affordability to Higher Education*, Center for American Progress and Innosight Institute. www.innosightinstitute.org/innosight/wp-content/uploads/2011/02/future_of_higher_ed-2.3.pdf

CHAPTER 1: HIGHER EDUCATION RETURNS AND FINANCING

Introduction

<p>Governments recognise HE as a major driver of development.</p>	<p>Governments have come to recognise that higher education (HE) is a major driver of economic and social development. As a consequence, there is political pressure for young people to get higher education degrees. Countries and regions are setting ambitious goals for higher education attainment:</p> <ul style="list-style-type: none"> ➤ The European Union set the average target attainment rate for higher education at 40% for all Member States (European Commission, 2012); ➤ Australian policies aim to see 40% of young adults attain higher education degrees by 2025 (Norton, 2012); ➤ In the United States, President Obama announced that by 2020 “America will once again have the highest proportion of college graduates in the world” (ABC News, 2012).
<p>HE is expensive, yet returns are high.</p>	<p>Higher education is expensive for all concerned. It costs money from the public treasury; among OECD countries, governments spend an average of 1.7% of GDP on tertiary education (OECD, 2013). The individuals who attend are also often required to pay at least a portion of the costs. Yet despite such costs, financial returns to the public and to private individuals are usually considerable. Indeed, even as costs rise and higher education becomes more expensive, the returns to higher education are also rising.</p>
<p>HE graduates can expect to earn more, live longer and attain more life satisfaction.</p>	<p>There are good reasons to invest in higher education:</p> <ul style="list-style-type: none"> ➤ Average earnings over a lifetime are significantly higher for people with higher degrees. ➤ A higher education degree is considered prestigious, so people with degrees often discover entry into different social circles. ➤ People who increase their general and specialised knowledge often choose healthier lifestyles, live longer and find more enjoyment in their lives.
<p>HE does not pay off for everyone.</p>	<p>However, although higher education pays off for the public generally and for most people who graduate, it does not pay off for everyone who gets a degree. There are many factors at play in who reaps the rewards and who merely pays the costs.</p>
<p>Factors such as gender, age, study field and occupation influence returns.</p>	<p>While some of the factors should be assessed on a smaller scale, such as specific circumstances, opportunities and individual characteristics, some factors can be evaluated at a more general level, such as gender and age, study field and earnings in different employment sectors. For a person considering entering higher education, knowing how such factors influence his or her potential lifetime earnings can be highly informative.</p>

<p>This chapter summarises different types of returns to HE.</p>	<p>This chapter explores what public and private benefits people may expect in terms of returns on their investments in higher education. Variations in returns according to study field, gender and educational attainment are also discussed, non-financial returns are examined and cost sharing is outlined as a legitimate approach to student financing in higher education.</p>
<p>Data source: OECD's EAG 2013</p>	<p>Information and data in this chapter are from the OECD publication <i>Education at a Glance 2013</i>, unless otherwise noted. The publication covers OECD and G20 countries for which data was submitted.²</p>

Returns on investments in higher education

<p>There is intensive debate on who benefits from and who should pay for HE.</p>	<p>The balance between public and private financing of higher education is an important policy issue in most countries. On the one hand, some stakeholders are concerned that if the costs for individuals are too high, students from poor families will not access higher education. On the other hand, there is concern that public funding benefits the affluent, who are more likely to enrol in higher education anyhow due to social and cultural mores. Since both the public and the individuals who attain higher education benefit, the practice of cost sharing is becoming widespread. Cost sharing is taken up in greater detail in the final section of this chapter.</p>
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Public returns on investments in higher education

<p>In most countries, HE is financed primarily with public funds.</p>	<p>There is a long, deeply embedded tradition of public funding for higher education. This tradition is currently under scrutiny in light of shrinking government budgets, greater competition for public funds, unequal access to higher education and the perceived unfairness of private returns to higher education graduates given the high proportion of costs borne by society at large. The counter arguments are based on evidence of public good resulting from higher education (see: Non-financial returns of higher education below), the need to further open access to marginalised groups, the role of higher education in nation building and economic development, and financial returns to the government and, indirectly, the general public. In most countries, the public still covers the greater portion of direct costs for higher education.</p>
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2. Education at a Glance 2013 features data on education from: the 34 OECD member countries: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States;

Two non-OECD countries that participate in the OECD Indicators of Education Systems programme, Brazil and the Russian Federation;

Six other G20 countries: Argentina, China, India, Indonesia, Saudi Arabia and South Africa.

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As demand for HE increases, the amount of public investment increases.

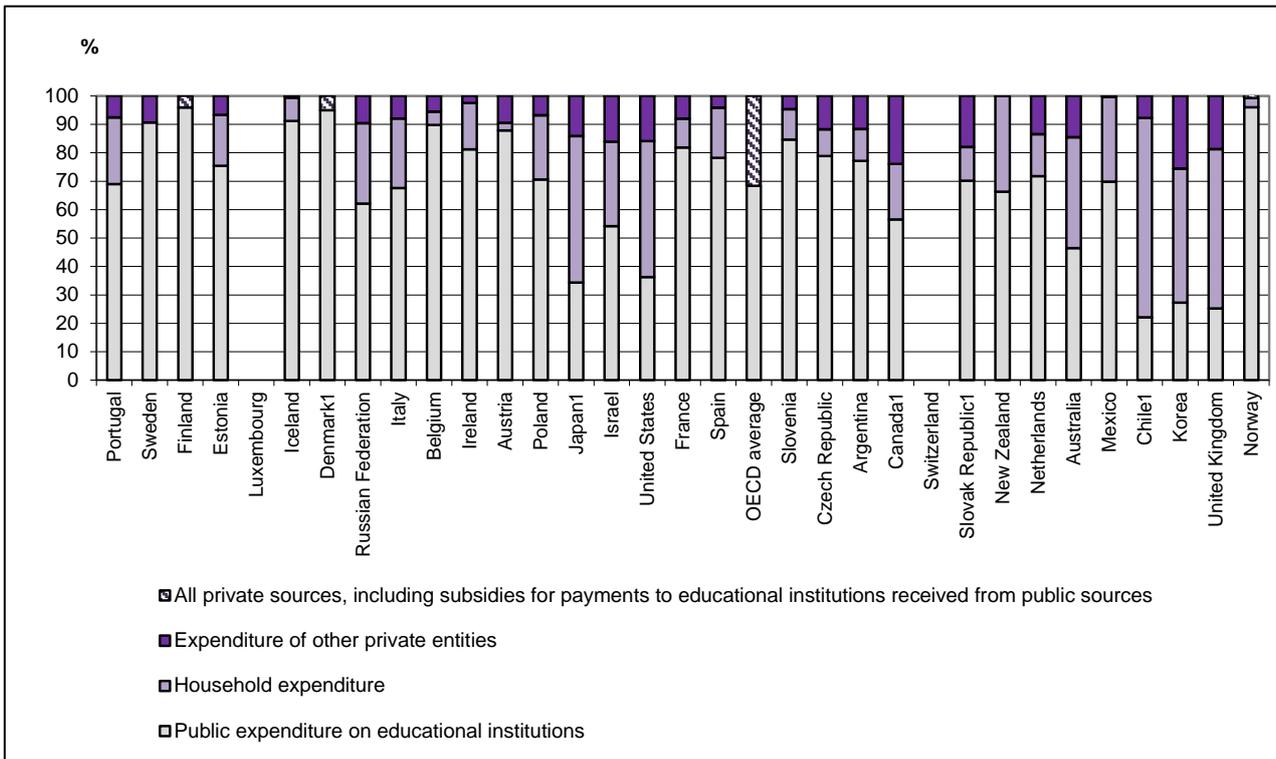
As demand for and participation in higher education have increased, the amount of public investment has increased as well. Public expenditure on higher education amounts to more than 1.5% of GDP in more than half of all countries covered by the OECD publication *Education at a Glance 2013*, and exceeds 2.5% in Canada (2.7%), Korea (2.6%) and the United States (2.8%).

The share of public funding for HE is in decline.

The cost of higher education is rising faster than public budgets can accommodate. Although the dollar amounts of public investment in higher education have increased, the share of the total cost covered by public funds is in decline. On average across OECD countries, 68% of higher education was publicly funded in 2010, down from 77% in 1995 and 71% in 2005. Most of the decline in the share of public investment is happening in non-European countries, where tuition fees are generally higher and private enterprises participate more actively in financing higher education.

Figure 1.1 Distribution of public and private expenditure on educational institutions (2010)

Tertiary Education



Note: Note: Some levels of education are included with others. Refer to "x" code in Table B1.1a which can be found in chapter: "Indicator B1 How much is spent per student?", in *Education at a Glance 2013: OECD Indicators*, <http://dx.doi.org/10.1787/eag-2013-13-en>

Countries are ranked in descending order of the proportion of public expenditure on educational institutions in primary, secondary and post-secondary non-tertiary education.

Source: OECD (2013), *Education at a Glance 2013: OECD Indicators*, Chart B3.2, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2013-en>, Chart: <http://dx.doi.org/10.1787/eag-2013-graph94-en>.

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<p>Public returns to HE are calculated by comparing various costs and financial profit.</p>	<p>Returns to higher education are calculated by comparing the financial profit (to the public or the earnings of an individual) with the amount paid or invested. Public benefits can refer to income taxes, social contributions and social transfers. Public costs include subsidies provided to higher education institutions, as well as indirect costs such as foregone taxes on income from employment-age people enrolled in higher education. In the OECD, the net public return on investment in higher education is over USD 100 000 for a man (three times the amount invested) and around USD 60 000 for a woman (twice the amount invested).</p>
<p>Public investment in HE is higher than for any other education level.</p>	<p>Higher education costs more than other levels of education. On average across OECD countries, public investment in a higher education student is USD 39 000 more than for a student's upper secondary or post-secondary non-tertiary education. Public investment is highest in Austria, Denmark, Germany, the Netherlands, Norway and Sweden, where the cost per student in higher education is USD 60 000 more than for other levels.</p>
<p>Despite rising costs, public returns to HE are two to four times higher than the costs.</p>	<p>Correspondingly, public returns to higher education are also much greater than the public returns from other education levels. On average, public benefits from higher education are twice the amount of overall public returns from upper secondary or post-secondary non-tertiary education for both men and women. The average public net return from higher education in OECD countries is more than USD 100 000 for a man and over USD 57 000 for a woman. Taking into account direct costs, foregone earnings and public grants, the public benefits from higher education for a man are four times higher than the public costs and more than two times higher for a woman.</p>
<p>Wage differentiation has a direct impact on public returns to HE.</p>	<p>Country differences in public returns to higher education are mainly due to the differences in wages between people with and people without higher education degrees. This flows from the higher taxes and social contributions that apply to people with higher incomes, most of whom have higher education degrees. Where the wage spectrum between low and high incomes is smaller, the returns to higher education are lower. This is the case in Denmark, Norway, Sweden and New Zealand, where the public returns to higher education are relatively low as a result of low earnings premiums and relatively large levels of public investment.</p>
<p>Public returns are higher in countries where the wage differential is larger.</p>	<p>Public returns are highest in countries where the wage differential is larger, there are no salary caps and the average salary of a higher education graduate is in the high income-tax brackets. In Austria, Germany, Hungary, Ireland, Italy, the Netherlands, Poland, Slovenia and the United States, people with higher education degrees pay considerably more in taxes and social contributions than people without degrees. In these countries, earnings premiums are above the OECD average and thus levies for social contributions are also higher.</p>

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<p>Public returns must be interpreted carefully when reviewing HE investment policy.</p>	<p>It is difficult to arrive at correct and comprehensive estimates of public (and private) returns. The information summarised in this report and published in the OECD's <i>Education at a Glance</i> should be interpreted with caution. However, when there are large discrepancies between private and public returns, additional analyses can be useful to assess whether government tax schemes or subsidies are appropriate. Overall, it is important to develop policies that promote the public and private good and are not limited to financial returns.</p> <p>For more on understanding private and public returns to education, see <i>Education at a Glance 2013: OECD Indicators</i>, Indicator A7, Box A7.1.</p>
<p><i>Private returns on investments in higher education</i></p>	
<p>HE graduates generally earn more than non-graduates and the difference is growing.</p>	<p>It is well documented that people who have higher education degrees generally earn more than their peers without higher degrees. Data from <i>Education at a Glance 2013</i> shows that, in all OECD countries, people with higher education earn more on average than people with an upper-secondary degree or no degree at all. Furthermore, in most countries, earnings for people with higher education have increased more over the last decade than the earnings for people without higher education. It seems that, not only do higher education graduates earn more, the difference between their earnings and those of people without higher education is also growing. Higher education, therefore, is becoming ever more attractive as an investment for individuals. The potential financial gains are a major reason for the increasing enrolments in higher education.</p>
<p>Certain factors make HE more profitable to some graduates than others.</p>	<p>Although higher education graduates generally earn more than people without higher degrees, earnings across occupations, sectors and countries vary significantly. This section unpacks the averages and looks as closely as data allows at how factors such as gender, age, study field and employment sector influence earnings. Indeed, each of these factors has a significant impact on the returns to higher education.</p>
<p>Private investment in HE is still proportionally smaller than public investment in most countries.</p>	<p>Private investments in higher education represent a smaller proportion of higher education expenditure than public investments in most countries. The exceptions are Chile, Korea and the United Kingdom, where institutions are largely funded by tuition fees. Like public investments, however, the amounts of private investments in higher education are increasing across all OECD countries.</p>
<p>As HE costs rise, private funding covers more of the costs.</p>	<p>In general, as the cost of higher education has increased, the share of private funding for higher education has also increased. Between 2000 and 2010, the private share increased by at least three percentage points in eleven countries. Students and their families, and private enterprises, are assuming an ever greater portion of the cost burden in most countries (See Figure 1.1).</p>

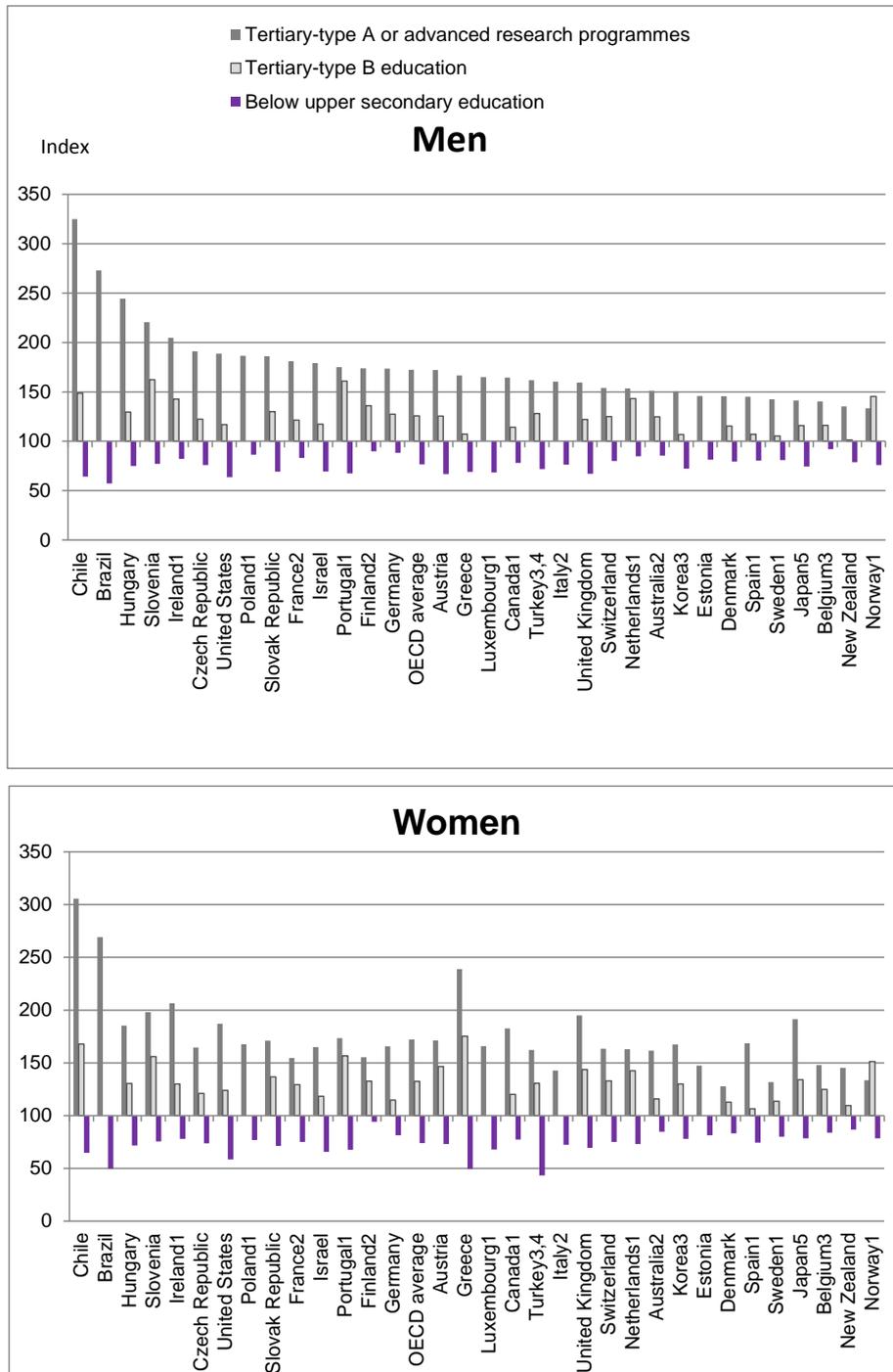
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<p>Generally, HE graduates can expect the highest net returns.</p>	<p>A person with a higher education degree may expect more than 60% higher returns on his or her educational investment than a person with an upper-secondary degree or a post-secondary non-tertiary degree. Private benefits are generally based on gross earnings and reduced risk of unemployment. People with higher education degrees generally earn substantial salaries. On average, the value of the gross earnings benefits for men with tertiary education is USD 330 000 and for women it is USD 240 000, although there is a lot of variation between countries.</p> <p>Costs include direct costs (such as tuition fees) and indirect costs (such as foregone earnings, income tax effect [the amount received by the public sector from taxes], social transfers related to earnings levels and social contributions). Even though higher education costs more than other education levels, the net private returns are generally greater for people with higher education degrees.</p>
<p>HE without a degree does not boost earnings.</p>	<p>Labour economists have documented the existence of so-called “diploma” or “sheepskin” effects. This implies that the year in which an individual completes a degree is associated with an increase in earnings above the increase observed for each previous year of education (Lange and Topel, 2006). In other words, over and above the number of years of higher education, possessing a degree provides an additional boost to one’s earnings. In the United States, for example, data shows that workers who only complete some college earn only marginally more than high school graduates. Workers with a Bachelor’s degree earn more at every percentile than those who completed some college, but did not graduate. These figures suggest that there are significant benefits to completion. Relative to an upper-secondary degree, only completing some higher education and then dropping out does not give the same earnings boost as a higher education degree. It is therefore very important for higher education institutions to help students succeed and graduate.</p>
<p>HE with no degree costs more than it benefits financially, but it can bring other rewards.</p>	<p>Deciding to pursue a degree and failing to obtain one is associated with real costs. If there are tuition fees, students incur financial loss, but they also miss the opportunity to enter the job market sooner, gain experience and potentially find better jobs. Likewise, longer completion times are also associated with additional costs and missed labour market experience.</p> <p>Aside from financial concerns, individuals may still benefit from higher education in other ways, even if they drop out before attaining a degree. Depending on the efforts a student makes, the educational experience can help with cognitive development and the achievement of skills, regardless of the degree. Higher education also opens opportunities for people to network, participate in a knowledge community and potentially teaches them to make healthy living choices (see: section on Non-financial returns to higher education later in this chapter).</p>

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Figure 1.2 Relative earnings of adult 25-64 year-old workers, by educational attainment and gender (2011)

Upper secondary or post-secondary non-tertiary education = 100



Notes: 1. Year of reference 2010; 2. Year of reference 2009; 3. Earnings net of income tax; 4. Year of reference 2005; 5. Year of reference 2007.

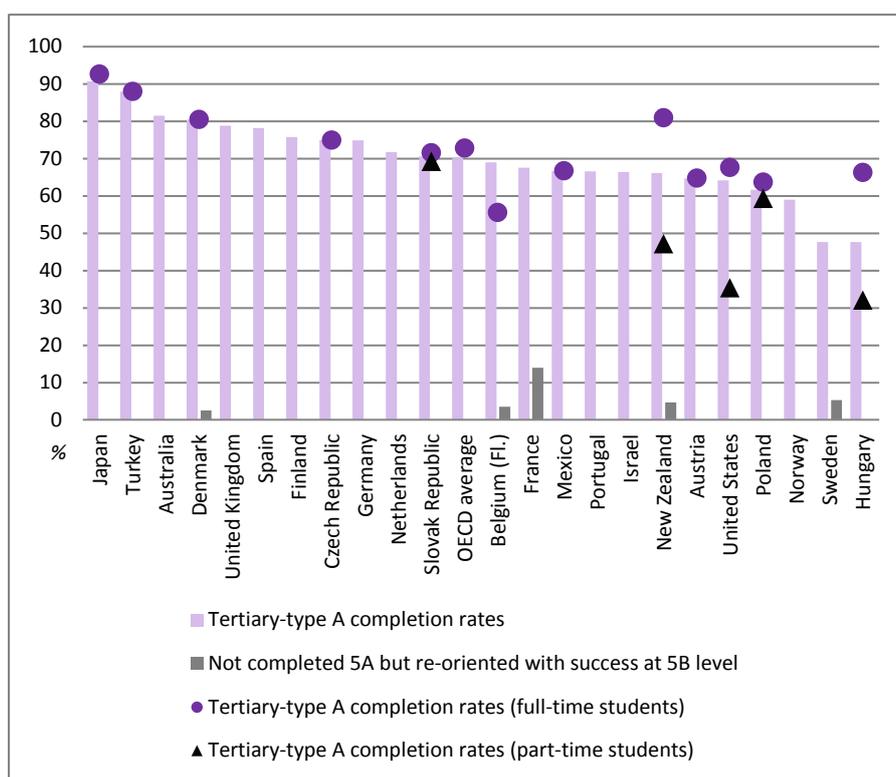
Countries are ranked in descending order of the relative earnings of 25-64 year-old men with tertiary-type A (including advanced research programmes) education.

Source: OECD (2013), *Education at a Glance 2013: OECD Indicators*, Chart A6.2, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2013-en>, Chart: <http://dx.doi.org/10.1787/eag-2013-table51-en>.

The number of HE graduates is consistently rising and is now nearly 40% across OECD countries.

On average across OECD countries, some 30% of higher education students are considered non-completers because they do not graduate from the programme they enter (see Figure 1.3 below). However, completion rates are not the same as graduation rates. Completion rates reflect only the students who start and complete their studies within a given programme at a given institution. Some students enter a study programme at one institution and later transfer to another programme or institution. Even if these students attain a degree, they are counted as non-completers. The graduation rate estimates the percentage of all young people in the higher education age cohort who attain degrees, regardless of where they originally enrolled, what programme they followed or from where they graduated (see Figure 1.4 below). Comparing completion rates and graduation rates shows that, although it seems that around one in three students do not complete their higher education degrees, the number of young people across OECD countries with higher education degrees is consistently rising, from just over 10% in 1995 to nearly 40% in 2011.

Figure 1.3 Proportion of students who enter tertiary-type A education and graduate with at least a first degree at this level, by status of enrolment (2011)



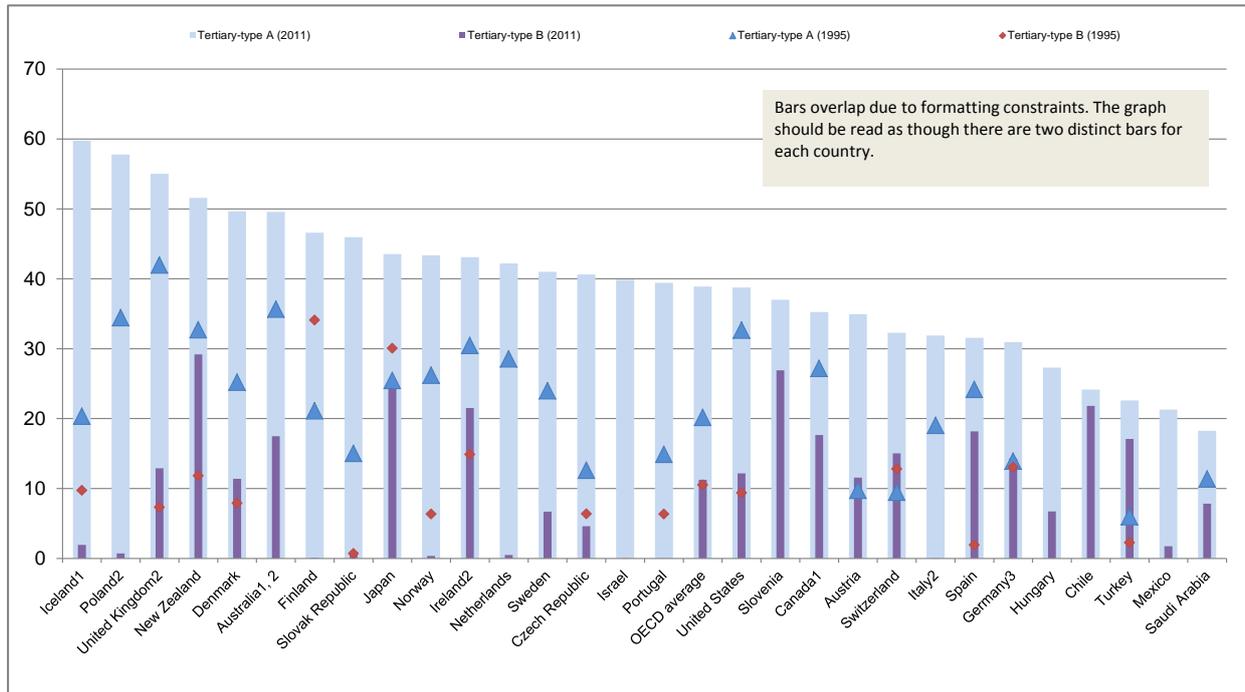
Note: Some of the students who have not graduated may be still enrolled, or may have finished their education at a different institution than the one they originally attended, as occurs frequently in the United States. Please refer to table A4.1 for details concerning methods used to calculate the completion rates.

1. Includes students entering single courses who may never intend to study all courses needed for a degree. Countries are ranked in descending order of the proportion of students who graduate from tertiary-type A education with at least a first degree.

Source: OECD (2013), *Education at a Glance 2013: OECD Indicators*, Chart A4.2, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2013-en>, Chart: <http://dx.doi.org/10.1787/888932846443>.

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Figure 1.4 First-time graduation rates from tertiary-type A and B education (1995 and 2011)



1. Year of reference 2010 instead of 2011.
2. Year of reference 2000 instead of 1995.
3. Break in the series between 2008 and 2009 due to a partial reallocation of vocational programmes into ISCED 2 and ISCED 5B.

Countries are ranked in descending order of first-time graduation rates for tertiary-type A education in 2011.

Source: OECD (2013), *Education at a Glance 2013: OECD Indicators*, Chart A3.2, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2013-en>, Chart: <http://dx.doi.org/10.1787/888932846386>.

There is a market need for even more HE graduates.

Even with more higher education graduates, there are still more skilled jobs in the labour market than people with higher education qualifications to fill them. Likewise, because there is a high demand for higher education qualifications in the labour market, graduates are likely to continue to realise high returns from their degrees. It appears that most countries would benefit if more students attained higher education degrees; however, the choice of study field is important when graduates reach the labour market (see: section on [Study Fields](#) later in this Chapter).

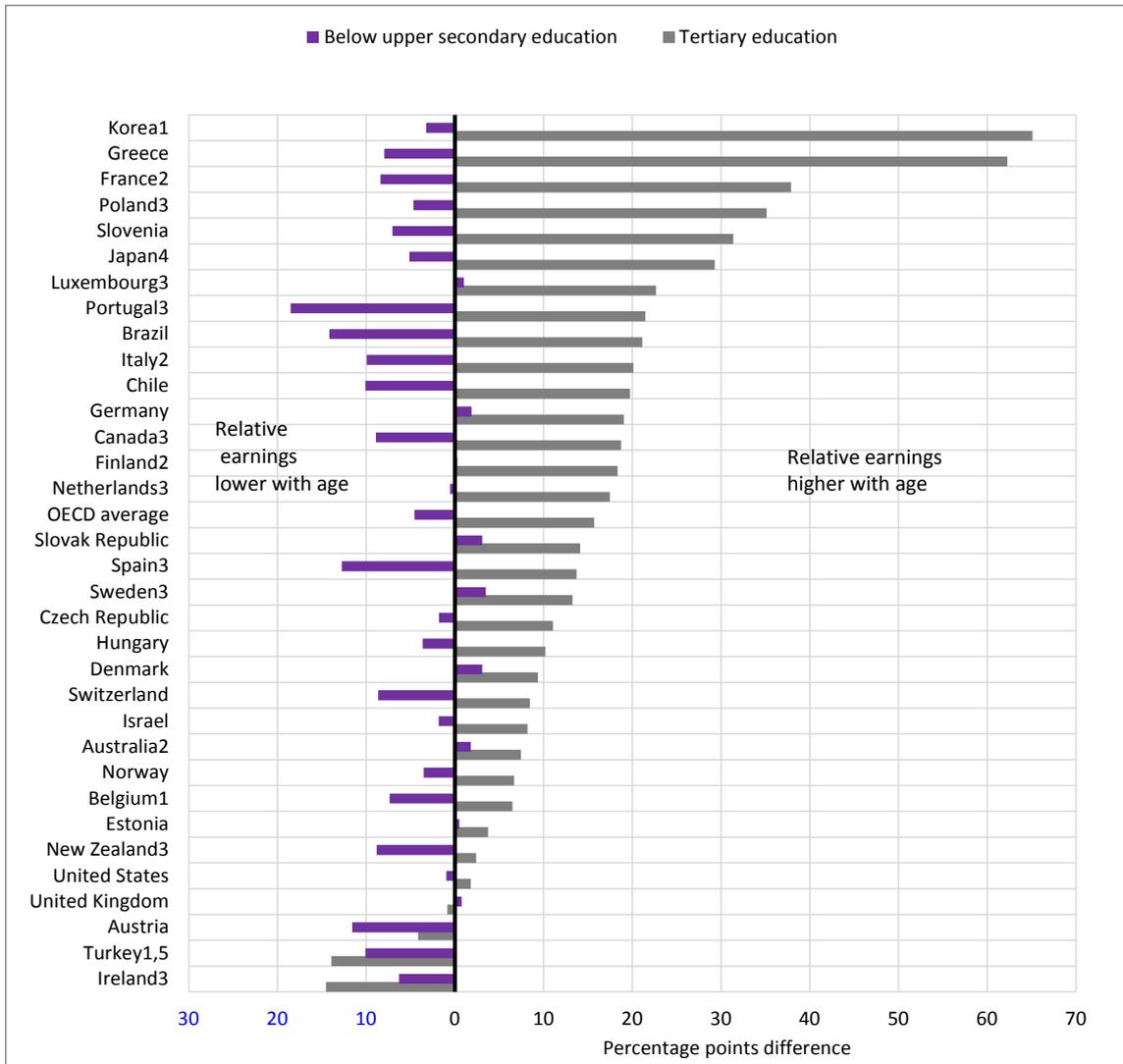
HE degrees become more valuable over time.

The financial value of a higher education degree increases as people age. Likewise, the financial disadvantages of not having a higher education degree also grow with time. Among higher education graduates, people of 55 years and older command higher salaries than younger people with the same level degrees. People with higher levels of education are also more likely to be employed, remain employed and have more opportunities to gain valuable professional experience (See: [Chapter 2](#)).

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Figure 1.5 Differences in relative earnings between older workers and all workers, by educational attainment (2011)

Percentage points difference, earnings relative to upper secondary or post-secondary non-tertiary



Note: 1. Earnings net of income tax; 2. Year of reference 2009; 3. Year of reference 2010; 4. Year of reference 2007; 5. Year of reference 2005.

Countries are ranked in descending order of the difference in relative earnings among 55-64 year-olds and the total population (25-64 year-olds) at the tertiary level of education.

Source: OECD (2013), *Education at a Glance 2013: OECD Indicators*, Chart A6.3, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2013-en>, Chart: <http://dx.doi.org/10.1787/eag-2013-graph43-en>.

Gender gap in private returns

Net HE returns are usually higher for men than for women.

Net private returns to higher education are typically higher for men than for women. The only exceptions are Portugal, where average returns are nearly the same for men and women, and Greece, Spain and Turkey, where returns are higher for women than for men.

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<p>Women benefit more from HE than men.</p>	<p>Regardless the level of education, women consistently earn less than men. The gender gap in wages is greatest for people with less education. This is because, in general, wages for women without higher education are significantly lower than wages for men without higher education. When statistics are controlled for gender, women are likely to benefit more from higher education than men, including women who work in sectors with relatively lower salaries, because women generally earn so little if they do not have higher education degrees.</p> <p>Among people with higher education degrees, women can generally expect to earn around 70% of what men earn. In Austria, Belgium, Finland, New Zealand, Slovenia and Spain, women with higher education degrees are comparatively better off and can expect to earn 75% of what men earn. In Brazil, Chile and Estonia by contrast, women with higher education degrees earn only 65% or less than their male counterparts.</p>
<p>Men are more likely than women to drop out of undergraduate HE.</p>	<p>Despite the fact that male higher education graduates have demonstrably higher earnings potential, men are more likely to drop out in most OECD countries. On average, 59% of all higher education graduates are women. Nonetheless, this higher proportion and success rate of women pertains to the first, undergraduate degree. The higher the level of education, the lower the proportion of women who graduate. Men are still more likely to receive advanced research qualifications across all OECD countries (54% on average).</p> <p>For more information on entry rates, graduation rates and completion rates, see <i>Education at a Glance</i> (OECD, 2013), indicator A4.</p>
<p><i>Earnings overlap</i></p>	
<p>Earnings overlap across the labour market: certain HE graduates earn less than those with no HE degree.</p>	<p>Although people with higher education degrees earn more on average than those without, there are overlaps in earnings levels. Higher education graduates are employed at a wide range of salary levels throughout the labour market. Likewise, there is a wide range of salaries among people without higher education degrees. Some higher education graduates earn less than their counterparts with lower levels of education. This concept is called “earnings overlap”. Overlap happens across the labour market. Within a given occupational category, more highly educated people typically earn more than their peers with less education. However, for example, someone with an upper secondary degree working in science or technology can expect to make more over a lifetime than someone with a higher education degree working in education. Due to the gender gap in earnings, if in the same example the person in science or technology is a man and the person in education is a woman, the overlap can be even more significant.</p>
<p>In most OECD countries, around 10% of HE graduates earn less than half the median income.</p>	<p>When the average is separated out into proportions of people who earn above or below the median income, earnings overlap is evident. Figure 1.6 (below) shows the proportion of people who earn more than twice the median income and those who earn less than half the median</p>

income by education level. The results show that much larger proportions of higher education graduates earn more than twice the median than do people with below upper secondary education. Yet in Brazil, Canada, Estonia, Ireland, Japan and Portugal, 5% or more of people with below upper secondary education also earn more than twice the median.

Also as expected, Figure 1.6 shows that people with below upper secondary education are much more likely to earn less than half the median income; however, in nearly 20 OECD countries around 10% of higher education graduates earn less than half the median.

What a difference a study field makes

Certain study fields lead to greater returns than others.

Earnings overlap across occupations could be of interest for people considering higher education, particularly when deciding on a particular field of study. Large differences in earnings by field of study appear in many countries, although internationally comparable data does not yet exist. Higher education degrees in science, technology, engineering, and mathematics typically lead to jobs with salaries 60% to 90% higher than salaries in arts, education and other humanities fields.

For example, in the United States in 2011, the average annual salary for 25-29 year-olds who had completed a first higher education degree was USD 44 800. However, this average ranged from USD 34 750 for people with degrees in social work to USD 75 700 for people with degrees in computer engineering. Other fields with annual earnings averages over USD 60 000 included several engineering specialities, computer and information systems, management-information systems and statistics. Typical fields with salaries less than USD 38 000 were theology and religious vocations, fine arts and teacher education.

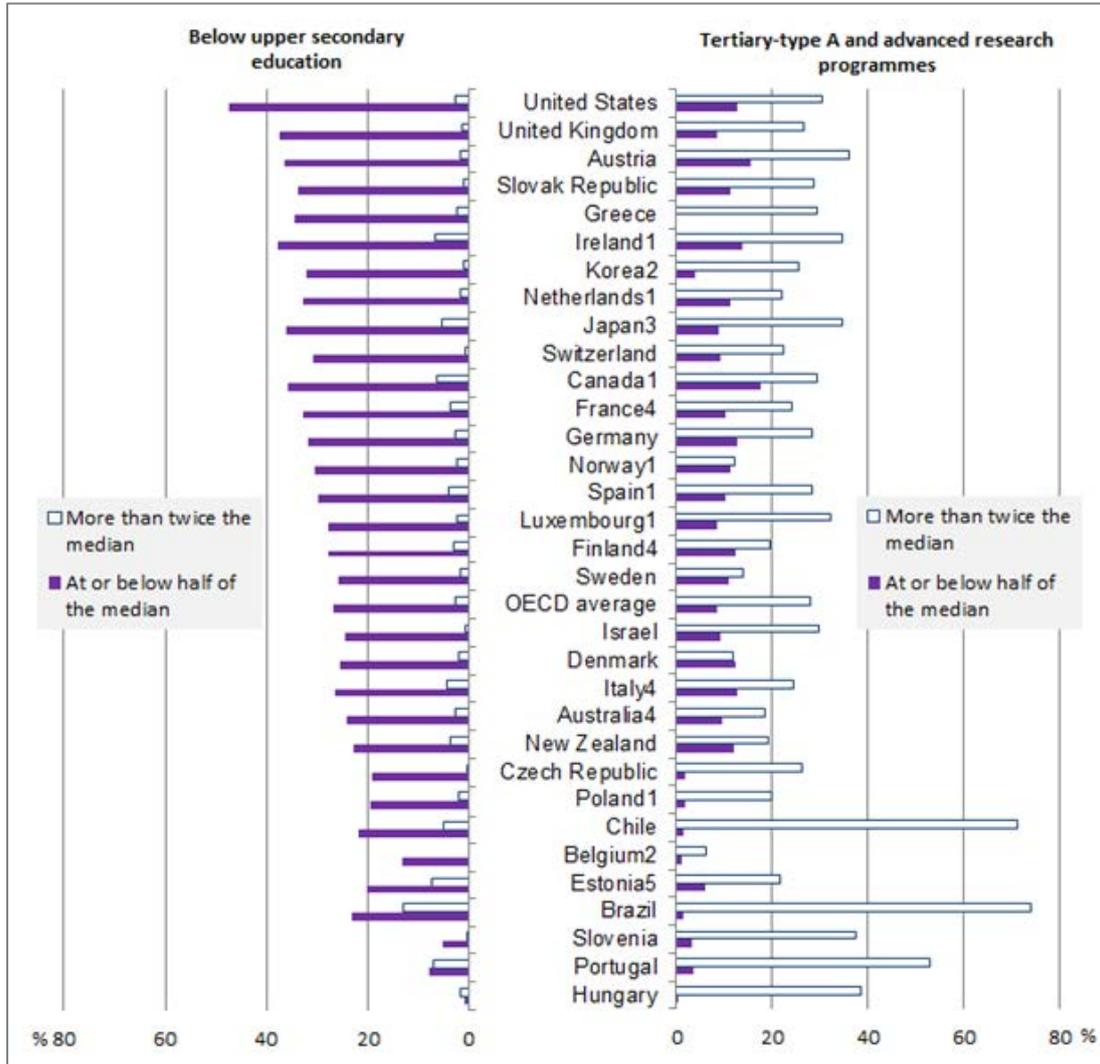
In Canada, the median salaries in 2007 for higher education graduates who studied engineering were about 64% higher than the salaries of graduates who had majored in visual and performing arts. In Sweden, the average 2010 salary for graduates in engineering was 90% higher than the average for graduates who had majored in arts and humanities. The median salaries of higher education graduates in New Zealand who had majored in health were 58% higher than the median salaries of graduates in creative arts fields; the salaries of graduates who had majored in engineering were 45% higher than those in creative arts.

Investing in HE is relatively low risk.

Risk is typically measured by the variation in outcomes. Since higher education can result in a variety of earnings levels, there is a measure of risk in investing in it. Even if direct costs are low or non-existent, there are always indirect costs, such as foregone earnings, to consider. However, given the sustained demand for highly skilled workers in the labour market and the likelihood of higher earnings for most people with higher education degrees, the risk associated with investing in higher education is relatively low.

Figure 1.6 Differences in relative earnings distribution of 25-64 year-old workers, by educational attainment (2011)

Proportion of 25-64 year-olds at or below half the median and the proportion of the population earning more than twice the median, for below upper secondary education and tertiary-type A or advanced research programmes



Notes: 1. Year of reference 2010; 2. Earnings net of income tax; 3. Year of reference 2007; 4. Year of reference 2009; 5. Tertiary-all types and advanced research programmes.

Countries are ranked in descending order of the difference in the proportion of 25-64 year-olds at or below half the median and the proportion of the population earning more than two times the median, at below upper secondary education.

Source: OECD (2013), *Education at a Glance 2013: OECD Indicators*, Chart A6.4, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2013-en>, Chart: <http://dx.doi.org/10.1787/eag-2013-graph44-en>.

Non-financial returns of higher education

HE is central to the well-being of society: better health

The idea that education produces social benefits is not new. Early philosophers such as Aristotle and Plato pointed out that education is central to the well-being of society. Most, if not all policy makers, school administrators, teachers and parents are aware of the wider benefits of learning.

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conditions, lower criminal activity, more social engagement.	Over the last several decades, social science research has consistently pointed out the correlation between higher levels of education among individuals and better health conditions, lower incidence of criminal activity, and higher levels of social engagement. More recently, researchers have started to present evidence suggesting the causal effects of education on diverse social outcomes (OECD, 2010).
HE graduates are more likely to be socially and civically active.	Adults with higher levels of educational attainment are more likely than their less-educated peers to engage in social activities, exhibit greater satisfaction with life and vote. The degree of people's social engagement and life satisfaction varies across different levels of educational attainment, even after accounting for differences in age, gender and income. This suggests that education may influence these outcomes by raising people's skills and abilities, although individual choices, such as type and area of education or the use a graduate makes of his/her credentials are also important.
HE helps people make informed and competent decisions.	Education can enhance social outcomes by helping people make informed and competent decisions. Through higher education, people gain knowledge and information, improve their cognitive skills and strengthen their socio-emotional capabilities, such as conscientiousness, self-efficacy and social skills. Thus, education can help people pursue healthier lifestyles and become usefully engaged in civil society.
HE graduates are more likely to vote.	All OECD countries encourage citizens to vote, yet voting rates vary across age groups. Significant differences in voting behaviour are associated with educational attainment. On average, the gap in the voting rate between adults from 25 to 64 years old differs by 14.8 percentage points between higher education graduates and people without advanced degrees. The gap is widest among young people 25-34 years old, whereby those with higher education degrees vote at a rate about 26.8 percentage points higher than those without degrees.
HE graduates tend to live longer.	Statistically, education is also an important predictor in life expectancy. On average across OECD countries, a 30-year-old man with a higher education degree can expect to live to around the age of 81, i.e. 8 years longer than his peers who have not completed upper secondary school (life expectancy of 73). Differences in life expectancy by education are particularly large in Central European countries and among men more than women.
HE graduates are more likely to enjoy their lives.	Complimentary to longer life expectancy, research suggests that additional education improves overall wellbeing by affecting things such as job satisfaction, health, marriage, parenting, trust, and social interaction. Many people also derive value from their careers in ways that have nothing to do with money. Such noneconomic factors can also change the cost-benefit calculus discussed earlier in this chapter.

Health benefits of higher education

Health is an important policy concern.

Health remains an important policy concern in OECD countries, in spite of the rapid increases in life expectancy overall in recent decades. The nature of health problems has changed significantly with a sharp rise in chronic debilitating conditions, such as diabetes, severe depression and the deterioration of healthy behaviours with regard to diet, exercise and alcohol. This year's Education at a Glance looks at two health indicators, obesity and smoking, and how they are associated with educational attainment.

Obesity

Obesity can affect every aspect of a person's health.

Obesity has reached epidemic proportions, according to the World Health Organisation (WHO, 2008). It is associated with serious chronic diseases, disability, reduced quality of life and shortened life expectancy. Obesity also affects mental health, social life and is associated with negative effects on educational outcomes (OECD, 2010). While the rise in obesity has affected all population groups, evidence suggests that obesity tends to be more common among people, especially women, in disadvantaged socio-economic groups.

HE graduates are less likely to be obese.

On average among OECD countries, approximately 19% of adults are obese. The incidence of obesity is particularly high among people with below upper secondary education (25%) and relatively low among those with higher education (13%). The incremental difference in health outcomes associated with more education (in this case, 12 percentage points) is commonly called the *education gradient*. The education gradient for obesity is particularly steep among women: a 16 percentage point difference, compared to a seven point difference among men.

Educational attainment reduces the occurrence of obesity for everyone, regardless of gender or age.

Women and older adults constitute the highest proportion of people who are obese. Researchers explored whether the relationship between education and obesity were largely driven by age or gender. They explored whether younger cohorts (or women) are less likely to be obese and are also better educated compared to older cohorts (or men). Their findings suggest that the relationship between educational attainment and obesity remains strong, even after accounting for age and gender.

Smoking

10% of adult deaths worldwide are attributed to smoking.

On average across OECD countries, smoking rates have decreased by about one-fifth over the past ten years, with the highest decline among men (OECD, 2011). Nonetheless, smoking is still responsible for about 10% of adult deaths worldwide and is the leading cause of circulatory disease and cancer (OECD, 2011). In all OECD countries except Sweden, more men smoke than

	<p>women. People from socio-economically disadvantaged backgrounds tend to smoke more often and for longer than others.</p>
<p>HE graduates are less likely to smoke.</p>	<p>Across OECD countries, 30% of adults smoke daily. The number of smokers is particularly high among people with below upper secondary education (37%) and low among those with higher education (21%). This education gradient is particularly high with men, with a 20 percentage point difference in the incidence of daily smoking. The education gradient among women is 13 percentage points. Data analysis shows that the relationship between educational attainment and daily smoking generally remains strong, even after accounting for age and gender.</p> <p>Several Central European countries and the predominantly English-speaking countries of Australia, Canada, New Zealand, the United Kingdom and the United States, as well as Norway, show particularly high education gradients. In all these countries, adults with higher education are half as likely to be smoking, compared with those with only below upper secondary education.</p>

Approaches to student financing

<p>HE costs are shifting from public to private funding.</p>	<p>There has been a dramatic shift in responsibility for direct costs of higher education in recent years. The burden of higher education costs worldwide is being shifted from the public sector to private individuals across different social, political and economic systems (Johnstone and Shroff-Mehta, 2004). The shift is taking place in a variety of ways:</p> <ul style="list-style-type: none"> ➤ reducing student grants and raising interest rates on student loans ➤ directing more enrolments away from public institutions to a less subsidised, tuition-dependent private higher education sector ➤ cost sharing, whereby parents and students are increasingly sharing costs that were previously paid primarily by taxpayer contributions via the government.
<p>Cost sharing is the most common approach to student financing.</p>	<p>Cost sharing is the most common approach to student financing. This usually takes the form of tuition fees being introduced for the first time or being increased where they already existed. Cost sharing may also refer to other types of fees, for example for room, board, books and other costs that were formerly covered mainly by public funds.</p>
<p>Cost sharing</p>	
<p>There are three rationales behind cost sharing.</p>	<p>There are three rationales behind the shift toward sharing costs in higher education:</p> <ul style="list-style-type: none"> ➤ 1: the need for revenue from non-governmental sources ➤ 2: the notion of equity, given the large private returns of higher education ➤ 3: market values may help make higher education more responsive to students and society.

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<p><i>1: Revenue is needed, yet HE is not a top priority for public budgets.</i></p>	<p>First rationale for cost sharing: the sheer need for revenue from non-governmental sources. Public budgets are increasingly limited and even when it is recognised as an economic necessity, higher education is unlikely to be a top priority for public spending. Even if taxes are levied successfully, the additional funds in the public treasury are most likely be allocated to elementary or secondary education, public health, sanitation, housing and other public infrastructure or other immediate social needs that are put before higher education (Johnstone and Shroff-Mehta, 2004).</p>
<p>Demand for HE is high and growing.</p>	<p>The public and private demand for higher education has dramatically increased in every country. Higher education is recognised as a major engine of national economic growth and a pathway for individual opportunity and prosperity. Rising demand for higher education comes from:</p> <ul style="list-style-type: none"> ➤ population increases ➤ greater secondary school completion rates, which raises the number of potential higher education applicants ➤ expanded potential pool of students that includes adults as lifelong learners. <p>Demand is particularly high in low-income countries trying to shift from “elite” to “mass” higher education participation to become more economically competitive. But demand is high and rising in nearly every country, including those with near-universal rates of participation.</p>
<p>Public funding cannot cover rising HE costs.</p>	<p>Meanwhile, even as demand for higher education is on the rise everywhere, public funding for higher education is shrinking. Inadequate financing results from the pressure of the demand and the high and rising per-student costs on top of the increasing numbers of students. Per-student costs in higher education generally rise faster than unit costs in the general economy. This is due to the traditional resistance within the institution and among faculty to substituting capital for labour or shedding lower priority programmes and their associated labour costs (Johnstone and Shroff-Mehta, 2004). Teaching in higher education may be less amenable to capital substitution than activities in other sectors. Perhaps the most visible contributor to increasing austerity, however, is the decline in available public revenue.</p>
<p><i>2: “Free” HE exacerbates inequity.</i></p>	<p>Second rationale for cost sharing: the notion of equity. Equity in higher education is the view that the people who personally benefit from higher education should share some of the costs. Several factors support this principle:</p> <ul style="list-style-type: none"> ➤ “Free” higher education is actually paid for by all citizens, including those who do not attend higher education institutions. ➤ A very disproportionate number of higher education students are from middle to upper income families who could and would pay at least a portion of the direct costs if they had to. Some would argue that “free” publicly-subsidised higher education resembles a transfer of payment from the public treasury to affluent families. ➤ It should be theoretically possible to use a portion of collected tuition revenues to help fund

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	<p>means-tested grants and loan subsidies for lower-income students (Johnstone and Shroff-Mehta, 2004).</p>
<p><i>3: Market values may make HE more responsive to students and society.</i></p>	<p>Third rationale for cost sharing: there is a neo-liberal economic notion that says placing a price on higher education as a valuable commodity introduces some of the virtues of the market. Universities should theoretically react by becoming more cost-conscious while students and parents become more discerning “consumers”. Cost sharing should also make universities more responsive to individual and societal needs and encourage students to finish their degrees sooner than later to save costs.</p>
<p><i>Pros and cons of cost sharing</i></p>	
<p>Cost sharing is strongly contested because HE is a public good.</p>	<p>Cost sharing is strongly contested and not easily accepted, especially in countries where higher education is traditionally viewed as a public good or social entitlement. This ideology can stem from the perspective that the public is the major beneficiary of higher education, regardless of the demonstrably high private benefits enjoyed by graduates and their families (see: Annex, Figures A.5 and A.6).</p>
<p>Loans and grants must accompany cost sharing to open access to HE.</p>	<p>Many people object that imposing tuition might exclude lower-income students from accessing higher education. The practical answer to this argument is to introduce generally available loans (loans that do not depend on the creditworthiness of the family) or means-tested student grants, paid for in part from tuition revenue. It is important to ensure that repayment of such loans is income dependent, so as to remove the notion of risk that might deter risk-adverse students from low-income backgrounds from participating. Admittedly, it is extremely challenging to implement a successful student loan system due to the difficulty of means-testing, although some countries have developed rather sophisticated techniques.</p>
<p>If public funding does not improve, cost sharing can support HE quality, access and equity.</p>	<p>Proponents of cost sharing argue that, in countries that cannot afford to inject large amounts of public funding in the sector, austerity in the public higher education system will get worse if funds cannot be raised through private investments. This will likely result in limited enrolments and underfunded, poor quality universities. Since the children of wealthy families will be able to afford higher quality alternatives in the private higher education sector or abroad, the potential students who will be hurt most by this situation would be the very disadvantaged students that resistance to tuition is supposed to protect (Johnstone and Shroff-Mehta, 2004). Without cost sharing, it is almost certain that enrolments will be restricted, and/or the quality of higher education available to the masses and still “free” will continue to decline.</p>

In closing

<p>The public and individuals benefit from HE in financial and non-financial ways.</p>	<p>Higher education generates positive returns to the public in general, as well as to the people who obtain degrees. Although higher education is expensive and costs are high, financial returns are much higher than returns for lower levels of education. In addition, society and higher education graduates enjoy a variety of non-economic returns, including lower crime rates, longer life expectancy, more life satisfaction and better health.</p>
<p>Returns to higher education vary considerably by gender and field of study.</p>	<p>Net private returns to higher education are typically higher for men than for women. Nevertheless, women are likely to benefit more from higher education than men, including women who work in sectors with relatively lower salaries. This is because, in general, wages for women without higher education are significantly lower than wages for men without higher education.</p> <p>Large differences in earnings by field of study appear in many countries, although internationally comparable data does not yet exist. Higher education degrees in science, technology, engineering, and mathematics typically lead to jobs with salaries 60% to 90% higher than salaries in arts, education and other humanities fields.</p>
<p>HEIs should help students succeed and graduate.</p>	<p>Despite the many benefits of higher education, not everyone who enrolls in higher education achieves an advanced degree. Many people drop or fail out of higher education for various reasons and this can be very costly. Although there are some benefits to higher education participation even if no degree is earned, drop-outs do not usually enjoy the same level of returns that degree holders can expect.</p> <p>Higher education institutions should ensure students are informed of the financial and non-financial risks of dropping out of higher education. Student support services can help students succeed and graduate.</p>
<p>The share of public funding for HE is in decline.</p>	<p>Although the dollar amounts of public investment in higher education have increased in recent years, the share of the total cost covered by public funds is in decline. On average across OECD countries, 68% of higher education is publicly funded, down from 77% in 1995 and 71% in 2005. Most of the decline in the share of public investment is happening in non-European countries, where tuition fees are generally higher and enterprises participate more actively in financing higher education.</p>
<p>Countries increasingly rely on cost sharing to finance higher education.</p>	<p>Demand for higher education is high and rising in every country, including countries with near-universal rates of participation. At the same time, higher education costs are rising, in part because teaching in higher education may be less amenable to capital substitution than activities in other sectors.</p>

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As a result, cost sharing is increasingly used to address the need for revenue from non-governmental sources. Beyond the financial rationale, cost sharing is also seen as justified from the perspective of equity, given the large private returns of higher education, and because market values may help make higher education more responsive to students and society.

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CHAPTER 2: HIGHER EDUCATION, THE LABOUR MARKET, SKILLS AND EMPLOYERS' EXPECTATIONS

Introduction

<p>Skills have become the global currency of the 21st century.</p>	<p>Skills have become the global currency of the 21st century. Without proper investment in skills, people languish on the margins of society, technological progress does not translate into economic growth, and countries can no longer compete in an increasingly knowledge-based global society. But this “currency” depreciates as the requirements of labour markets evolve and individuals lose the skills they do not use (OECD, 2012).</p>
<p>ICTs in the workplace have changed what is required of workers and how work is organised.</p>	<p>The introduction of information and communication technologies in the workplace has changed the kinds and levels of skills required of workers. In many cases, ICTs have also changed the very structure of how work is organised.</p> <p>In most OECD countries, at least one-third of economic activity is in high tech manufacturing, communications, finance, real estate and insurance. Many traditionally low skilled sectors are also using advanced technologies now. Agriculture, for example, is being transformed by biotechnology and computerisation.</p>
<p>More than 25% of all workers in OECD countries are professionals or skilled technicians.</p>	<p>In most OECD countries, more than a quarter of all workers are professionals, associate professionals or skilled technicians. Between 1998 and 2008, the number of people employed in these categories increased more rapidly than did overall employment rates in most OECD countries (OECD, 2013c).</p> <p>The share of occupations with highly educated workers has grown, while the share of occupations with both medium- and low-educated workers has declined.</p>
<p>The modern workplace is a place of constant change.</p>	<p>The modern workplace is a place of constant change. Changes to the way work is organised contribute to a changing demand for skills and require that individuals adapt and learn new things.</p>
<p>This chapter covers skills, employers' expectations and the role of HE.</p>	<p>This chapter covers the relationship between labour market patterns, higher education and skills, employers' expectations of higher education graduates, the importance of connections between higher education and the labour market, and the role of workplace learning in preparing students for employability.</p>

Labour market patterns³

Employment rates are highest among HE graduates.	People with higher education degrees are more likely to find employment and remain employed. This finding holds true across all OECD and G20 countries for which data was submitted for OECD's publication <i>Education at a Glance</i> . Across OECD countries, more than 80% of people with higher education degrees are employed, compared with 70% of people with upper secondary or post-secondary non-tertiary education and less than 60% of people with below upper secondary education. See also: Annex, Table A.1 .
HE graduates are more versatile, informed and motivated.	<p>There are several reasons for higher employment rates among higher education graduates:</p> <ul style="list-style-type: none"> ➤ Highly educated workers can perform different types of jobs, including low-skilled jobs when necessary, while less educated workers generally have fewer options. ➤ People who attain higher education may be better informed about the labour market and have more effective job search techniques, both of which reduce the likelihood or duration of unemployment. ➤ Because their salaries are usually relatively high, people with higher education degrees have a greater financial incentive to be employed rather than seek income replacement benefits or stay home (OECD, 2008).
The job market for people with HE degrees is growing.	Not only are people with higher education degrees more versatile on the labour market, the job market for people with higher education degrees is growing, while the share of employment for occupations associated with lower education levels is shrinking on average across OECD countries for which data is available (OECD, 2013c) – see Figure 2.1 (below).
HE graduates usually remain employed as they grow older.	<p>Employment rates at all education levels are highest for young adults between the ages of 25 and 34 and lowest for older adults between the ages of 55 and 64. Among people with higher education degrees, the gap is the smallest: 82% of young adults are employed, compared with 67% of older adults. In light of the figures for people with lower level education (82% of young adults and 41% of older adults are employed) and those without below upper secondary education (58% of young adults and 14% of older adults are employed), it appears that the value of higher education degrees increases as people age, at least with regard to employment prospects.</p> <p>On a very basic level, this can also be understood from an assessment of the types of jobs people with different education levels are likely to hold. Most people with low educational skills hold jobs</p>

3. Information and data in this section are from the OECD publication *Education at a Glance 2013*, unless otherwise noted. The publication covers OECD and G20 countries for which data was submitted.

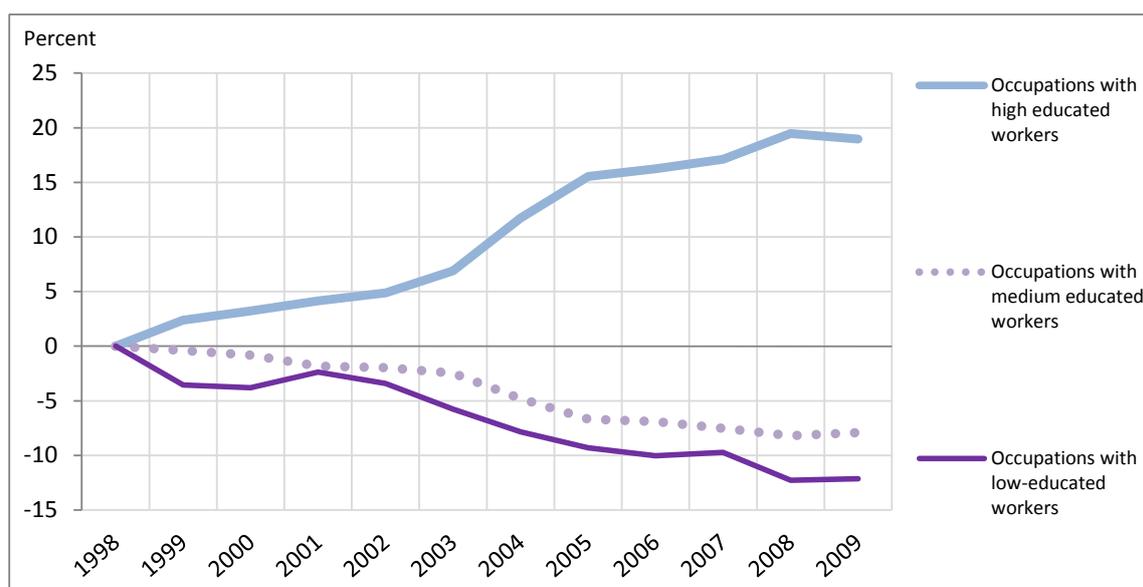
that require physical labour or routine tasks. The risk of unemployment due to injury or age is higher for these types of employment. Most people with higher level skills will hold jobs with less physical activity. The risk of injury at these types of jobs is lower and such work can be continued well into the age of retirement and even beyond.

People with HE degrees are more likely to remain employed during financial crisis.

In the knowledge-based economy, people with less education have a higher risk of being unemployed. Since the onset of the global recession in 2008, people with below upper secondary education have lost their jobs at much higher rates than people with any kind of education degree: unemployment rates across the OECD rose from 8.8% to 12.6% for people in this category. People with upper secondary or post-secondary non-tertiary education were also affected to a large degree. Although the unemployment rate for people with higher education degrees also rose, the increase has been marginal (1 to 2 percentage points) in most countries. Meanwhile, in Brazil, Chile and Germany, unemployment rates decreased for people with higher education degrees.

Figure 2.1 Evolution of employment in occupational groups defined by level of education

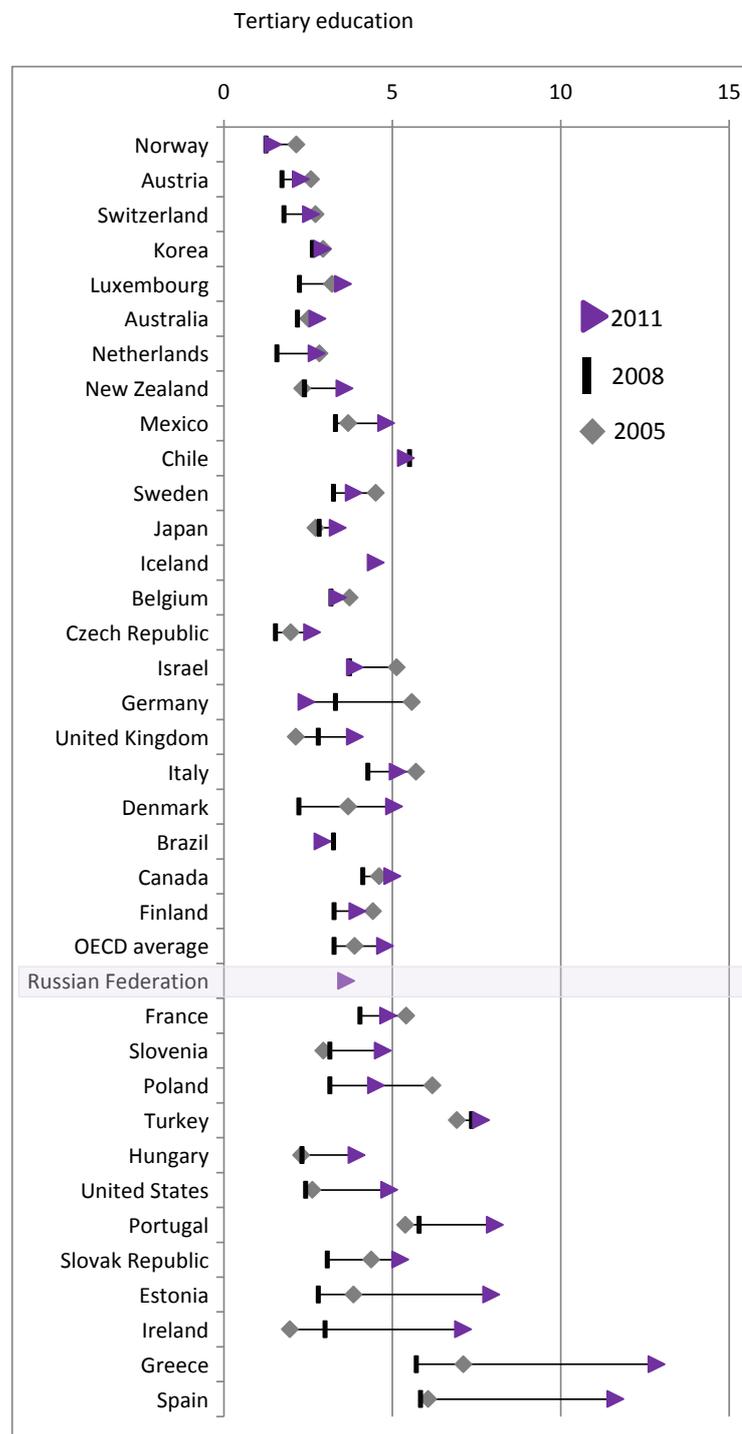
Percentage change in the share of employment relative to 1998, by occupational groups defined by workers' average level of education



Notes: Only the 24 OECD countries available in the 1998 LFS database are included in the analysis. High level of education refers to tertiary level or more than 15 years of schooling; medium level of education refers to no tertiary but at least upper secondary education or around 12 years of schooling; low level of education refers to less than upper secondary education or 11 years of schooling. Occupations with high-educated workers: legislators and senior officials; corporate managers; physical, mathematical and engineering science professionals; life science and health professionals; teaching professionals; other professionals; physical and engineering science associate professionals; life science and health associate professionals; teaching associate professionals; and other associate professionals. Occupations with medium-educated workers: managers of small enterprises; office clerks; customer services clerks; personal and protective services workers; models, salespersons and demonstrators; extraction and building trades workers; metal, machinery and related trades workers; precision, handcraft, craft printing and related trades workers; stationary plant and related operators; and drivers and mobile plant operators. Occupations with low-educated workers: other craft and related trades workers; machine operators and assemblers; sales and services elementary occupations; and labourers in mining, construction, manufacturing and transport.

Source: OECD (2013), *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*, OECD Publishing, Paris, Figure 1.4, <http://dx.doi.org/10.1787/9789264204256-en>, Figure: <http://dx.doi.org/10.1787/888932900289>.

Figure 2.2 Unemployment rates among 25-64 year-olds, by educational attainment (2005, 2008 and 2011)



Countries are ranked in ascending order of 2011 unemployment rates among 25-64 year-olds with upper secondary or post-secondary non-tertiary education.

Source: OECD (2013), *Education at a Glance 2013: OECD Indicators*, Chart A5.2, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2013-en>, Chart: <http://dx.doi.org/10.1787/888932846500>.

<p>Jobs requiring an HE degree have remained stable after the global recession.</p>	<p>These findings reflect the relative stability of employment requiring higher level skills. Immediately following the global economic crisis, private sector fields such as construction were hit hardest; the majority of employees in such fields are young men with low levels of educational attainment. Fields such as education, health, science and business, where employees are more likely to hold higher education degrees, have been significantly less affected.</p> <p>See also: Annex, Table A.1 and Figure A.8.</p>
<p>Unemployment rates for women with HE degrees increased after the economic crisis.</p>	<p>From 2010 to 2011, two years after the global economic crisis, employment rates have generally improved at least slightly for almost everyone, particularly for younger men with little education who were hit hardest by the crisis. Women with higher education degrees were the exceptions: unemployment rates for people in this category rose slightly across OECD countries. Younger women were affected more than older women, which may indicate that hiring in some fields dominated by women has slowed or that, because women outnumber men in undergraduate higher education, the number of women coming into the labour market is not being accommodated, despite the demonstrated high demand for people with high skill levels.</p>
<p>Gender gap in employment</p>	
<p>Employment rates are higher amongst men.</p>	<p>From the public policy perspective, long-term economic growth requires full engagement by as many highly skilled people as possible. However, on average across OECD countries and all education levels, only 65% of women are employed compared with 80% of men. This concern does not take into account the possible non-economic advantages of having highly educated people engaged outside of the labour market, for example for family health, community service or cultural contributions; however, in terms of financial returns on public and private investment in education, it is optimal for highly educated people to be gainfully employed.</p>
<p>Women with HE degrees are much more likely to be employed than women without degrees.</p>	<p>Women who have higher education degrees are more likely to be employed than women without degrees. The gap between men's and women's employment rates is smallest among people with higher education degrees, where the difference is less than 10 percentage points on average. Among people with upper secondary or post-secondary non-tertiary education, the gap is around 15 percentage points and for people with below upper secondary education it is more than 20 percentage points (69% for men and 48% for women).</p>
<p>Certain policy measures could increase women's participation in the labour market.</p>	<p>In Canada, Japan, New Zealand and the United States, where there are large proportions of women with higher education degrees compared to the OECD average, the employment rate of women is still below the OECD average. In economic terms, it would benefit overall growth if more highly educated women had well-paying jobs. Some policy measures could help increase women's participation in the labour market, including providing childcare subsidies with employment;</p>

increasing the availability of affordable, flexible, high-quality childcare services, especially for single mothers; providing maternity and paternity leave; and offering flexible working hours. In Sweden, the expansion of childcare services during the 1970s is thought to have helped increase women's employment rates from 60% to over 80% (Kamerman and Moss, 2009).

The importance of study field

It is difficult to match HE outcomes with labour market needs.

From a public policy perspective, it could be useful for a well-functioning economy to improve the match between labour market needs and the supply of higher education graduates in certain study fields. However, labour markets are volatile and it is difficult to predict future needs. Furthermore, in the knowledge economy, where cutting edge skills and capacities can become outdated quite quickly, trends can be foreseen at best for the medium term; higher education, meanwhile, is a long term endeavour in which outcomes may become apparent only years after a student graduates.

Student study field choices do not always correspond to labour market needs.

In many countries, public officials and business leaders are concerned that students are not making optimal study choices for the economy – i.e. study fields in which students enrol do not correspond to the needs of the labour market. In some OECD countries, there are concerns that the number of students in the arts, social sciences, law and business fields far exceeds labour market demand, while the number of students enrolled in health-related studies, natural sciences and engineering is too low to meet demand. **Under pressure as a driver of economic development, higher education institutions must strive for a balance between autonomy to protect academic freedom and labour market relevance** (see: [Vrioni, Chapter 4](#)).

There is a wide range of employment outcomes for HE graduates in different study fields.

Although people with higher education degrees are generally employed at higher rates than those without degrees, this is not the case for all graduates from all types of higher education programmes. There is a range of employment outcomes for degree holders from various types of programmes. Some occupations pay well yet are unstable; some are unstable and pay badly; and others are stable and pay very well.

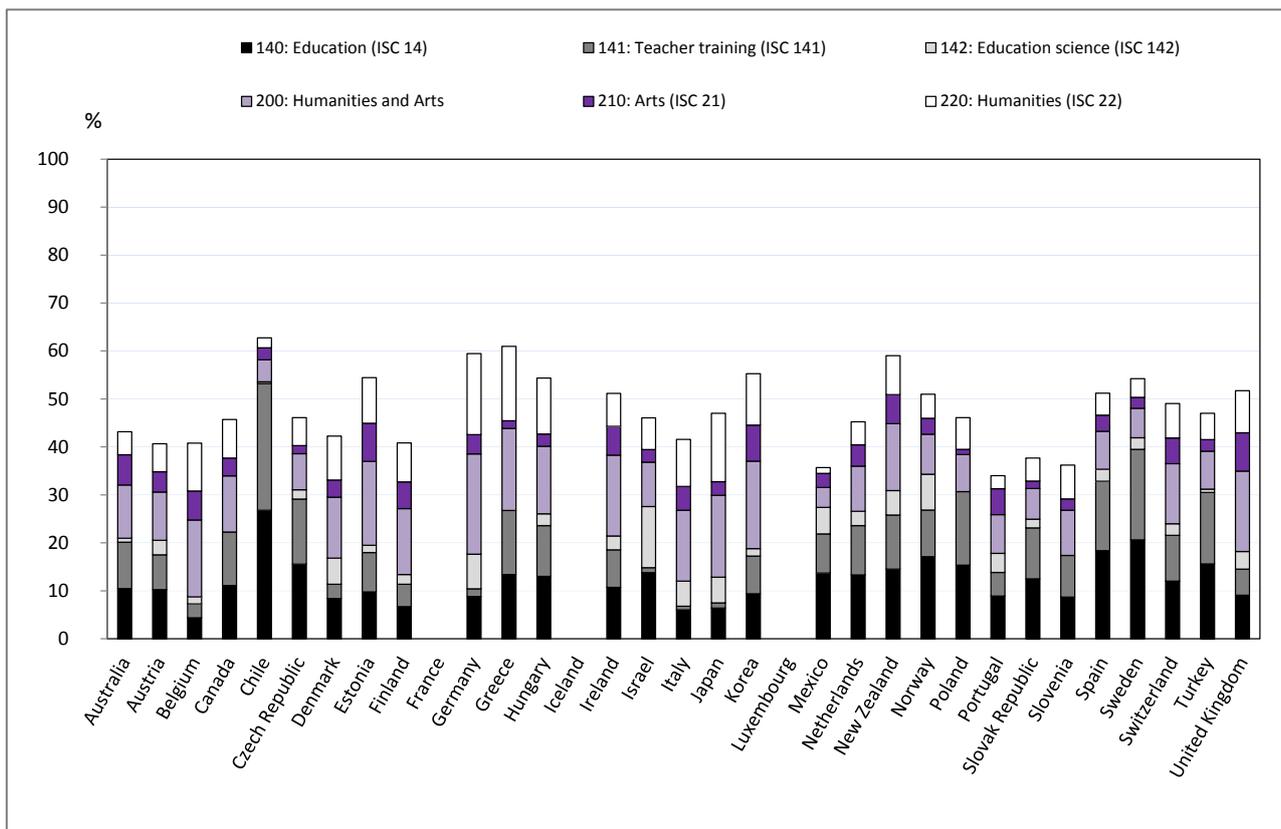
For example, in the United States:

- engineering and computer fields: higher than average salaries; higher than average unemployment rate
- mechanical engineering and nursing: relatively high salaries; low unemployment rates
- history, philosophy, religious studies: below-average salaries; higher than average unemployment rates
- education and social services: below-average earnings; one of the lowest unemployment figures of any study field at 2.4%.

	Unstable (high unemployment)	Stable (low unemployment)
Higher salaries	Engineering, computers	Mechanical engineering, nursing
Lower salaries	History, philosophy, religious studies	Education, social services

Other OECD countries have also observed a relatively wide range of unemployment rates by field of study. A study of higher education graduates in Canada found that the 2007 unemployment rates ranged from 3% for people in agriculture, health and engineering, to 8% for those in education. Such findings illustrate the complexity and diversity in outcomes for higher education graduates entering the labour market according to their country of employment.

Figure 2.3 Tertiary graduates by field of education (2011)



Note: In 2011, some 5% of Japanese tertiary students that graduated in tertiary education did it in a Sciences-related field.

Source: OECD (2011), OECD.Stat (database), <http://dx.doi.org/10.1787/data-00285-en>; <http://stats.oecd.org/>.

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<p>Women tend to choose study fields with lower returns in the labour market.</p>	<p>Women and men tend to study different subjects at the higher education level, with consequences for their respective careers in the labour market. Many more women complete programmes in the humanities, arts, education, health and welfare. By contrast, more men complete programmes in mathematics, science and engineering.</p> <p>A 2006 study estimating the returns to higher education by field of study in France, Germany, the United Kingdom and the United States found that an arts degree had the lowest relative return in all countries for both men and women. By contrast, the returns for science, engineering and technology degrees were higher, especially for men. Such findings are broadly consistent with what is perceived in other countries: that science, engineering and technology degrees provide greater relative returns and these study fields are dominated by men (Machin & Puhani, 2006).</p>
<p>Initiatives to promote gender equality across study fields have had little success.</p>	<p>There are many initiatives to promote gender equality in OECD countries and at the EU level. For example, in 2000, the European Union established a goal to increase the number of higher education graduates in mathematics, science and technology by at least 15% by 2010 and to reduce the gender imbalance in these subjects. So far, however, there has been relatively little progress towards this goal. The Czech Republic, Germany, the Slovak Republic and Switzerland are the only countries in which the proportion of women in science grew by at least 10 percentage points between 2000 and 2010. Among the OECD countries, the proportion of women in science grew from 40% in 2000 to 42% in 2010, even as the proportion of women graduates in all fields grew from 54% to 58% during the same period. The proportion of women in engineering, manufacturing and construction is still low and increased only slightly from 23% to 27% over the past decade. Higher education institutions can also implement career counselling and student guidance services to help promote gender equality across study fields.</p>
<p>Students should be well informed about the labour market.</p>	<p>It is broadly assumed that if student demand is to align higher education provision with the needs of labour markets, students must be well-informed about labour market outcomes when choosing a field of study. Moreover, higher education institutions must be able and willing to respond to students' choices and public authorities must provide a policy framework that accommodates students' choices, as well as institutional responsiveness to students and labour markets.</p>

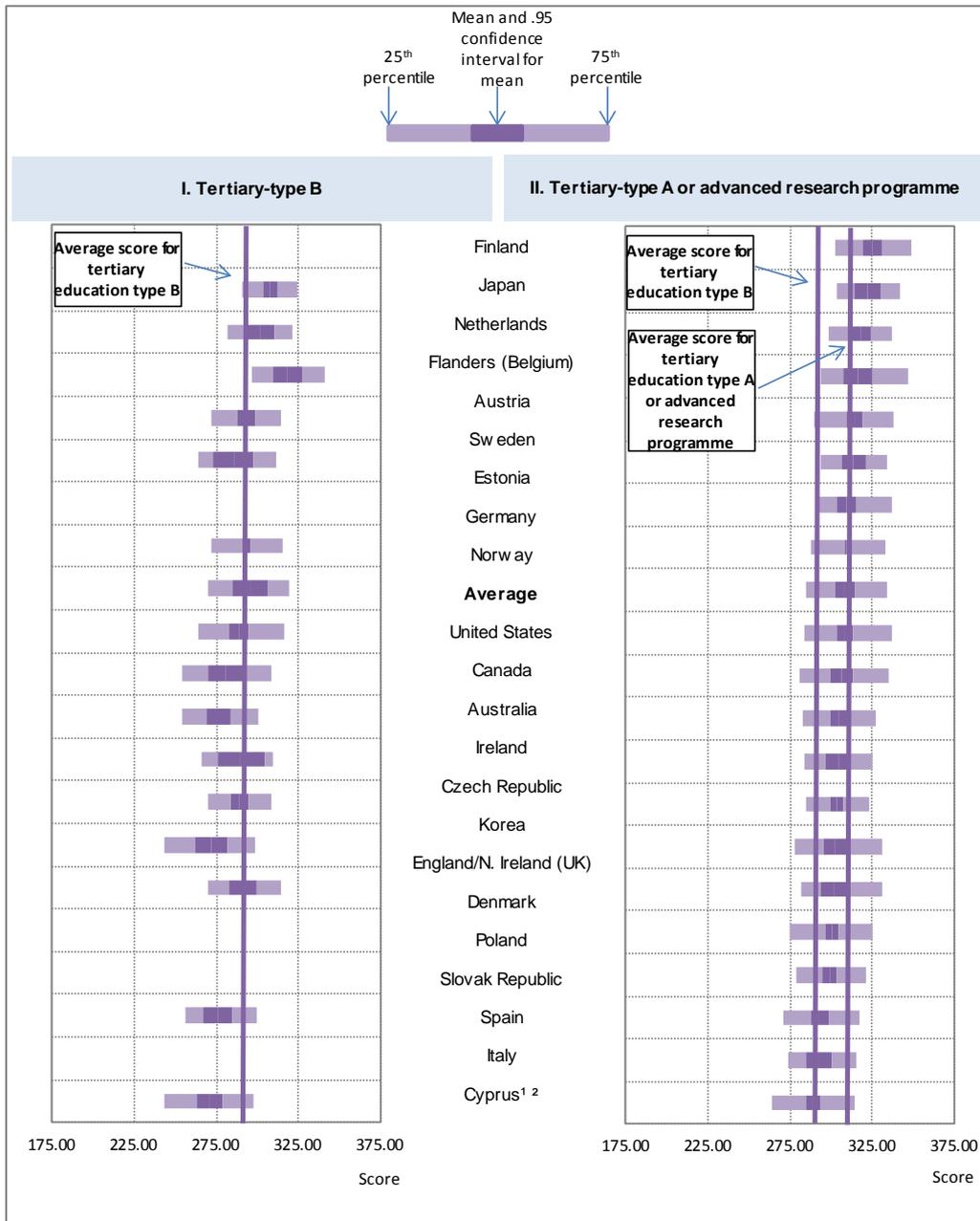
Relationship between higher education and skills⁴

<p>PIAAC assesses proficiency in key information-processing skills among working-age adults.</p>	<p>In October 2013, the OECD published the first international report on the <i>Survey of Adult Skills</i> (PIAAC). The Survey (OECD, 2013c) was designed to give insights into who has key skills and where individuals develop and use their skills. The skills measured by the Survey are literacy, numeracy and problem solving in the context of technology-rich environments. These skills are “key information-processing competencies” that are relevant to adults in many social contexts and work situations. Such skills are also considered necessary for people to fully integrate and participate in the labour market, education and training, and social and civic life.</p> <p>PIAAC surveyed around 166 000 adults, aged 16 to 65, in 24 participating countries and sub-national regions. It collected a range of information on the reading- and numeracy-related activities of respondents, the use of information and communication technologies at work and in everyday life, and on a range of generic skills required of people at work. Respondents are also asked if their skills and qualifications match their work requirements and whether they have autonomy over key aspects of their work.</p>
<p>PIAAC shows that the higher educational attainment an individual has, the higher his/her key information-processing skills score is.</p>	<p>The PIAAC results show a strong positive association between educational attainment and proficiency in the information processing skills assessed. The study clearly shows that the higher educational attainment an individual has, the higher his/her key information-processing skills score is. Proficiency rises on average with increasing attainment and adults with higher education qualifications usually demonstrate the highest levels of key skills, although there is considerable variation in proficiency among higher education graduates. This is likely to be due, in part, to differences in the quality of education and because skills can also be developed outside the formal education system, as well as lost through lack of use or the effects of biological aging. In the end, a person’s skill level depends on what he or she has the opportunity and chooses to learn, as well as when and how well.</p>
<p>People with HE degrees usually score higher than people from vocational education.</p>	<p>Figure 2.4 compares the distribution of literacy skills among adults with tertiary level qualifications. The chart distinguishes between tertiary-type B (vocationally oriented) and tertiary-type A (academically oriented) studies. As can be seen in the left panel of the Figure, young adults from vocationally-oriented programmes score significantly lower, on average, than those from academically-oriented programmes. The results for adults age 16 to 29 show most clearly the impact of educational attainment on proficiency, since aging and different career trajectories later in life can also influence proficiency.</p>

4. This section presents the findings from the first international report on the *Survey of Adult Skills* (PIAAC) (OECD, 2013c), unless otherwise noted. See also: www.oecd.org/site/piaac/

Figure 2.4 Literacy proficiency among young adults with tertiary education

Mean literacy proficiency and distribution of literacy scores, by educational attainment, 16-29 year-olds



Countries are ranked in descending order of the mean literacy score of adults aged 16-29 with tertiary, type A or an advanced research programme.

1. Note by Turkey:

The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

2. Note by all the European Union Member States of the OECD and the European Union:

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Notes: Tertiary-type B corresponds to the International Standard Classification of Education (ISCED) category ISCED 5B. Tertiary-type A corresponds to ISCED 5A and advanced research programmes correspond to ISCED 6. Estimates based on a sample less than 30 are not shown in panel I and II. The estimate for Tertiary-type B for Finland is based on a sample size very close to 30 and is not shown at the country's request.

Source: OECD (2013), *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*, OECD Publishing, Paris, Figure 5.5d (L), <http://dx.doi.org/10.1787/9789264204256-en>, Figure: <http://dx.doi.org/10.1787/888932902151>.

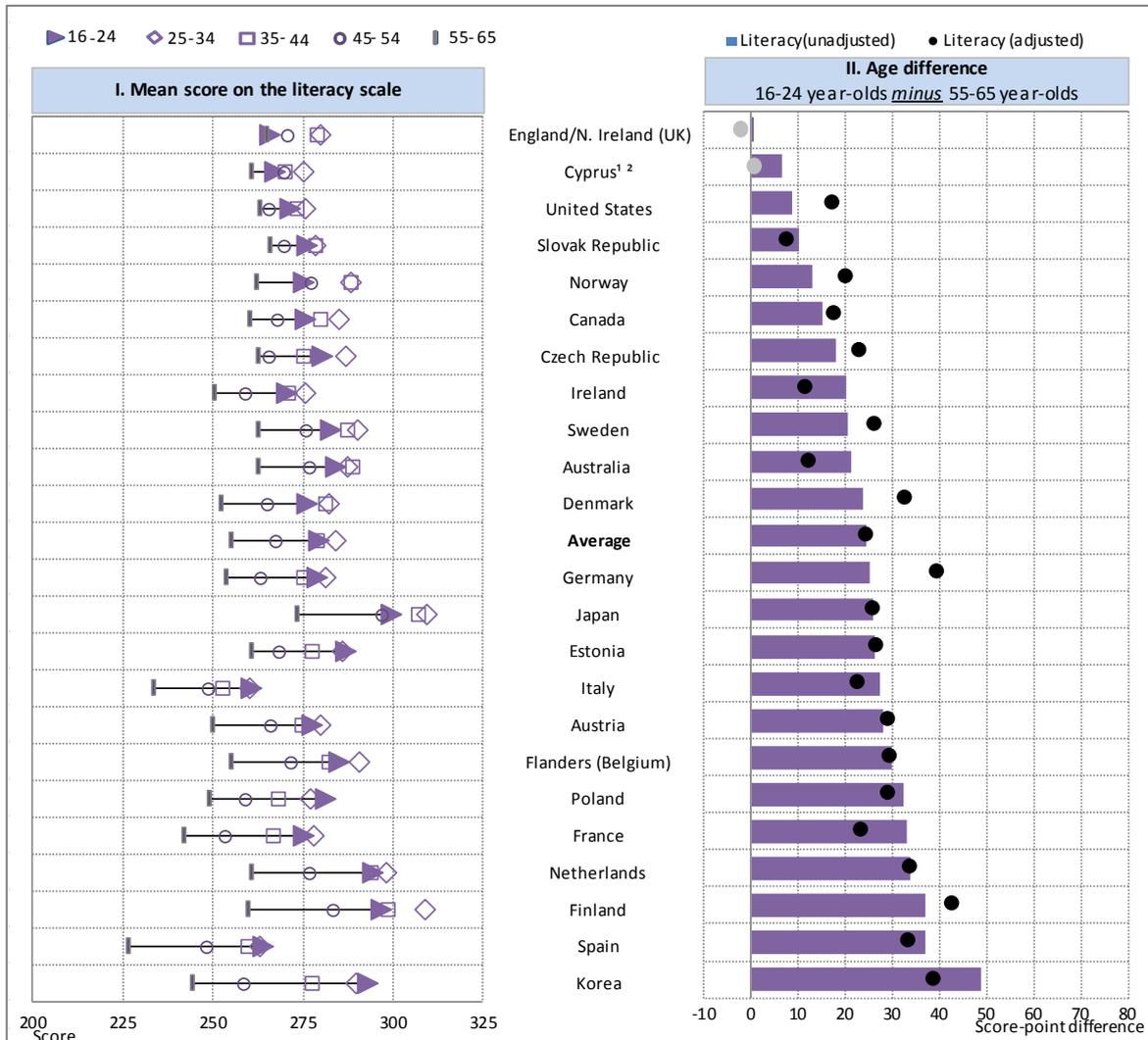
CHAPTER 2: HIGHER EDUCATION, THE LABOUR MARKET, SKILLS AND EMPLOYERS' EXPECTATIONS

<p>Higher education raises the overall average proficiency level of the population.</p>	<p>Higher education offers the opportunity to develop high level information-processing skills at an age ideally suited to learning. At the same time, individuals with greater proficiency in key information-processing skills are more likely to participate in higher levels of education.</p>
<p>There is a two-way relationship between education and the people who have or easily acquire skills.</p>	<p>There is a two-way relationship between education and skills. Education helps people develop technology-related, numeracy and literacy skills. People who are good at math and/or information and communication technologies tend to do well in school and many choose to continue on to higher education. Similarly, reading helps people develop and maintain their reading skills, and people who are good at reading tend to like reading and to read often and, thus, improve their reading skills even more.</p>
<p>The relationship between education and proficiency depends largely on the experience and quality of compulsory education.</p>	<p>One of the explicit goals of the school systems in the countries that participated in PIAAC is to ensure that students leave compulsory education with adequate literacy and numeracy skills and with the ability to use information and communication technologies. The level and type of formal learning students achieve has a direct impact on their skill levels. Formal learning is also indirectly related to individuals' proficiency as working adults: skills learned in school determine who has access to jobs and further education or training that help people maintain and develop their skills. The education system is also the place and time when people develop their dispositions, attitudes and practices that facilitate lifelong learning, such as an interest in reading or positive attitudes toward learning.</p>
<p>People from socio-economically advantaged backgrounds usually have higher scores than people from disadvantaged backgrounds.</p>	<p>Like previous international surveys (the International Adult Literacy Survey and the Adult Literacy and Lifeskills Survey), PIAAC shows that people from socio-economically advantaged backgrounds have higher scores on average than people from disadvantaged backgrounds. The strength of the association between skills proficiency and socio-economic background varies widely across countries and, within countries, between different age groups. With the massification of higher education, access to education and better quality of education may make socio-economic background a less important factor in skill development.</p>
<p>Policy makers are challenged to ensure higher education is accessible to and supportive of everyone aspiring to achieve or improve information-processing skills.</p>	<p>Although skills can be developed outside the formal education system, individuals that achieve tertiary education possess higher key information-processing skills than those who do not. It is therefore in the interest of each society to ensure that compulsory education systems succeed in teaching students the fundamental skills necessary to continue learning. Although not everyone chooses to pursue a higher education degree, access to higher education should be open to all based on merit, regardless of socio-economic background.</p> <p>In systems where students' skill levels after compulsory education are too low for them to succeed in higher education, strategies to ensure compulsory education prepares students well for higher education should be implemented. These could include improvements to teacher education,</p>

	<p>curriculum reform or appropriate student support services. At higher education institutions, remedial programmes can also help students develop the skills they need to access and succeed in their post-compulsory education.</p>
<p>Generally, proficiency peaks at around age 30.</p>	<p>All individuals are different. Some people develop skills as they age, some lose skills, and some maintain them. However, on average across all countries participating in the PIAAC survey, proficiency peaks at around age 30. The age curve (see Figure 2.5, below) reflects proficiency levels of different age cohorts rather than that of individuals over time. It shows that older age groups display lower levels of proficiency than the youngest.</p>
<p>Education accounts for proficiency increases from ages 16 to 30.</p>	<p>The increases in proficiency observed across cohorts aged from 16-30 years are likely to be related to the fact that, in most countries, significant proportions of young people continue in education or training until their mid- to late 20s. In other words, participation in education and training after the age of 16 continues to add “value” by helping people increase their proficiency in information-processing skills.</p>
<p>Older people tend to have lower proficiency on average than younger people.</p>	<p>On average, older people tend to have lower proficiency than younger people. The decline in proficiency by age observed for adults is likely to be related to a range of factors, including the quantity and quality of the education received, opportunities for skills development and the effects of age-related cognitive decline. However, even when educational attainment and other factors are taken into account, age continues to have a strong relationship to proficiency. The important country differences in average age-skills profiles (see Figure 2.6, below) suggests that social and economic factors, such as the kinds of jobs that are prevalent in an economy, may also affect the relationship between age and skills. Policy and other circumstances may help reduce skill losses over time.</p>
<p>Faced with an aging workforce, HEIs can help policy makers implement measures for successful aging.</p>	<p>It is important to understand the underlying reasons for performance changes as people age. Many OECD countries have experienced steep drops in fertility combined with increases in life-expectancy and greater numbers of adults working beyond the age of 55. The average age of the workforce is rising. As the proportion of young people in the labour force shrinks, it becomes extremely important to up-skill or re-skill the existing, older workforce. Policy makers face the challenge of identifying factors and conditions that may relate to successful aging, such as effective education for the young, effective adult education, and certain physical, mental and social conditions that facilitate cognitive development. Higher education institutions can be instrumental in such efforts.</p>

Figure 2.5 Age differences in literacy proficiency

I. Mean literacy proficiency, by 10-year age groups
 II. Mean literacy score difference between the youngest (16-24 year-old) and oldest (55-65 year-old) adults



Countries are ranked in ascending order of the unadjusted difference in literacy scores (16-24 year-olds minus 55-65 year-olds).

1. Note by Turkey:

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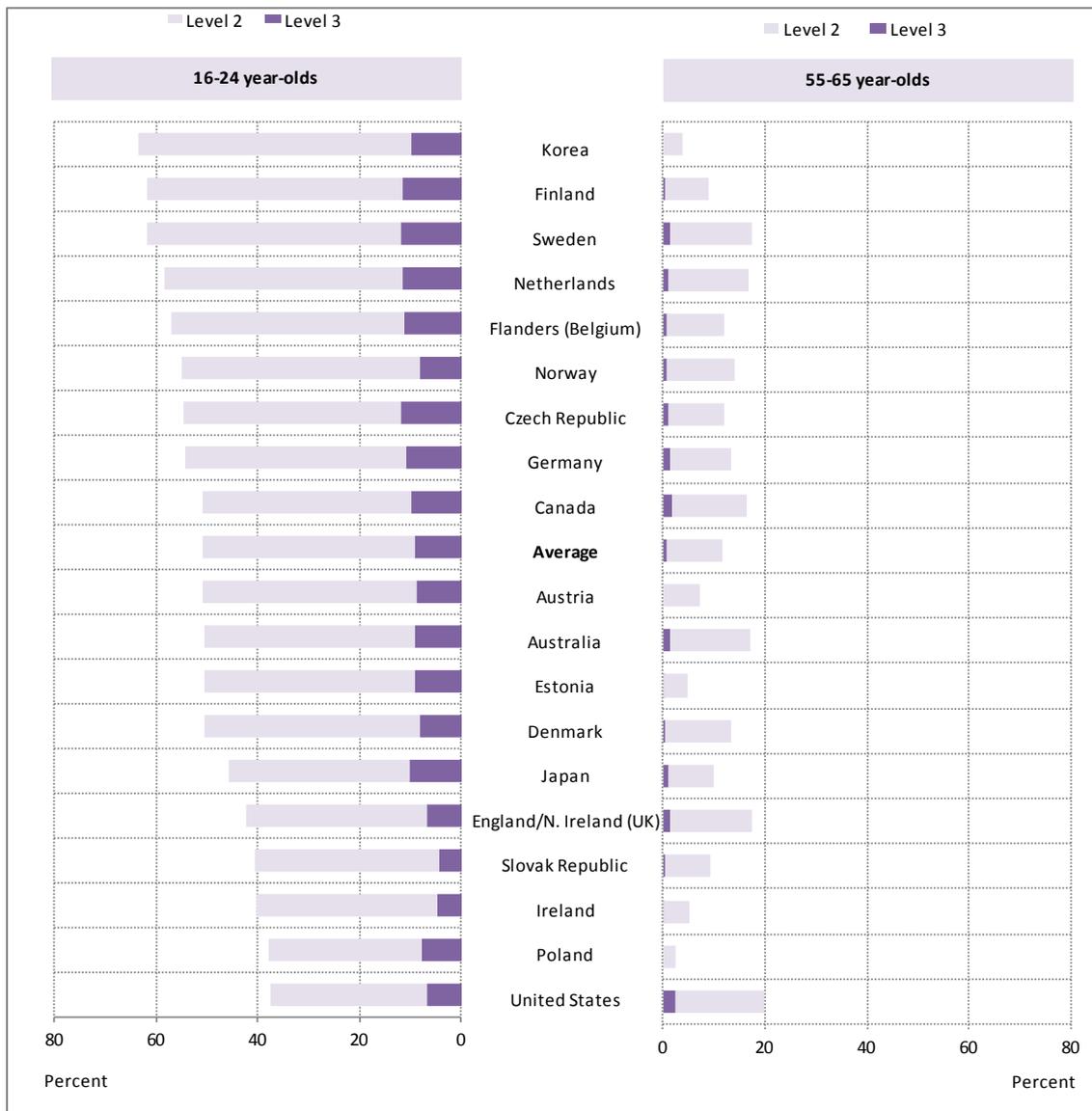
Notes: Statistically significant differences in panel II are marked in a darker tone. Unadjusted differences are the differences between the two means for each contrast category. Adjusted differences are based on a regression model and take account of differences associated with other factors: gender, education, immigration and language background, socio-economic background, and type of occupation. Only the score-point differences between two contrast categories are shown in panel II, which is useful for showing the relative significance of age vis-a-vis observed score-point differences. All adults aged 16 to 65, including the non-employed, are in the analysis. For more detailed regression results, including for each category of each variable included in the model, see table B3.17(L) in Annex B.

Source: OECD (2013), *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*, OECD Publishing, Paris, Figure 3.2 (L), <http://dx.doi.org/10.1787/9789264204256-en>, Figure: <http://dx.doi.org/10.1787/888932900840>

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Figure 2.6 Problem-solving proficiency among younger and older adults

Percentage of adults aged 16-24 and 55-65 scoring at Level 2 or 3 in problem solving in technology-rich environments



Countries are ranked in descending order of the combined percentage of adults aged 16-24 scoring at Levels 2 and 3.

Notes: Percentages on the problem solving in technology-rich environments scale are computed so that the sum of proportions for the following mutually exhaustive categories equals 100%: opted out of the computer-based assessment; no computer experience; failed ICT core test; below Level 1, Level 1, Level 2 and Level 3. For more detailed results for each category, see corresponding table mentioned in the source below.

Source: OECD (2013), *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*, OECD Publishing, Paris, Figure 3.3 (P), <http://dx.doi.org/10.1787/9789264204256-en>, Figure: <http://dx.doi.org/10.1787/888932900859>.

<p>Practice reinforces proficiency and proficiency facilitates practice.</p>	<p>The best way to develop and maintain skills is to use them. Indeed, there is a two-way relationship between proficiency in information-processing skills and the practices that require using those skills: practice reinforces proficiency, and proficiency facilitates practice. For example, people with already-high skill levels are more likely to gain access to jobs that require still higher skill levels. In turn, holding a job that requires regular use of literacy, numeracy and problem-solving skills helps people develop and maintain these skills.</p>
<p>HEIs can help employers provide at-work skill development opportunities.</p>	<p>Skill development takes place within and outside formal education. Training at work and regular work tasks can be tailored to help people practice and develop their skills. Higher education institutions can work with employers to develop training programmes, train trainers and raise awareness about the need for at-work skill development.</p>
<p>Adult education helps people maintain skills and re-skill for new types of work.</p>	<p>Although it may not be optimal, skills can be developed or re-learned later in life. In systems where many older adults have lost skills or have low proficiency levels, adult education programmes can be instrumental in helping people improve or maintain their key information-processing skills. Since people who have already attained high levels of education are more likely to take part in adult education, such programmes should also be made accessible and attractive to people who left school or did not go on to higher education earlier in life. There are a number of ways to do this, e.g. through part-time or distance provision and designing education and training alternatives tailored to the needs of employers or certain industries (OECD, 2008). Public financial support to help low-income workers or a framework that allows higher education institutions to raise funds for adult education would open access to such programmes to more adults throughout the labour market.</p>

Employers' expectations of higher education graduates

<p>The labour market is setting new professional requirements for HE graduates.</p>	<p>Massification of higher education has amplified the big and challenging question of the real employability of higher education graduates in the labour market. In addition, there is a strong move in education from supply-oriented policies to more output oriented actions where the labour market plays an increasingly important role (Lindqvist, 2012). This means that higher education institutions must be fully aware of all facets and stakeholders in the higher education market, and how to react to them. The market is setting new professional requirements for higher education graduates in terms of professional and academic skills.</p>
<p>Employers expect HE graduates to be "work-ready".</p>	<p>Employers want higher education graduates to arrive on the labour market "work-ready" (Humburg, van der Velden and Verhagen, 2013). Although employers recognise that some skills are better taught and learned on-the-job, they are often reluctant to invest in developing the transferable skills of graduates due to the expense, as well as the belief that young employees lack</p>

	commitment to the organisation (Jackson, 2010). Higher education institutions are expected to fill this gap and ensure their graduates have the academic and professional skills required by employers upon completing their degrees.
A new survey reveals the relative significance of key skills when recruiting HE graduates.	Across the literature, there are a number of lists and a range of terminology for the types of skills employers seek when recruiting higher education graduates (Tymon, 2013). A recent survey of employers conducted for the European Commission was conducted along a different methodology than earlier studies (Humburg, van der Velden and Verhagen, 2013 – see Chapter 5). The authors did not give employers carte blanche to compile a wish list of skills they would like to see among job applicants. Instead, using a conjoint study approach, they required employers to choose between imperfect graduate profiles. Therefore, the choices employers made reveal the significance of the particular skills and attributes employers look for when selecting a new hire.
	In this European Commission (EC) study, Humburg, van der Velden and Verhagen (2013) identify six skill domains in which they measured specific skills as summarised in Table 2.1 below. Each of the skill domains encompasses multiple aspects. ⁵

Table 2.1 Definition of skills tested in the conjoint study and in-depth interviews

Skill domain	Skill measured in study	Definition
Professional expertise	Professional expertise (specific body of knowledge)	Knowledge and skills needed to solve occupation-specific problems
	General academic skills	Analytical thinking, reflectiveness, and the ability to see the limitations of one's own discipline
Flexibility	Not measured	
Innovation and knowledge management	Innovative / creative skills	Ability to come up with new ideas and to approach problems from a different angle
Mobilisation of human resources	Strategic / organizational skills	Ability to act strategically towards the achievement of organisational goals and priorities
	Interpersonal skills	Ability to work in a team and communicate and cooperate effectively with diverse colleagues and clients
Entrepreneurship	Commercial / entrepreneurial skills (ability to turn an idea into a successful product)	Ability to recognise the commercial value of an idea and to search for and pursue opportunities to turn them into successful products
International orientation	International orientation (both aspects)	Proficiency of foreign languages and intercultural skills, that is the ability to work with people from different cultural backgrounds and to adapt to new cultural contexts

Source: Humburg, M., R. van der Velden and A. Verhagen (2013), *The Employables: What Makes the Difference? The Employers' Perspective on Graduate Employability*, Research Centre for Education and the Labour Market, Maastricht and European Commission, Brussels.

5. The remainder of this section presents the findings from Humburg, van der Velden and Verhagen, 2013, unless otherwise noted.

<p>Although all key skills are important, some are more highly valued by employers than others.</p>	<p>Employers largely regarded the six skills measured as almost equally important. Slightly more importance is given to professional expertise (specific body of knowledge) and interpersonal skills, which often “tip the balance” for or against an applicant. Commercial/entrepreneurial skills and innovative/creative skills are not sought by every employer for every position. In some cases where recruitment is made in the context of teams, employers consider it important for one or more members of the team to have these skills, but not for all team members to have them. Hiring decisions do not usually turn on strategic/organisational skills and general academic skills. All higher education graduates are assumed to have adequate general academic skills to perform a job requiring a degree. Strategic/organisational skills are usually expected only of more experienced employees, not recent higher education graduates.</p>
<p>The labour market needs a mix of skills in the population of HE graduates.</p>	<p>The EC study also indicates that no two employers are the same and all have different views on graduate employability and different demands for graduate skills. Across and within organisations, employers expect higher education graduates to have different skills, different skill levels and different approaches to their work. The labour market needs a mix of skills in the population of graduates as a whole.</p>
<p>Differentiation among HEIs is needed in response to different employers' requirements.</p>	<p>A mix of skills in the labour market requires differentiation between higher education institutions and within institutions between different degree levels and types of programmes. Some institutions can offer more academic programmes and others more vocational oriented programmes. Employers have different requirements and expectations for employees with doctorates, Master's and Bachelor's degrees.</p> <p>On average across Europe, employers consider the Bachelor's and Master's degree as similar signals of employability, yet substantial differences exist across countries. In the Netherlands and Sweden, employers seem almost indifferent about whether applicants have a Bachelor's or a Master's degree. In Spain and the United Kingdom, employers seem to prefer graduates with a Bachelor's degree over graduates with a Master's degree when making a selection for invitations for a job interview. In all other countries, the Master's degree is often considered the standard and most common degree and recruitment strategies seem to reflect this. Graduates without a Master's degree seem to be able to compensate for this disadvantage with at least a year of relevant work experience.</p> <p>The doctorate is the least preferred degree among employers recruiting for junior positions in all countries included in the study. The average employer does not consider graduates with a doctorate to be a good match for the junior positions they offer. However, the study shows that doctorates are very attractive for employers who are looking for graduates with specialised knowledge in their field and an elevated theoretical orientation.</p>

<p>HE quality is important to employers.</p>	<p>Employers assume that every candidate who successfully graduates from higher education has attained a level of general academic skills sufficient for doing most jobs requiring a degree. This belief is based on an inherent trust in higher education that must be safe-guarded and upheld by institutions. Higher education institutions must ensure that everyone to whom they grant a degree has attained the requisite skill level. Failing this, employers could be taking a great risk in trusting higher education: the costs related to hiring someone who underperforms is much higher than the possible benefits associated with above average performance by someone else.</p>
<p>HE should focus on teaching subject-specific knowledge and general academic skills.</p>	<p>Employers generally consider that field-specific knowledge and general academic skills can never be developed separately. Most consider it practically impossible to acquire general academic skills without applying them to a specific context, and vice versa: to acquire field-specific knowledge is also to automatically acquire general academic skills. According to employers, therefore, higher education should focus on teaching subject-specific knowledge, as well as general academic skills.</p>
<p>Not all skills can or should be taught in HE.</p>	<p>Not all skills can be or are best taught in formal higher education. Institutions must make choices, given the limited time and resources available.</p> <p>Employers consider that the following skills should be developed <u>mainly in</u> higher education:</p> <ul style="list-style-type: none"> ➤ Professional expertise and generic academic skills: these should be the main objectives of higher education. <p>Employers suggest that the following skills should be developed <u>outside</u> higher education:</p> <ul style="list-style-type: none"> ➤ Interpersonal skills: with the emergence of high performance workplaces, basic interpersonal skills are required from everyone, yet many employers consider it impossible to teach interpersonal skills. However, higher education institutions could work at further stimulating the development of these skills in various ways through applied pedagogy. ➤ International orientation: most employers believe that this skill is hard to teach, although it can be simulated through student exchange programmes and courses taught in English where English is not the domestic language. <p>Employers consider that the following skills <u>can best be developed outside</u> of higher education:</p> <ul style="list-style-type: none"> ➤ Strategic/organisational skills: higher education can provide a basis for the development of these skills; however, they should be developed mainly in the course of one's career. The common reason for this is that higher education is not the most effective venue to develop such skills, which should be acquired through practice. ➤ Commercial/entrepreneurial skills and innovative/creative skills: such skills are expected to be more in demand as the world continues to change so rapidly. Higher education graduates should possess one or more skills in these domains; however, employers consider these skills to be innate and therefore very difficult to teach. These are most often seen as skills to develop throughout life.

Professional expertise should be taught in HE and improved at work.

Although professional expertise and specific knowledge of a job-related subject are highly regarded during recruitment, employers also acknowledge that people only become true experts from experience on the job. The understanding is that a certain basis of specific knowledge should be taught in higher education; however, this skill will be acquired in the course of a person's working life. Meanwhile, employers agree that the relevance of higher education curricula to the practices and demands in the labour market is extremely important. In this, the findings by Humburg, van der Velden and Verhagen (2013) directly correlate with the findings of previous graduate surveys (e.g. REFLEX, HEGESCO). Some employers indicate that higher education should work more closely with the labour market by involving employers more in the academic programme either through internships, as guest lecturers, or by directly involving them in curricular design, etc.

Connecting higher education and employers

Institutional autonomy should balance the relationship between HE and stakeholders.

As providers of intellect, innovation and critical thought, universities still need to maintain institutional autonomy in balance with responsiveness to the labour market and government priorities (see: [Vrioni, Chapter 4](#)). Universities must use their autonomy as a tool to promote their critical voice and effectiveness, not for isolating themselves as in the "ivory tower" era, when the traditional research university was revered as a place remote from worldly things and concerns.

HEIs should have open communication channels with employers about skills gaps and needs.

Accountability to stakeholders is not enough. **Higher education institutions must develop and maintain an active, open line of communication with employers in particular.** However, employers are not a homogenous group. Humburg, van der Velden and Verhagen (2013) find that employers find it extremely difficult to make predictions about future trends in the labour market and to reflect on what they may imply for higher education programmes. Rather than depending on employers to define what higher education should teach, institutions should focus on general developments in the labour market and collaborate with employers to develop appropriate programmes while retaining the autonomy necessary for best practices in higher education to continue.

HEIs should develop strategic liaisons with the labour market.

After teaching/learning and research, the "third mission" of higher education is service to society. As part of this mission, **higher education institutions need to liaise with national and international organisations to learn and get feedback about trends in the labour market and in society generally.** This requires a keen strategic approach, allowing for quick reactions in terms of curricula, promoting and supplying lifelong learning and taking into account the role of alumni. In fact, alumni may be some of the best and most consistent partners for higher education institutions (Lindqvist, 2012).

<p>HE alumni are an invaluable resource in the relationship between HEIs and the labour market.</p>	<p>Higher education alumni can be an invaluable resource to institutions. Alumni know best how well or poorly they were prepared for the work they undertake after graduation. In order for higher education institutions to avail themselves of this unique resource, relationships and databases must be established and maintained from the student's entrance to graduation and beyond into the world of work.</p>
<p>HEI governing boards with external stakeholders can be crucial to the relationship with the labour market.</p>	<p>Internally, the university governing board is a key actor in translating public policies and orientations into actual institutional practice and policy implementation. It is very important that the governing board have regard for the public interest when setting the strategy and direction of the institution. Most OECD countries have legal provisions allowing external stakeholders to be members of university governing boards (OECD, 2008). With the right members actively involved, this steering body can be crucial to the institution's relationship with the labour market, as well as other external stakeholder groups.</p>
<p>Formal structures can help foster the HE-labour market relationship. Example: Universities UK.</p>	<p>Buffer organisations and consortiums of higher education institutions can assume a mission that includes fostering the relationship with the labour market. For example, Universities UK is a consortium of 133 higher education institutions in the United Kingdom. One of the organisation's key objectives is to support constructive engagement between universities and business, employers, the National Health Service and other key stakeholders. Universities UK considers these partnerships key to their strength and success and to the relevance and vital role of higher education in the knowledge economy (Universities UK, 2010). Other countries have also developed formal structures to promote communication and collaboration between higher education institutions, industry groups and employer associations on a permanent basis: e.g. Australia with the Business, Industry and Higher Education Collaboration Council and the Business and Higher Education Round Table (OECD, 2008).</p>
<p>Work-based learning is an integral aspect of the relationship between HE and employers.</p>	<p>Of course, work-based learning is an integral aspect of the relationship between higher education and employers. This aspect is taken up in more detail in the next section.</p>

Role of workplace learning⁶

Workplace learning strengthens ties between HE and the labour market.	Ties between higher education and the labour market can be strengthened by promoting student internships and traineeships through partnerships between businesses and higher education institutions. Furthermore, workplace learning is an effective way to facilitate students' transition from higher education to the labour market.
There are major challenges to establishing workplace learning programmes.	Establishing workplace learning programmes is a challenging task. In some countries, employers are not motivated to establish workplace learning opportunities; there may be no tradition in the private sector, or the educational culture can often be hostile to corporate participation. Traditional university values are not always compatible with entrepreneurial activities; academics are not always motivated to develop partnerships with employers; and employers do not always feel the need to co-operate with higher education institutions, perhaps failing to see the direct benefit to the company.
Workplace learning can help students attain professional expertise and increases employability.	Despite the challenges, workplace learning programmes are an effective way to help students attain professional expertise, the most important skill employers want to see in higher education graduates. Employers want graduates to be "work-ready". According to Humburg and van der Velden (2013), employers suggest that students should have a period of practical experience while they are enrolled in higher education, for example through internships or dual programmes that combine work and study. Workplace learning has been shown to significantly increase the labour market success of graduates. Programmes with such workplace learning are also strong predictors of graduates' employability.
Workplace learning helps students transition to the labour market.	Internships and other forms of workplace learning can help students toward a smoother transition to the labour market. With the current high levels of youth unemployment, it is becoming more important for higher education institutions and employers to foster possibilities for young people to get relevant professional experience before entering the labour market.
Workplace learning must be good quality for it to be effective.	Like any learning experience, workplace learning must be of good quality for it to be effective. As a start toward a quality programme, programme leadership managers should ensure that all stakeholders understand and are clear about expectations. For example, the learning content should be agreed upon between the student, the institution and the employer. There should be a fair and clear distribution of responsibilities and duties among the three stakeholders. Each stakeholder should be responsible for his/her input. Finally, the role of the student's supervisor in the company is key.

6. This section draws on the discussions and findings from the *OECD Higher Education Programme Webinar: Enhancing the quality of internships*, held on 2 July 2013, www.oecd.org/edu/imhe/archivesofpastimheevents.htm

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<p>Workplace learning programmes should be developed strategically and in concert across the HEI.</p>	<p>Efforts and resources are easily wasted if they are not well co-ordinated. Successful workplace learning programmes are the product of a global process of relations between the higher education institution and the labour market. Higher education staff who are involved in the programme, including student support services, academic staff and institutional management, should all adhere to the goal of preparing students for employment during their studies.</p>
<p>Different study levels require different types of workplace learning.</p>	<p>Workplace learning programmes should be designed according to level of study. For graduates, examples of good practice show that internships last six months to allow the student to fit into the company. This gives the necessary time for the company to organise itself and for the student to learn a number of fundamentals about the business. For lower study levels, good practice shows that internships take place between the second and third year of study and last four weeks.</p>
<p>Organisation is the key to success.</p>	<p>The success of any workplace learning programme depends on its organisation. The higher education institution plays a central role; however, various models have proven effective in different environments. At some institutions, the student is solely responsible for researching and identifying an internship. At others, students, staff and teachers might work together to identify possibilities. Some institutions have a centralised system for managing the contracts with employers, at others this is a decentralised task. Some institutions offer stipends to help students during internships at home or abroad; other internships are paid by the employing company.</p>
<p>Trust is the hardest challenge to overcome.</p>	<p>It is often difficult and time consuming to build solid relationships with employers. Corporations may find it hard to assess the efficiency of a higher education institution. Even when things seem to be going well, it may be difficult for a company to make consistent contact with the higher education institution. In addition, many employers do not know how to recruit young graduates. There may be legal requirements that pose challenges for SMEs.</p> <p>The issue of trust is also valid for students. It takes time for a student to trust the university and the employer. Graduates have to accept that it will take time to learn and advance within a company or profession. To build trust, good practice shows that talking with students, families and student unions is helpful. Eventually, word of mouth will help bolster confidence in the programme.</p>
<p>There are several common practices that bode well for success.</p>	<p>Evidence from the OECD's reviews of vocational education and training (OECD, 2010a; 2010b) suggests that there are several common practices that seem promising for success:</p> <ul style="list-style-type: none"> ➤ A sense of collective responsibility within the institution to improve the employability of students. ➤ The establishment of permanent structures within the institution (or linked with the institutions) that manage relationships with businesses. ➤ A career approach, with monitoring of students that goes beyond internships and gives special attention to the quality of training. The institution tracks students up to and beyond graduation. ➤ A point of contact for the company within the institution.

In closing

<p>HEIs have to balance HE principles with labour market priorities.</p>	<p>Higher education degrees are highly valued on the labour market. Employment rates are highest among higher education graduates; graduates also tend to earn relatively high salaries and enjoy stable employment conditions. However, higher education's role as a driver of economic development does not fully align with the principles and expertise of the university. It is, therefore, important for higher education institutions to carefully balance the priorities of the labour market and the relevance of the curriculum with a sufficient level of institutional autonomy to ensure academic freedom.</p>
<p>HE institutions should keep students informed of labour market risks and opportunities.</p>	<p>There is greater demand for people with high-level skills in the labour market than there are higher education graduates; however, many students choose study fields that lead to poor labour market prospects. Although it is difficult to predict changes in the labour market or to match short-term labour market needs with longer-term higher education outcomes, higher education institutions should help students become as informed as possible about how their study field choices will affect their options in the labour market. Institutions could also take steps to encourage women to enrol in high demand study fields, many of which also lead to a higher payoff.</p>
<p>HEIs should be differentiated to serve the diverse niches and needs of society.</p>	<p>Employers do not want all graduates to have the same skills and levels of expertise. Higher education institutions should encourage creativity and originality in students and they should demonstrate their own originality by differentiating themselves from the competition. No university can be all things to all people; however, any university can develop a cachet of excellence in its own area or for a specific stakeholder group.</p>
<p>There are many local measures HEIs can take to open access, especially by helping improve schools.</p>	<p>Opening access to higher education is a priority in every country. This mandate may run counter to the priorities of the higher education sector, where merit is the first consideration; however, institutions strive to open access as part of their mission in service to society and to diversify the student and faculty profiles. Nonetheless, higher education standards should be compromised as little as possible.</p> <p>In systems where potential students do not have the necessary skills after compulsory education to succeed in higher education, institutions should develop strategies to help improve compulsory education, i.e. through improving teacher education and curricular reform. Institutions can also offer remedial programmes and other appropriate student support services to help students develop the skills they need to succeed.</p>
<p>HEIs can contribute to gender equality in study fields, which will influence the labour market.</p>	<p>The choice of study field has direct consequences on graduates' careers and earnings. Women and men tend to study different subjects at the higher education level. More women complete programmes in the humanities, arts, education, health and welfare fields. By contrast, more men complete programmes in mathematics, science and engineering. Although a number of initiatives have aimed to promote gender equality in OECD countries and across Europe, they have met with</p>

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	<p>little success. Higher education institutions can also contribute to the effort by implementing career counselling and student guidance services to help promote gender equality across study fields.</p>
Adult education programmes benefit individuals, HEIs, employers and all of society.	<p>Graduation should not be a farewell to higher education. With adult education programmes, higher education institutions can contribute to up-skilling or re-skilling higher education graduates later in their careers; work with employers to develop training programmes, train trainers and raise awareness about the need for at-work skill development; and support the government with programmes to help people maintain and recover skills as they age.</p>

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CHAPTER 3: QUALITY IN HIGHER EDUCATION: LESSONS FROM THE FEASIBILITY STUDY FOR AN ASSESSMENT OF HIGHER EDUCATION LEARNING OUTCOMES (AHELO)

Introduction

<p>Quality assurance systems became necessary as HE became massified.</p>	<p>As higher education systems shift from “elite” to “mass” – and, in certain countries, to “universal” – greater numbers and more diverse stakeholders are more interested in and need to have ways to understand the quality of higher education provision and outcomes. As a result, quality assurance systems and transparency practices have been developed for mass higher education.</p>
<p>QA is one of the most significant developments in HE since the 1980s.</p>	<p>The strong development of quality assurance systems is one of the most significant developments in higher education since the early 1980s. New systems and approaches have replaced the traditional, often informal quality assurance procedures previously used in systems with few higher education institutions and students. Quality assurance for massified higher education also responds to cost pressures that arise from budget cutting and retrenchment operations. Furthermore, the recent focus on accountability makes quality assurance one of the most urgent and controversial topics in the field of higher education.</p>
<p>The impact of QA on higher education is still unclear.</p>	<p>Despite the rapid development of quality assurance systems and their growing sophistication in the last two decades, little is known of their actual impact (OECD, 2008). While the goal of quality assurance is to ensure that standards are met and quality is improved, it is decidedly difficult to measure impact. There is evidence that academics’ behaviours and management within higher education institutions have been affected by quality assurance procedures and some authors optimistically report signs of an impact from evaluations on teaching practices (Brennan, 1997; Silva et al., 1997), but a number of researchers are sceptical about the impact of quality assurance on teaching and learning (Christensen, 2010; Ewell, 2010; Harvey, 2006; Newton, 2000, 2001). Although a number of countries that participated in the OECD Thematic Review of Tertiary Education offered some evidence of the positive impact of quality assurance on the quality of teaching and learning, such impact was measured in terms of the number of negative accreditation evaluations, student satisfaction rates or the acceptance and recognition of higher education institutions. Such proxies for higher education quality are very rough. The OECD Review concluded with a recommendation to increase the focus on student outcomes to alleviate this problem (OECD, 2008).</p>
<p>Indicators and proxies for quality do not give a full picture.</p>	<p>The most commonly used indicators of quality in higher education are</p> <ul style="list-style-type: none"> ➤ completion rates and time to completion, drop-out rates, graduation rates, destinations and employment rates of graduates in specific fields of study.

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	<p>These performance indicators help us understand and monitor the performance of higher education at the institutional level; however, data remains scarce on learning outcomes, despite the fact that it is among the most important pieces of information on higher education.</p> <p>In addition to quality assurance systems and performance indicators, there are proxies of higher education quality that also fail to fill the information gaps on learning outcomes:</p> <ul style="list-style-type: none"> ➤ reputation: highly subjective, reinforces existing hierarchies ➤ rankings: constrained by data availability, biased toward available data, better suited to measure research excellence than teaching and learning ➤ student surveys: provide valuable information at national level, not international, satisfaction is not a measure of learning ➤ student self-reports on their learning gain: do not match objective measures of learning ➤ graduate and employer surveys: labour market outcomes become proxies for quality.
<p>There is a clear need for direct measures of learning outcomes.</p>	<p>None of the quality assurance indicators and proxies for quality directly measure learning outcomes. Yet the fundamental question when it comes to quality is how effective higher education is at teaching and learning. There is a clear need for a way to assess institutional performance in this area.</p>
<p>AHELO was developed in response to this need.</p>	<p>The proposition to explore the development of an international Assessment of Higher Education Learning Outcomes (AHELO) emerged during the Athens Meeting of OECD Ministers in 2006 (Giannakou, 2006). This concept was put forth at a time of great pressure to develop better performance metrics in higher education, whether to support accountability reporting requirements or to assist leaders, teachers and learners to understand and position their work in increasingly complex environments. This idea illustrated the broader trends reshaping higher education as it moved into the 21st century. Indeed, the AHELO proposition is illustrative of a paradigm shift for higher education that has moved beyond collegial approaches as it became massified and increasingly emphasises student centred learning and student learning outcomes.</p>
<p>This chapter describes the AHELO feasibility study and summarises the main outcomes.</p>	<p>While a number of systems have developed national assessments of learning outcomes at national level (Nusche, 2007), the AHELO feasibility study was a first-of-its-kind attempt to develop such an assessment at the international level. In this respect, this initiative has been ground breaking. This chapter provides a brief description of the objectives and design of the AHELO feasibility study, and summarises its main findings and lessons.</p>
<p>Data source: OECD's AHELO Feasibility Study Report, 2013.</p>	<p>Information in this chapter is from the OECD publications <i>AHELO Feasibility Study Report, Volumes 1 (2012), 2 and 3 (2013)</i>, unless otherwise noted.</p>

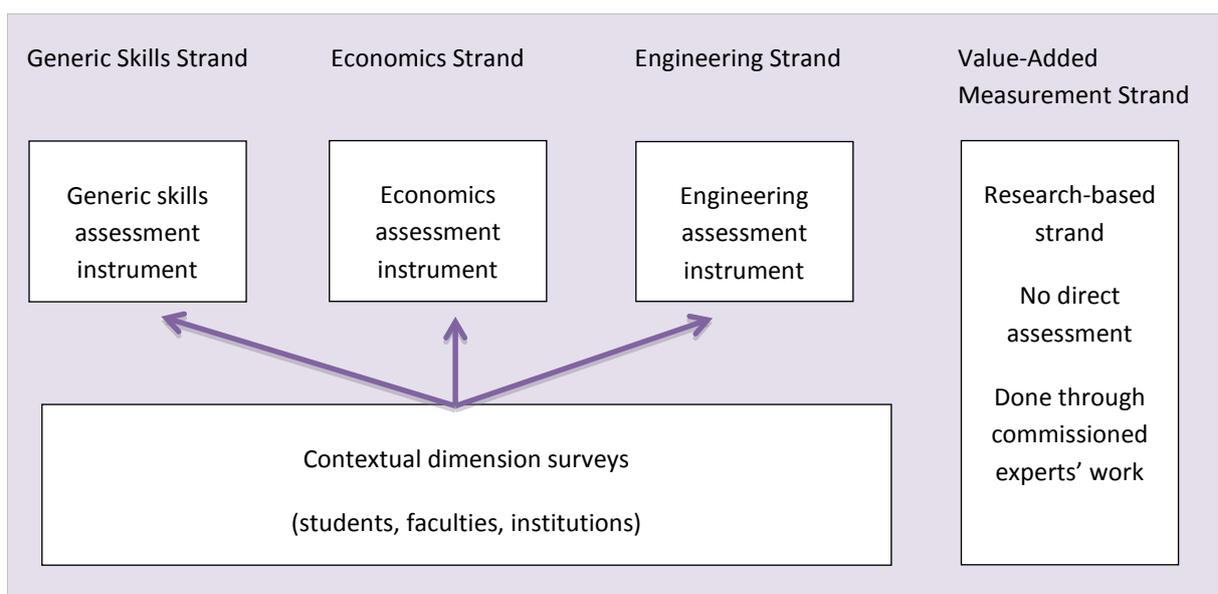
About the AHELO Feasibility Study

<p>The AHELO feasibility study was launched in 2008 and concluded in 2013.</p>	<p>In 2008, the OECD launched a feasibility study for an Assessment of Higher Education Learning Outcomes (AHELO), an initiative with the objective to assess whether it is possible to develop international measures of learning outcomes in higher education. The feasibility study concluded in March 2013 with a conference at OECD Headquarters in Paris and the publication of the AHELO Feasibility Study Reports.</p> <p>See: www.oecd.org/edu/skills-beyond-school/testingstudentanduniversityperformancegloballyoecdahelo.htm</p>
<p>AHELO aimed to provide a direct evaluation of student learning outcomes.</p>	<p>The AHELO feasibility study aimed to complement institution-based assessments by providing a direct evaluation of student learning outcomes at the global level and to enable institutions to benchmark the performance of their students against their peers as part of their improvement efforts.</p>
<p>The purpose of the feasibility study: is it feasible to assess student learning outcomes on an international scale?</p>	<p>The purpose of the feasibility study was to see whether it is practically and scientifically feasible to assess what students in higher education know and can do upon graduation within and across diverse contexts. The feasibility study brought to light what is feasible and what could be feasible, what worked well and what did not, and provided lessons and stimulated reflection on how learning outcomes might be most effectively measured in the future.</p>
<h3><i>AHELO feasibility study design and scope</i></h3>	
<p>The feasibility study was designed as a research exercise to gather evidence about assessing learning outcomes.</p>	<p>The AHELO feasibility study was designed as a research exercise rather than a pilot study for a fully-fledged AHELO main survey. This research approach:</p> <ul style="list-style-type: none"> ➤ Focused on gathering evidence in support of the AHELO concept by building upon existing tools and instrument materials as much as possible, rather than developing new assessment instruments. ➤ Allowed the work to be artificially broken down into several distinct strands of work in order to examine different types of higher education learning outcomes, as well as different approaches to assessment and testing. ➤ Guided the selection of disciplines. It was decided to focus on Engineering from STEM and Economics from the social sciences to gauge the feasibility of building international consensus on two very different assessment domains.
<p>The feasibility study only tested the potential to collect comparable data on learning outcomes.</p>	<p>The goal of the AHELO feasibility study was not to publish data on learning outcomes. This study was limited to testing whether it would be possible to develop such measures. Therefore, the emphasis of the overall design, analysis plan and international reports were on:</p> <ul style="list-style-type: none"> ➤ identifying the methodological and technical questions raised by an international AHELO

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	<ul style="list-style-type: none"> ➤ addressing these issues during implementation and in the analysis of results ➤ providing conclusions on the outcomes of the feasibility study, as well as guidance for future longer-term development of an eventual AHELO.
<p>HEIs were the main units of analysis and reporting.</p>	<p>The main units of analysis and reporting were higher education institutions. This meant that no attempt was made to sample HEIs within countries to develop country-level performance measures. Nevertheless, in recognition of the variety of institutions and their missions in higher education systems, it was important to ensure that an AHELO could provide valid and reliable results across different types of higher education institutions. As a result, participating countries were asked to select a range of different institutional types that reflected the diversity of institutions in their national systems to gauge the suitability of an international assessment to these diverse institutional contexts.</p>
<p>The feasibility study consisted of 4 strands: Generic Skills, Economics, Engineering and Value-Added Analysis.</p>	<p>The study consisted of four distinct strands of work that were developed separately, but coherently. The first three strands focused on three different domains:</p> <ul style="list-style-type: none"> ➤ Generic skills: critical thinking, analytical reasoning, problem-solving and written communication ➤ Economics ➤ Engineering <p>The fourth strand focused on the issue of value-added measurement. This strand did not involve direct assessment. Instead, a research perspective was adopted to examine the measurement of value-added in higher education through a reflection on methodological approaches, data needs of various value-added strategies, and pros and cons of different approaches.</p>

Figure 3.1 AHELO feasibility study strands of work



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<p>Participating countries allowed for comparisons across cultural and linguistic differences.</p>	<p>The feasibility study tested the challenges of capturing higher education outcomes internationally, taking into account cultural and linguistic differences. The study therefore covered quite different countries. The 17 participating countries ensured a range of geographic, linguistic and cultural diversity in each strand.</p>
<p>17 participating countries.</p>	<p>The Generic Skills strand was tested in nine countries: Colombia, Egypt, Finland, Korea, Kuwait, Mexico, Norway, the Slovak Republic and the United States (in Connecticut, Missouri and Pennsylvania).</p> <p>The Economics strand was tested in seven countries: Belgium (Flanders), Egypt, Italy, Mexico, the Netherlands, the Russian Federation and the Slovak Republic.</p> <p>The Engineering strand was tested in nine countries: Abu Dhabi, Australia, Canada (in Ontario), Colombia, Egypt, Japan, Mexico, the Russian Federation and the Slovak Republic.</p>
<p>The feasibility study consisted of three phases of work.</p>	<p>The AHELO feasibility study consisted of three phases of work:</p> <p>Phase 1 (January 2010 – June 2011)</p> <ul style="list-style-type: none"> ➤ Initial proof of concept: instrumentation development and small-scale validation <p>Phase 2 (July 2011 – December 2012)</p> <ul style="list-style-type: none"> ➤ Scientific feasibility and proof of practicality: field implementation of the assessment instruments and contextual surveys and analysis of the evidence collected <p>Phase 3 (March 2012 – March 2013)</p> <ul style="list-style-type: none"> ➤ Value-added measurement: methodologies and approaches <p>For more a detailed explanation of the phases of work in the AHELO feasibility study, see <i>AHELO Feasibility Study Report: Volume 1</i>, chapter 3.</p>
<p>Three assessment instruments and contextual instruments were adapted from existing instruments through consultation with international experts.</p>	<p>In the first phase of work, an assessment instrument was developed for each of the three strands: Generic Skills, Economics, and Engineering. Contextual instruments were also developed to identify factors that would explain observed learning outcomes, e.g. student context, faculty context, institution context. All instruments were developed through research and consultation. Existing instruments were identified and adapted to the AHELO feasibility study through consultation with international expert groups. Feedback from experts provided a basis for survey instrument development, translation and adaptation, validation, small-scale testing and delivery.</p>

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<p>Emphasis remained on validity, reliability and freedom from bias.</p>	<p>In implementing instruments, emphasis was placed on ensuring that the resulting measures of learning outcomes would be valid, reliable and free of bias to the extent possible, e.g. through adequate processes for the translation and cultural adaptation of instruments, the sampling of students and faculties within HEIs, and the scoring of tasks, scaling, etc. Once the instruments were developed, they were translated, adapted, pre-tested and revised. Even then, before they were administered in each participating country, other preparations were undertaken, including:</p> <ul style="list-style-type: none"> ➤ the Assessment Design and its derivative Analysis Plan – to guide the development and analysis that followed ➤ students and faculty sampling plan – including the use of an unbiased probabilistic sample to guarantee estimates would be comparable across institutions ➤ Technical Standards – to ensure a high degree of uniformity in all participating countries in achieving standardised administration of the instruments ➤ online tools for student testing, data collection and scoring were developed and tested ➤ survey procedures and operations – developed and shared with all participating countries and included the Sampling Manual, Test Administration Manual, and International Scoring Manual.
<p>Implementation helped focus on the practical feasibility of an AHELO</p>	<p>In the second phase of work, the three assessment instruments and contextual surveys were administered to participating higher education institutions. The purpose of this phase of the feasibility study was to explore the best ways to implicate, involve and motivate leaders, faculty and students to take part in the testing and build an interpretive context for the learning outcomes to help identify factors leading to enhanced outcomes. In this phase, tests were administered, student response scored, data analysed, and reporting and evaluation of the scientific and practical feasibility of an AHELO was conducted.</p> <p>Test instruments and contextual surveys were implemented from the beginning of 2012 until July 2012. Data was collected from almost 23 000 students, 4 800 faculty and more than 240 Institution Co-ordinators across all 17 participating countries.</p>
<p>Data were subjected to analysis to assess scientific feasibility.</p>	<p>Once implementation was complete, the main activities included data file preparation, verification and validation, sampling analyses and weighting, scaling of student performance data, validity analyses, contextual analyses, and the production of data products and written reports.</p>

Lessons from the feasibility study

Lessons from the feasibility study refer to the instruments developed for the study.

In line with the feasibility study's objective to prove the concept and demonstrate whether or not it is possible to measure student learning outcomes on an international scale, the lessons from the AHELO feasibility study refer to the instruments developed for the exercise. The quality, validity and reliability of the instruments were closely scrutinised by a range of assessment experts and a Technical Advisory Group. Overall, they found that the instruments passed in each respect; however, they also highlighted that there were challenges and problems that would need to be addressed for any future assessment tool.

Quality, validity, reliability and feasibility of AHELO instruments

See *AHELO Feasibility Study Report: Volume 2*.

The instruments used were generally good; however, some items did not work the same way across all student sub-groups.

The AHELO feasibility study produced many items that functioned well. During the analysis, only a small number of items were removed because they mal-functioned. The removal of so few items indicates that the overall quality of the instruments used for the study was good. However, when item performance was considered for different sub-groups based on gender, institution types, countries and languages, significant differential item functioning was found. In other words, some items on the test were more or less difficult for students, depending on the language, culture, the student's gender or other factors. The underlying reasons for the differential item functioning are not clear. For a well-functioning international instrument, it is important to understand why different patterns occur.

The three instruments are valid: each measures one common construct.

All three instruments achieved reasonable levels of construct validity. Analysis and statistics showed that each of the three assessment instruments was measuring one common construct. For the purpose of this study, enough evidence was collected to ascertain validity, although a full-scale study would need additional evidence.

Common agreement was reached on frameworks and selected learning outcomes for economics and engineering, but not for generic skills.

In the disciplinary strands of economics and engineering, evidence suggested that the instruments achieved reasonable levels of content validity. Experts agreed on the assessment frameworks and selected learning outcomes to be measured for these two strands. Feedback from students also supported the validity of the content in economics and engineering.

For the generic skills strand, an existing instrument was used and therefore there was no consultation to reach an international agreement on the instrument content. There were a number of circumstances and reasons why consensus on the learning outcomes for generic skills was not achieved. However, the AHELO feasibility study showed that for any full-scale study, a prerequisite will be to reach international agreement on the generic skills students should learn in higher education. Given fierce epistemological debate on the issue, a challenge will then be to reach expert consensus on whether generic skills can be measured in isolation or only within the context of disciplines.

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<p>Students generally thought the instruments did what they were intended to do.</p>	<p>Face validity is the extent to which a test is subjectively viewed as covering the concept it purports to measure. In addition to the evidence of face validity collected from stakeholders while the instruments were being developed, students also generally thought the tests were fit for purpose. Students were also asked to consider the educational and professional relevance of the tests. Students participating in the generic skills strand saw greater professional relevance of the instrument, while students participating in the two discipline-based strands saw greater educational relevance.</p>
<p>The feasibility study did prove that an AHELO correlates with academic performance or student satisfaction.</p>	<p>There is no strong correlation between self-reported academic performance, or student satisfaction and AHELO scores, with the possible exception of the engineering strand. Even there, the pattern for engineering showed only some correlation and the patterns were still less clear for generic skills and economics. Furthermore, the relationships between AHELO scores and self-reported academic performance or overall education satisfaction vary significantly across countries. Additional analysis with more direct measures of student abilities would be needed to provide evidence that a learning outcomes assessment correlates with academic performance or student satisfaction.</p>
<p>The three instruments provided reliable results, but improvements are needed.</p>	<p>The three instruments functioned reliably overall, meaning the results were consistent and stable across different testing situations. However, some improvements are needed to provide sufficiently reliable results. One example of possible improvement is to better match the test difficulty with students' abilities during the test development phase by eliminating the items that are too difficult for students to respond to.</p>
<p>Any future AHELO will require a delicate balance between types of test items, such as multiple choice questions or constructed-response tasks.</p>	<p>In terms of reliability, an interesting finding uncovered by the study was the existence of trade-offs in item types, whereby constructed-response tasks were engaging for students and brought about important insights for pedagogy, but came at the cost of lower reliability of these items. By contrast, multiple choice items proved highly reliable, but did not leverage much value for the enhancement of teaching and pedagogy. A direct implication is that for any future AHELO, a delicate balance will have to be struck between different types of items. This balance should reflect the aims of the assessment, with more emphasis on constructed response tasks wherever the focus is on pedagogy and quality improvements, and more emphasis on multiple choice items if the aim is to develop accountability measures.</p>
<p>The feasibility study indicates that it is possible to score constructed-responses in a reliable way across countries.</p>	<p>Scoring was reliable in all three strands. Two cross-country studies were conducted on inter-scorer reliability; these showed that it is feasible to score constructed-responses in a reliable way across countries. Although variations were observed in scoring across countries, the scores were consistent in the rank orderings of the quality of the responses. This indicates that with appropriate training and scoring monitoring, student responses can be scored reliably across countries.</p>

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<p>The AHELO feasibility study demonstrated that it is feasible to develop international instruments with reliable and valid results.</p>	<p>The AHELO feasibility study demonstrated that it is feasible to develop instruments with reliable and valid results across different countries, languages, cultures and institutional settings. However, the feasibility study was conducted at a relatively small and manageable scale. Although overall results provide sufficient evidence of the feasibility of obtaining valid and reliable results in this case, further evidence in an AHELO main study would be required to better understand and explain differences of instrument quality across different types of institutions, countries and languages.</p>
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In closing

<p>Analysis of the AHELO feasibility study results pertain only to the instruments tested.</p>	<p>The purpose of the AHELO feasibility study was to provide a proof of concept: was it technically and practically feasible to assess what students know and can do near graduation? Because of the limitations inherent to a feasibility study, the analysis of the results only pertain to the instruments tested and cannot be generalised.</p>
<p>The study proved that it is feasible to assess student learning outcomes and sparked debate.</p>	<p>However, we can conclude that the feasibility study was successful in proving that it is feasible to assess student learning outcomes, even though the study also brought to light some of the technical or operational challenges that would need to be addressed in any full-scale endeavour, e.g. how to secure student participation. The study was also a success for bringing the issue of learning outcomes to the forefront of the quality assurance debate. The questions raised throughout the process of the feasibility study are as much a part of its success as the actual findings.</p>
<p>Was the feasibility study worth the cost? It is too soon to tell.</p>	<p>Different stakeholders in the AHELO feasibility study have different opinions as to whether the exercise was worth the cost. The general consensus is that more data and analysis could still be gained from the feasibility study before a judgment on worth vs. cost can be made. While the international costs are clear and documented, it is not yet possible to get amounts for the national costs due to the nature of the feasibility study. Before embarking on a main study, a clearer idea of the full costs of such an assessment is essential.</p>

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ARTICLES BY EXPERTS

The following five chapters are original contributions from intellectuals and experts in the higher education field. The authors were invited to contribute to this report to share information and stimulate debate.

Three articles focus on issues of institutional concern, such as autonomy, labour market relevance and the advent of new modes of provision:

- The first article, by higher education consultant **Mrs Holta Vrioni**, opens this section of the report with an historical overview of the key trends and debates surrounding institutional autonomy and academic freedom, particularly the tensions that have arisen with the “evaluative state”.
- The second article, by **Dr. Martin Humburg** and **Professor Rolf van der Velden**, explains a framework for re-thinking skill formation in higher education. The authors contend that it is critical to think very carefully about which skills should be developed in higher education and which left to the learner to develop elsewhere.
- Finally, **Professor Peter Coaldrake** and **Dr. Lawrence Stedman** lay out the context of technological innovation in higher education and the advent of Mass Open Online Courses (MOOCs). The authors argue that technology can, ideally, help defend and preserve the best elements of traditional university education.

The next two articles focus on the prevalent global issues of institutional financing and international mobility:

- First, **Dr. Ellen Hazelkorn** reflects on the impact of the economic crisis on higher education, including the disconcerting finding that institutional responses to austerity often result in greater social stratification.
- Second, **Professor Philip G. Altbach** airs concerns about international brain drain and institutional responsibility. This candid exposé explores the topic in greater depth than Professor Altbach has written on the subject to date.

Disclaimer: The views expressed in these commissioned articles are those of the authors and do not necessarily reflect the views of the OECD.

CHAPTER 4: KEY TENSIONS AND DEBATES SURROUNDING INSTITUTIONAL AUTONOMY AND ACADEMIC FREEDOM

Holta Vrioni

The relationship between the university and its stakeholders is rife with tension. In many countries, the public structure and funding of higher education institutions result in the “single master” syndrome, by which the one who pays also decides. Without exception, when there is a single master, this master is the government. In principle and in good practice, institutional autonomy should be upheld for the management of universities. However, autonomy should not be absolute in university governance, since universities have direct incentives to do some things (such as maximise revenue), but no direct incentives to do others (such as diversify student enrolment), many of which serve the larger public interest. To ensure that universities fulfil their defined missions and serve the greater public interest, autonomy should be in balance with accountability to stakeholders.

This chapter seeks to address the following questions: Why should the university be autonomous? What does autonomy mean - from whom or what is an institution autonomous? With autonomy, how can we ensure that a university is also acting in the best interests of everyone: academics pursuing knowledge, students pursuing personal growth and professional careers, the public seeking residual benefits from knowledge workers and producers, the government seeking economic growth?

Institutional autonomy is a fundamental characteristic of the university

Autonomy through the ages: An historical overview

For the last few centuries, since the international community of learning began to progressively split into national institutions, the university mission that formerly transcended political boundaries has been subverted to support the nation-states. Although research continues to be international, national governments are increasingly interested in using universities to promote national wealth. Kerr (1990, p.5) has called this relationship one of "dual identity", posed between a mythical academic heaven and an actual earthly hell.

Since the 1950s and 1960s, market forces were prevented from steering the development of education in Europe. Typically, especially in Europe, higher education was built mainly under state funding and control. Questions of access, content and modes of operation were protected from market forces and consumer pressures by centralised government control. In European universities, for example, establishing a new discipline typically still becomes possible only after careful deliberation by central authorities as to needs and standards of the country, rather than emerging as a result of the laws of supply and demand (Trow, 1989).

By the 1960s, each nation state in Europe had its own system of higher education firmly entrenched in the nation-building agenda. Under the pressure of rising student numbers in the 1970s and 1980s, national centralised higher education systems became fragmented into differentiated levels and sectors (Cerych, 1989; Neave, 1989). Alongside the traditional university dedicated to science and scholarship, a non-university sector came into being, comprising a wide variety of more vocationally oriented colleges, open university institutions, post-graduate training, etc. (Teichler, 1990).

With the growth of the non-university sector, the mission and definition of higher education changed. Traditional universities began to take on new tasks, enter into closer relations with industry and business and

offer extracurricular training. Non-university higher education institutions sought university-like status and the university itself set out on new paths and surrendered its role as the ivory tower of pure science and scholarship (Neave, 1989; Kerr, 1982, 1987).

Since the 1980s, European national governments have become increasingly keen to make use of higher education in the pursuit of economic growth and national welfare. This shift in the purpose of higher education led to decentralisation: universities were granted more autonomy in order to promote competition and market sensitivity (Cerych, 1989). Along with the institutional autonomy granted in the 1980s, universities were also called to account for their results, which gave rise to the creation of evaluation systems to assess results. Despite the beginnings of a reliance on consumer- and market-driven forces, belief in the entrenched rationale of state governance and control of higher education continued to prevail in Europe.

At the instigation of government policies since the 1970s, the relationship between higher education and industry has fundamentally changed in Western Europe: "Today, all governments, irrespective of political allegiance, are calling for this kind of cooperation and introducing such measures as they regard appropriate in order to facilitate it" (Cerych 1985, pp. 7-8). Such policies gave rise all over Europe to science parks and other joint ventures between universities and industry: shared facilities, consultancies, training courses, research contracts, etc. Behind it all looms what Neave (1984) calls the "evaluative state".

With the advent of the Bologna Process, national higher education laws throughout Europe have endowed universities with greater autonomy than in previous decades. The prevailing theory has been that autonomous, creative universities can best contribute to the Bologna objectives of mobility, compatibility and comparability. Institutional autonomy in the European setting, therefore, continues under governmental parameters in which objectives are established centrally and implemented by autonomous institutions under strict accountability systems.

Throughout the 1980s and continuing through the Bologna Process, several trends became characteristic of governments' higher education policies in which the continuation of powerful state interventionism clashes with the move toward granting greater autonomy to higher education institutions:

- cuts in public spending on higher education; in some countries (e.g. the United Kingdom), implementation of the cuts is up to the institutions; in others (e.g. France), the government takes the decisions
- push for efficiency, including pressure to abide by the Bologna-defined study duration of 3+2 years for the first and second study cycles and generally produce more results with less funding
- managerialism through the introduction of strategic management geared toward the achievement of pre-stated objectives and the monitoring of results
- formula-based funding in place of block funding as a negotiation process between the university and the state and by which funding is tied to specific objectives and the monitoring of results
- establishing evaluation systems in higher education as part of normal procedure with an emphasis on assessment of results rather than objectives.

The capacity of national governments to adopt predatory behaviour toward their own higher education systems has been well documented over the past several decades, the Australian and British examples being two of the most dramatic (Clark, 1990). This capacity comes as a direct consequence of the single-source funding model of most European higher education systems. In every country with single-source funding, the source is, without exception, the government.

Institutional autonomy is one of the fundamental characteristics of the university. Autonomy is essential to universities because the goals and priorities of these intellectual institutions are intrinsically different from the aims and interests of any single group of stakeholders, including the government.

The classic Humboldtian principle of *Lehrfreiheit*, the freedom of the professor to pursue scholarship of his or her choosing, is fundamental to the quality of research and teaching and thus to the excellence of a university. Academic freedom is an instrumental principle that has proven to be productive for the most useful scholarship (in the long run) and the most effective teaching for virtually any student in any programme (Johnstone, 2009). The larger public interest is, therefore, served best by academic freedom and other principles of university autonomy, when combined with careful selection of the academic staff to whom such freedom is granted.

In addition to the generally accepted missions of teaching/learning, research and service, universities as democratic institutions may also undertake the mission to “...offer informed, reasoned critiques on the moral standards of business people, professionals and politicians. This supports public, popular criticism of the transgressions and helps keep professional authority in its rightful place. Universities cannot play this role if they are taking their cues from the (corrupt) market in a misguided effort to maximize social utility.” (Gutmann, 1987)

This mission of social and political critique may be in the greater public interest; however, it can often be in direct conflict with the interests of the prevailing political power. When the government is the single master of the university and when this power is not counter-balanced by institutional autonomy, the university cannot play this unique democratic role.

It was stated clearly at a conference on institutional autonomy and academic freedom in Bologna in 2012 that, when it comes to higher education, there is tension between principles and politics: “...the tension between institutional autonomy and academic freedom on the one side and the economic and political needs of countries and states on the other is evident.” (Tomusk, 2012)

As we learned from the “ivory tower” era, the university does not stand alone, above and beyond the needs and concerns of society. Higher education institutions must participate in the building and continuation of society. Without autonomy, the university has no voice in the dialogue. With autonomy, the university’s informed, considered and reasoned perspective takes its rightful place within the debate on how we co-exist with each other and what it means to live with dignity. Autonomy gives the university a voice in the dialogue with the State and other actors who influence the quality and conditions of our lives (Glass, 2012).

The fragile balance between autonomy and accountability

In the context of higher education, institutional autonomy generally refers to the degree of freedom from the State, freedom from regulations or other governmental dictates. Johnstone (2009) posits that there may be greater or less controversy over autonomy depending on the nature of the issue or decision element. For example, the case for autonomy is generally uncontested on such matters as: what students to admit to which programmes; what to teach and how to teach it; what faculty and other staff to appoint to which positions or jobs; what to research; whether and how to disseminate research findings, etc.

Institutional autonomy is more controversial when it comes to matters such as:

- employment rights and compensation of faculty and staff – which in some countries are considered civil servants and employees of the state
- disposition of land and other assets, which is often considered the property of the state
- programmes to be offered, which in most countries requires concurrence from the state on the bases of demonstrated need and likely quality
- curriculum of academic programmes required for professional licensure, such as engineering, medicine and law, which are viewed by most states akin to the protection of the client, patient and citizen

CHAPTER 4: KEY TENSIONS AND DEBATES SURROUNDING INSTITUTIONAL AUTONOMY AND ACADEMIC FREEDOM

- setting of tuition and other fees, which are generally considered to be too related to the basic goal of higher education access, which the state is paying for by its underlying appropriation while the university has a disproportionate incentive to maximise revenue relative to its incentive for student access
- requirement of and rules surrounding the demonstration that the public's needs have been met in ways that constitute a cost-effective use of the public's money: that is, the measures of accountability (Johnstone, 2009).

Institutional autonomy has no set parameters. It is a changing set of regulations and expectations that are negotiated among different stakeholder groups. These groups often have conflicting interests and needs, including:

- faculty and academic staff, intent on impressing the university with their academic values and standards and on protecting their freedoms and emoluments
- university management, generally charged with doing more with less and leading a faculty that wants to be protected and fed, but generally left alone
- the government sector charged with the provision of higher education quality and accessibility, usually the ministry of higher education
- the government sector charged with disbursement of precious public revenues and the difficult act of balancing voraciously increasing public needs with inevitably limited public revenues, usually the ministry of finance
- the head of government and majority party or coalition, endeavouring to meet the expectations of their electorates, who want admission of their children to a university they can be proud of, at a fee they can afford and without calling for additional taxes
- the governing board (of institution or system) charged with carrying out the needs of the public (often at odds with the needs of the faculty), while supporting and advocating for the university
- businesses and other employers, expecting to receive useable knowledge and knowledgeable graduates from universities, also without having to pay the additional taxes universities call for
- students, wanting admission, good teaching, a voice in university governance, preferably without paying for it or having to depend on parents for financial support (Johnstone, 2009).

From the government to academics to institutional leaders, from students to employers to civil society, no single interest group should have control over the university or that institution will fail in meeting all aspects of its mission. Autonomy *from* the control of any interest group is essential; however, accountability *to* all interest groups is equally essential. Humboldt himself recognised that the university is predestined to be myopic. While preparing to establish the University of Berlin in 1810, Humboldt stressed that “the state must understand that intellectual work will go on infinitely better if it does not intrude;” however, “...this intellectual freedom can be threatened not only by the state, but also by the intellectual institutions themselves which tend to develop, at their birth, a certain outlook and which will therefore readily resist the emergence of another outlook. The state must seek to avert the harm which can possibly arise from this source.” (Humboldt, 1870, p. 244; quoted from Zgaga, 2012, p. 16)

University governance is defined as the determination of the mission; structures of management; rules for sharing authority among the faculty, university managers, students and other stakeholders. Governance also incorporates the delicate balance between autonomy and accountability of universities (Johnstone, 2009).

We might consider governance to be “good” when it serves the long-term public interest. Such public interest is served by a university that carries out its multiple missions with cost-effective excellence; however, good governance must also negotiate the array of sometimes conflicting, often competing claims for the long-term

public interest. Johnstone considers that good governance is not in the hands of any single party, but something negotiated and arrived upon over time, respectful of history and of the great traditions of the university, and also of the changing needs of societies and economies and of the multiple demands on universities.

To ensure that universities fulfil their defined missions and serve the public interest, autonomy should be in balance with accountability by the university to stakeholders.

Key message for higher education institutions

The most useful scholarship and the most effective teaching in any programme are based on the fundamental principle of academic freedom. Such freedom is possible only if the university is autonomous. However, autonomy is not a shield behind which universities can shelter from unwelcome external interference. Such defensiveness leads to insular behaviour, resistance to contradictory perspectives, and an artificial division between higher education and society.

Optimally, autonomy is negotiated between the institution and its funders – most often the government, but funders may also be students, philanthropists, private donors and private industry, etc. In the process of such negotiations, the priorities and direct interests of each stakeholder group come to light and trade-offs must be made. At the institutional level, trade-offs may have to be accepted so higher education can contribute to the broader public good, e.g. equality, remediation of past prejudices, etc. Essentially, when negotiating for autonomy, the university must ensure that academic freedom remains intact while accommodating policies that promote higher education's service to society as its third mission, along with teaching/learning and research.

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Martin Humburg, Rolf van der Velden

Introduction

Higher education is facing many challenges, including increased student enrolments, diversification of the student population and decreasing budgets. Meeting the demands of the labour market is another of the major challenges faced by higher education.

In the area of meeting demands of the labour market, the role of higher education has significantly changed over the past century. When higher education was still elite education, graduates were certain to find good jobs. Nowadays, getting a higher education degree does not automatically guarantee a good position on the labour market. Between 2008 and 2011, the unemployment rate of young adults with a higher education degree has risen from 3.3% to 4.8% in OECD countries as a result of the economic crisis (OECD, 2013). These figures do not take into account the probably substantial number of graduates who avoided unemployment by accepting jobs for which they are overqualified and in which they are not able to put the skills they acquired in higher education to full use.

Questions, therefore, arise as to whether higher education meets the demands of today's labour market. Could higher education contribute more to the innovative capacities of economies? Should more attention be paid to the so-called 21st century skills?⁸ If so, which ones? Should higher education produce more generalists to keep up with the fast changing world? Or should it focus more on producing specialists who can deal with the increasing complexity of the work to be done? Should higher education focus on imparting skills that increase short-term employability, or should it focus on imparting skills that ensure long-term employability?

These are not easy questions to answer and we need a more systematic approach for dealing with them. This paper outlines a framework to help think about skill formation in higher education in a more structured way.

The decisions that need to be taken in education

In order to optimise higher education for the allocation of graduates to the labour market or society at large, three types of decisions need to be taken:

1. **What** are the skills graduates need to have in order to function well on the labour market or in society in general?
2. **When** (at which time) in the life course do these skills need to be learned?
3. **How** can these skills best be taught?

7. The line of thought developed in this paper largely builds on the earlier research of the two authors: a literature review on trends and related skills demands on the labour market (Humburg and van der Velden, 2013) and an empirical study on employers' preferences for CV and skill attributes of higher education graduates (Humburg, van der Velden and Verhagen, 2013).

8. Throughout this document we will use the term skills. With skills we refer to the whole set of knowledge, skills, attitudes and competencies that enable people to adequately perform their tasks.

In general, we have more systematic knowledge about the “how” than the “what” and the “when”. This is easy to understand if one acknowledges that teachers are probably the prime source of information when it comes to knowledge about skill formation. Over the centuries, teachers have accumulated practical knowledge about what works and what does not work in education. When it comes to the “how”, they usually get immediate feedback if the methods they use prove to be ineffective. With the massive growth of educational research in the past few decades, this knowledge has attained a more scientific foundation (for the state of the art, see Dumont, Istance and Benavides, 2010), but we should not forget that many of these insights were already rooted in the practices of teachers.⁹

The situation is fundamentally different for the “what”, as there is no immediate feedback to teachers as to whether the skills they teach are actually the ones that are most needed.¹⁰ The more time elapses between the actual skill formation and the use of these skills in the labour market or in society, the more difficult it becomes to oversee the consequences.

There is also no systematic feedback to teachers about the optimal timing of learning particular skill domains over the course of a lifetime, with the exception of the timing within a particular domain, such as math or a professional discipline. Here the domain specialists usually have a good idea about the optimal timing for learning different skill elements. The situation is quite different when one looks at the timing of different skill domains. Should one precede the other? Can both be taught at the same time? And how does progress in one domain affect the progress in another? We know very little about these aspects of skill formation and it is to be expected that significant gains could be made if we understood them better (Cunha and Heckman, 2007).

A simple model of skill formation in higher education

As indicated above, we are still very far from having a full understanding of the mechanisms that drive skill acquisition in education and how this process of skill formation can be improved. In our view, a model on skill formation in higher education should incorporate the following four notions: *trade-offs*, *mutual dependencies*, *optimal age*, and *skill depreciation*.

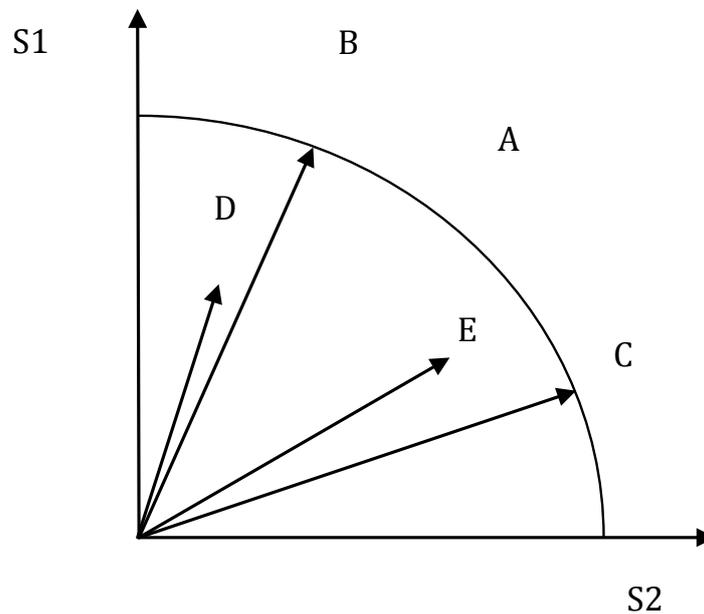
1. Trade-offs

Much is expected from higher education, but policy makers are not used to thinking of the field in terms *trade-offs*. Nonetheless, time is limited. Time spent developing one skill domain cannot usually be spent developing another. Figure 5.1 displays the trade-off in the situation of producing skills in two skill domains: S1 and S2. A displays the production frontier: this is the maximum skill output that can be produced given a certain input (e.g. time, staff characteristics, curriculum, technology). Improving the “how” (i.e. the input of staff or the improvement of teaching methods) can push up this frontier.

9. A notable exception is the relationship between assessment and skill formation. People often think that curriculum is the main driver of skills formation, but this is only partly true. The way we assess students also drives the learning process and this is a neglected area of research. We need to know more about which assessment methods foster which types of skills (William, 2010).

10. This is different for the more professionally oriented disciplines in higher education where this kind of feedback is provided.

Figure 5.1 Trade-off between skills

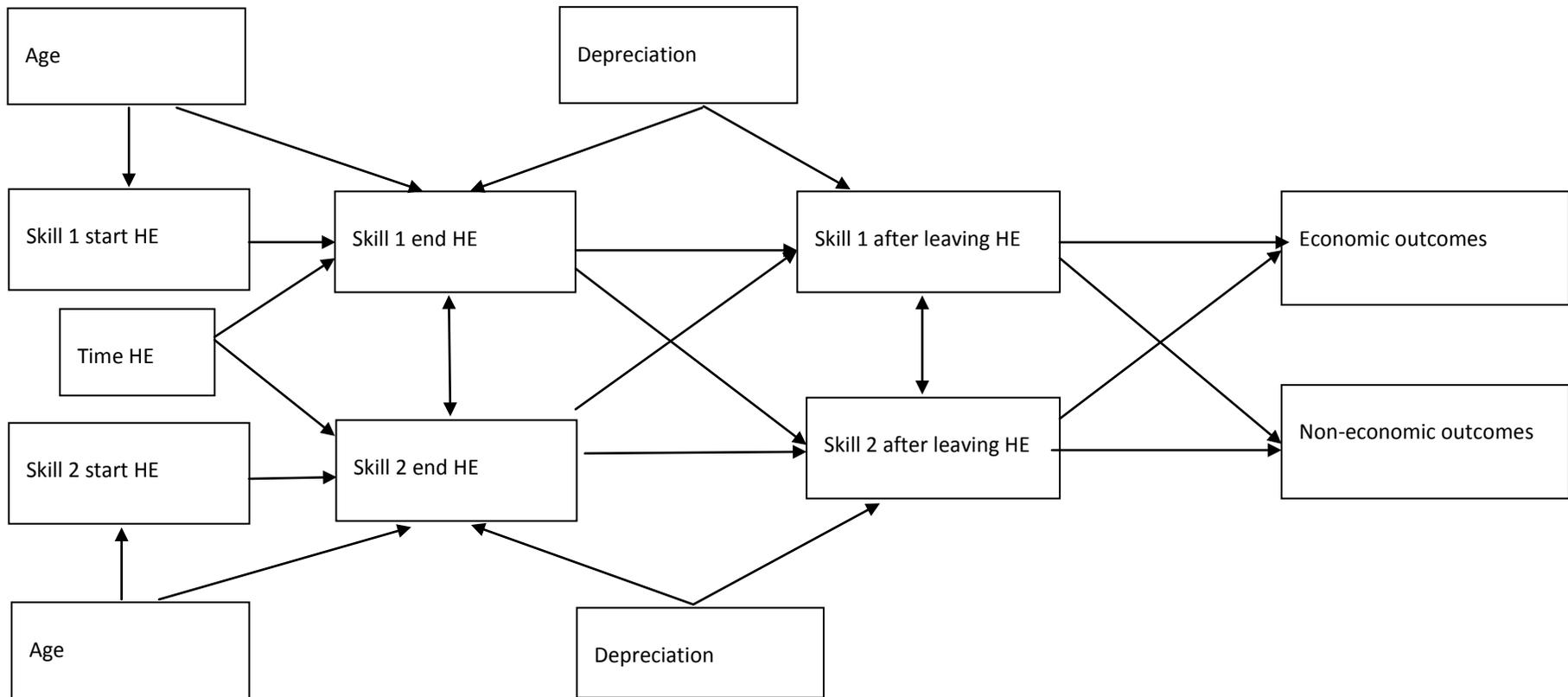


The frontier indicates that producing more skills in skill domain 1 (S_1) will happen at the expense of producing skills in skill domain 2 (S_2). B and C display the different choices universities can make in deciding which skill profile to produce. D and E provide examples of universities that are inefficient: they do not produce a combination of skills in domains 1 and 2 at the level that could be possible given the input.

2. Mutual dependencies

The second notion of our simple model is that of *mutual dependencies*. The accumulation of skills in one domain is not only dependent on the initial skill endowment and the time invested in developing these skills, but also on the skills developed in another domain. Sometimes a certain skill is not directly needed on the labour market or in society, but it is considered an important prerequisite for the development of other skills that are directly needed. An example might be introduction courses to the philosophy of science, which may help students from all disciplines develop professional and academic skills. In that case, skills developed in the second skill domain (S_2) may be a prerequisite for developing skills in the first domain (S_1). Or it might be that skills developed in S_2 make it easier to develop skills in S_1 . Figure 5.2 illustrates this by showing the mutual dependencies between the development of S_1 and S_2 in higher education.

Figure 5.2 A simple model of skill formation in higher education



3. Optimal age

The third notion any model of skill formation should incorporate is that there is an *optimal age* at which skills should be developed. Some skills (such as language skills) can be more effectively and efficiently developed at a young age, while other skills require some life experience (e.g. managerial skills). This is indicated in Figure 5.2 by the effects of age.

4. Skill depreciation

The fourth notion is that skills can also *depreciate* over time. These skill losses are indicated in Figure 5.2 by the effects of depreciation. When no time is invested in keeping skills up-to-date, the skill level will decline. The amount of skill depreciation may differ between skill domains, depending, for instance, on the half-life of the knowledge in a particular domain.

Which skills are relevant for graduates?

In a recent literature review, we identified six trends at the core of the changing role of graduates in economic life (Humburg and van der Velden, 2013). These trends are *the knowledge society, high performance workplaces, the ICT revolution, the change of the economic structure, globalisation, and increasing uncertainty*. By changing the nature and range of tasks graduates are expected to fulfil in today's economy, these trends generate demand for new skills and also intensify demand for certain traditional skills, which we summarise as:

- *professional expertise*: this entails a specific body of knowledge, the ability to apply expert thinking, and general academic skills
- *mobilisation of human resources*: interpersonal skills, self-(management) skills and strategic-organisational skills
- *innovation and knowledge management*: innovative/creative skills; network, information and strategic ICT skills; and the skills to implement innovations in an organisation
- *entrepreneurship*: the ability to identify commercial risks and opportunities, cost awareness and the ability to turn an idea into a successful product
- *international orientation*: foreign language proficiency and intercultural skills
- *flexibility*: the ability to deal with changes and uncertainty, the ability to learn new things and general employability skills.

Does that mean that all these skills need to be addressed in higher education?

Certainly not. As indicated above, time in higher education is precious and we need to think very carefully about which skills should be developed in the course of a higher education degree and which ones not.

Previous research has shown that *professional expertise* is the prime driver of success on the labour market (Allen, Pavlin and van der Velden, 2011, Allen and van der Velden, 2011), even if a graduate is working outside his or her own domain. As the traditional domain of higher education, it is not surprising that professional expertise is often regarded as the key skill domain on which higher education should focus (Humburg, van der Velden and Verhagen, 2013). In developing professional expertise in higher education, two things should be kept in mind:

1. General academic skills are inextricably connected to the development of professional expertise. Results from cognitive psychology show that it is hard or even impossible to develop general academic skills such as analytical thinking or learning skills without content (Perkins and Salomon, 1989). Moreover, there are strong indications that general skills alone have no practical utility (Weinert, 2001). Even if this were the case, one would still need the vehicle of a discipline with specific content to develop general skills.

2. One often hears claims that the role of specific knowledge has become less important. Much knowledge can be found on the internet and – moreover – specific knowledge quickly becomes out-dated. Proponents of this point of view argue that it is more important to develop general learning and information-searching skills than to impart specific knowledge. However, this view fundamentally neglects the role of building up a body of knowledge in order to become an expert. Becoming an expert is not just simply a function of “googling” on the Internet. In order to evaluate and integrate new knowledge, one needs an already existing frame of reference (Hayes, 1981). Specific knowledge is, thus, key to becoming an expert in a certain field and the cognitive science literature has accumulated convincing evidence that solving expert-level tasks requires content-specific skills and knowledge (Weinert, 2001).

The second most important skill domain according to the findings of our research among European employers (Humburg, van der Velden and Verhagen, 2013) is *mobilisation of human resources*. *Interpersonal skills* rank particularly highly on the employer’s agenda. Lack of these skills is associated with large risks for productivity (not only a graduate’s own productivity, but also the productivity of others in the organisation). Despite the importance of interpersonal skills, this does not necessarily mean that higher education is the only or even the best place where these skills should be developed. As long as there is no trade-off with the development of skills in other domains, such as professional expertise, this should provide no problem. Student-centred methods, such as problem-based learning and project-based education, seem to produce both types of skills at the same time. However, if this were not the case, one could wonder whether precious time in higher education should be spent in developing interpersonal skills. It might be more effective to develop these skills earlier in life or outside higher education, for instance by encouraging students to join a team sport or a student association.

Self-management skills are also an important type of skill, but, as with interpersonal skills, these can also be partly learned as a by-product of the way education is organised. Working under time restrictions, learning how to plan and organise your studies is something students learn better in certain curricula than in others. Unlike the case with interpersonal skills, however, it might be very good to invest in specific skills training in this area in the early phase of students’ time in higher education, as these skills also affect the efficient accumulation of skills in other domains.

The more *strategic-organisational and management skills* that are related to the mobilisation of human resources should not be the focus of higher education. According to employers interviewed in our research, these skills should be developed later in life, as this type of skill needs more life experience to be effectively developed.

Employers expressed some doubts as to whether skills related to *innovation and knowledge management* as well as *entrepreneurship* can be developed at all, or whether they are basically innate. In our research, many employers argued that it is not easy to develop innovative capacity, creativity and entrepreneurship. What is more, employers feel that these types of skills lend themselves to specialisation. While every graduate needs to be an expert and have good interpersonal skills, not everybody needs to be an innovator or an entrepreneur. Although this may be true to some extent, the question is whether there is an alternative to higher education playing a central role in the further development of these skills: innovation, creativity and entrepreneurship are often seen as vital to an economy’s growth potential. The competition between countries will most likely be determined by success in finding ways to produce these types of skills in higher education. Furthermore, although some elements of innovation and knowledge management, as well as entrepreneurship, such as creativity and commercial instinct, may not be easy to develop, other elements such as ICT skills and cost awareness can certainly be developed in higher education.

Higher education has become strongly internationally oriented in the past decade. But the world around higher education has changed even faster. There is continued need for higher education to foster the *international orientation* of students by offering programmes in English and by encouraging their participating in exchange programmes. This is again more a question of how education is organised and no trade-offs need to be faced if it is organised well.

Finally, *flexibility* and the skills related to this domain do not need special attention in higher education. The findings of earlier research (Allen and van der Velden, 2011) show that flexibility in itself is not rewarded in the labour market. Although graduates will face a world of work that is increasingly characterised as insecure and

uncertain, flexibility is more the passive component for dealing with that uncertainty. The results of our research suggest that innovation and entrepreneurship provide more active ways of successfully dealing with changes and uncertainties (Humburg, van der Velden and Verhagen, 2013).

Concluding remarks

The fact that certain skills need to be developed in higher education does not necessarily imply that each student needs to have the same set of skills. Humburg's and van der Velden's (2013) analysis relates more to the *mix of skills* required on the labour market on an aggregate level, rather than the individual level. This means that choices can and should be made and that students can specialise in one or more skill domains.

However, all graduates need to have a common core of skills from each domain in order to be able to work together efficiently. At the moment, we only have a vague idea of what the minimum skill levels in each domain are. General academic skills (as part of professional expertise) and interpersonal skills most likely play a prominent role in facilitating communication and understanding among team members with complementary skills. Determining the balance between the common set of skills required for every student and the set of skills that lend themselves to specialisation is key to developing a proper curriculum for higher education.

We need a new research agenda that aims to address these issues in a systematic way. National and international higher education policymakers could benefit greatly by making such a research agenda possible.

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Peter Coaldrake and Lawrence Stedman

The promise of technological enhancement for universities has long been accompanied by prophecies of fundamental disruption and change. While people have been furiously speculating about what MOOCs might mean, universities have to make practical and strategic decisions, and student expectations are rising while government funds are tightening. To do this, universities need to separate the real promises and threats from the hype and wishful thinking, and put what students need and want at the forefront of their thinking.

Higher education has been, and generally remains, based on direct personal interactions among students and academics. These interactions are supplemented in a variety of ways by forms of technology ranging from print through to the Internet. Despite many decades of prediction, technology has not significantly displaced personal interaction or physical attendance at campuses. This is not for want of trying; despite correspondence courses, educational television, lectures on video or discs, open universities and even the advent of the web and social media, the traditional campus-based lecture and tutorial model has proven surprisingly resilient despite rapid expansion of higher education to ever larger shares of the population in most countries. Mass higher education, for the most part, remains stubbornly labour-intensive, and it is no coincidence that the task of providing the resources needed to extend it ever more widely is creating an increasing headache for governments, individuals and families.

As costs mount and technological capability grows, there are few reasons to believe that we have seen the end of efforts to disrupt the status quo. Among the most recent manifestations is the MOOC, or massive open online course. Before 2012, MOOCs were relatively obscure experiments, but the emergence of the MOOC phenomenon – linked to highly prestigious U.S. universities, venture capital, and some of the biggest names in artificial intelligence research – catapulted the term to such prominence that casual observers of the sector could be forgiven for thinking that the game was almost all over for the traditional university. Even when some of the initial hype about “Ivy league education for free” had faded, the rapid signing-up of courses from prestigious universities around the world showed that something new and potentially very significant was emerging.

However, it is important to put this phenomenon in some perspective. Just over fifteen years ago, the management guru Peter Drucker predicted that within three decades big university campuses would be relics, unable to withstand cheaper technology-based alternatives. This was a time when higher education was widely seen as being at a tipping point, exemplified by a major review of universities in Australia that foreshadowed radical changes. A research project commissioned by the Australian government provided some counterbalance, noting that, while many of these prospects were overstated, there had already been expansion and transformation of long-standing forms of alternative provision, such as open universities and education delivered by for-profit companies, such as the Apollo Group. Follow-up research in 2000 and 2001 traced the fate of some of these experiments, including Columbia University’s Fathom, which went on to close in 2003, Dow Jones University, Melbourne University Private (closed in 2005), UNext/Cardean and several other spin-off online programmes that emanated from established universities.

Along with entrepreneurial venturing, fear of “falling behind” prompted the U.K. government to set up what was known as U.K. e-university (UKeU) in 2001. The first courses did not appear until late 2003, and only 900

11. This article is based on Chapter 7, ‘Weapons of mass instruction’, in *Raising the Stakes. Gambling with the Future of Universities* by Peter Coaldrake and Lawrence Stedman, University of Queensland Press, 2013.

students were enrolled against a target of 5 600. By the time the Higher Education Funding Council for England closed the UKeU in 2004, the venture had consumed GBP 50 million of public money.

While there had been many failures in new corporatised ventures, as would be expected in a rapidly moving, experimental field, online education has steadily percolated throughout the higher education enterprise. While some courses – and some universities – are fully online, most incorporate online features within a campus-based framework. However, it has been apparent that the combination of online with face-to-face education has not led to noticeable cost savings. If anything, the reverse has been the case, as online activity has been added to and (more recently) incorporated within the traditional delivery paradigm. Meanwhile, highly expensive IT personnel and systems have consumed ever greater shares of university budgets. In the United States, online education in both the non-profit and for-profit higher education sectors frequently proved itself to be just as, if not more, expensive than residential-based alternatives.

The emergence of MOOCs in 2012 promised more than a re-run of past utopian visions of online higher education; it provided working examples of massive economies of scale. However one of the key questions is whether this itself will scale: can MOOCs go beyond one-off boutique short-course offerings in a limited range of subjects? There has been much speculation about what might constitute a “business model” for MOOCs. It has become apparent that a long list of issues will need resolution if MOOCs are to make the kind of headway that their proponents hope (and many of their detractors fear) and, in particular, if they are to serve as more than piecemeal resources developed by motivated and often subsidised professors for people who are already capable of independent learning. These issues include matters such as identity verification, external demonstration of learning, maintenance and renewal of expensive course materials, intellectual property rights, co-ordination with wider curriculum, management of peer assessment, and dealing with high drop-out rates and mixed student motivation. Pedagogy is also in its formative stages, with significant reliance on old-fashioned approaches to lecturing and limited feedback – especially beyond student peers.

Many of these issues will be resolved over time, or at least rendered more manageable. There is a great deal of investment behind these ventures and some of the finest minds in the world are actively engaged in making them work; however, in many cases the solutions will pull the “product” back from being massive and open, as exemplified by special arrangements that have been entered into between some MOOC providers and particular educational institutions. In effect, at least some part of the MOOC enterprise might move closer to being a form of “learning management system”. As it does so, it will be of very considerable interest to see whether MOOCs can build new alliances with other education providers to offer high quality education in ways that are financially sustainable for institutions and more affordable for students. It will be even more striking if such entrepreneurial approaches are developed for the mainstream or even the elite end of higher education, and not offered as second-best solutions for the financially disadvantaged.

Technology and “delivery” are not the only, or perhaps even the most important, aspects of MOOCs. One of the immediate questions they raise is whether universities can or should recognise MOOC study undertaken by potential students. This leads to wider considerations about recognition of learning and credit for what has been learned, derived from outside the usual credentialing structures of traditional higher education. While competency-based education has long been a feature of technical education, it has been slow to impact higher education. This, too, is beginning to change, particularly in the United States, where new explorations are underway in pursuit of low-cost higher education.

Among these initiatives is that of Southern New Hampshire University, on whose board sits Harvard Business School Professor Clayton Christensen, a noted champion of the concept of “disruption” caused by competitors whose products are not necessarily better in quality, but are cheaper and easier to use. His favoured model involves developing more standardised low-cost online programmes, which “unbundle” the various components of course development and delivery, and incorporate, where possible, new technological products and processes.

In a related fashion, a company known as StraighterLine began business in 2010, offering low-cost online general courses that suit the first one or two years of college study. StraighterLine uses commercial content and a learning management system paralleling that used in many traditional and for-profit providers, and in 2012 it charged students USD 99 a month plus USD 39 a course. It has negotiated credit arrangements with a

number of accredited universities and colleges, though to date it has struggled to strike such deals with many of the better-known traditional universities and colleges.

Western Governors University (WGU), a private not-for-profit institution, was founded in 1997 with initial funding from governors of 19 western U.S. states and based in Salt Lake City, Utah. WGU does not develop its own courses, but instead specifies competencies and assessments and then either licenses course content from commercial providers or takes it from open courseware sites. There is no structured academic calendar. Instead students can take tests when they feel ready and they are charged tuition at a flat rate every six months, with WGU claiming that it can provide degrees at typically half the cost of comparable regionally accredited online universities. WGU took a number of years to establish itself in an environment that was not set up to handle competency-based higher education, but it has grown rapidly over recent years with affiliates opening in Indiana, Washington and Texas, and a total student population of over 30 000 in 2012. As more and more alternatives emerge for students to undertake their own courses at times and paces of their choosing, we can expect increasing pressure on universities to soften their perceived intransigence on credit-granting for prior learning.

While it is true that universities are not just information-based enterprises like newspapers, bookstores or encyclopaedia companies, and while it is true that we are facing evolution rather than revolution for at least the short term future, two matters are beyond dispute. First, universities will be under ever greater pressure in the years ahead to limit their costs. The world will demand more affordable high quality higher education in the years ahead, and in some countries we have probably already passed the peak level of real public subsidy per student. Second, technology will continue to expand in capacity, mobility, penetration throughout the community and in its ability to enable new ways of providing education.

If we are to retain the best elements of personal, social and cultural interaction that characterise great university education, we need to embrace new ways of working with technology and open our minds to new possibilities for helping students to learn. This demands that universities themselves take the initiative. While some scepticism is warranted, and much of the fear of being left behind is misplaced, we must not blindly or complacently defend the status quo in order to counter over-idealistic or opportunistic entrepreneurialism. Nor can we expect to spur academics into action with lurid tales of doom or imminent obsolescence. Instead we need to find our own solutions, driven by a desire to improve and a willingness to experiment and innovate and, above all, by a focus on what students want and need, and expect to experience, rather than on merely what educators, policy makers or entrepreneurs might prefer to offer.

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CHAPTER 7: IMPACT OF THE GLOBAL ECONOMIC CRISIS ON HIGHER EDUCATION: THE LEADERSHIP AND POLICY CHALLENGES

Ellen Hazelkorn

The 2008 global financial crisis triggered the collapse of financial institutions around the world, rising unemployment, and prolonged problems of public and private debt. Some governments have been able to maintain or expand funding for higher education and research, while others have been forced to reduce expenditure. An OECD conference in 2009 found the crisis was likely to precipitate trends already apparent, and while there were short term measures or adjustments that could and should be made, there were likely to be long term implications. Four years on, how much do we understand about the impact of the crisis on higher education institutions and the challenges being faced by institutional leaders? Do the changes simply reflect the continuation of existing trends, or do they signify a transformative paradigm shift in the Western model of publicly-funded mass higher education?

This chapter presents preliminary results of an international survey of higher education leaders conducted during 2012-13. From the perspective of institutional resilience, the chapter looks at issues of institutional strategy, quality finance, student participation and faculty work, and considers the range of remedial actions and strategies being adopted by HEIs around the world.

Impact of the crisis

OECD evidence consistently points to the critical link between higher education and sustainable social and economic health and prosperity for individuals and for society. Higher education contributes to developing the knowledge and skills citizens need to contribute to society throughout their lives; to enabling graduates to succeed in the labour market, fuel and sustain personal, social and economic development, and underpin democratic civil society; and to generating new knowledge through research and the translation of new ideas into new products, services and policy. These benefits require that higher education is no longer an elite privilege, but a necessary national asset.

At the very moment when the continuing shift to a knowledge-based economy and the rising demand for higher education are occurring, many governments and citizens face serious financial strain, which has knock-on implications for higher education and research systems. Globalisation is accentuating comparative and competitive advantages, placing higher education quality and performance under intense scrutiny. While many of these challenges were manifest years ago, the intensification of competition signalled through global rankings, the premium now being placed on "talent", and recognition of higher education's role as a driver of economic recovery has placed higher education institutions (HEIs) and university-based research at the forefront of strategic policy.

The global financial crisis has varied in intensity and effect, and over time, on individual countries and higher education systems and institutions. For example, the European University Association (EUA), which has been monitoring the situation since 2008, says only seven out of 20 higher education systems in Europe have better funding in 2012 than in 2008 (Privot, 2012), while Usher (2012) argues that, across the OECD, the "financial crisis is only phase one of the problem." In contrast, HEIs in Asia, Australia and South America have had a very different experience (UNESCO, 2012).

It is clear that nations, and consequently HEIs, are being affected in different ways and to varying degrees by the current economic crisis. But how much do we really understand? Are the changes being experienced simply the continuation of existing trends, or do they represent a profound shift in what has come to be accepted as the basic model of mass (publicly-funded) higher education? What choices are being made, and what are the leadership and policy challenges?

International survey of HEI experiences

To get behind the general commentary and anecdotes, an international survey of senior higher education leaders was conducted during 2012-13 by the Higher Education Policy Unit (Dublin Institute of Technology, Ireland) in association with the International Association of Universities (IAU). Thirty-four HEIs from 29 countries participated. While every continental region is represented, 52.9% are from Europe; 80% are based in metropolitan areas, 38% were established since the 1970s, and 50% describe themselves as research-informed or research-intensive. There are methodological shortcomings associated with cross-jurisdictional comparisons across diverse HEIs, but the study reveals a remarkable similarity across all institutions – regardless of age, size or geographic location – with respect to the effects, scenarios, and responses being considered and implemented in reaction to the changing global economic and national policy environments.

All participating HEIs say they have been affected by the current global crisis. This includes being affected indirectly as a consequence of changes to national policy made in response to global developments, such as reductions to core budgets or other funding programmes due to government deficits, and reform of higher education systems, including governance changes and increased scrutiny in response to value-for-money concerns. Factors such as availability of funding (from government or other sources), changes in student demand, increasing evaluation environment, reductions in core budget, and requirements of employers and the graduate labour market are driving institutional priorities. Almost 77% of respondents say the crisis has made it more difficult to achieve institutional goals, with only 7% saying they have been unaffected; 56% say the crisis has negatively affected the income they receive or earn.

The overall effect has been to focus institutional attention on a limited set of key issues, with more emphasis on improving competitiveness and distinctiveness, recruitment and retention of talented students and faculty, and achieving greater efficiency through the adoption of a new business model, rather than broader objectives such as recruiting students, improving rankings or building capacity. The differences may be subtle, but they suggest a more targeted and strategic approach. More generally, it's clear that the crisis has shaken a previous complacency; as one HEI admitted: "Prior to 2008, the assumption was that the institution could rely on an increasing flow of students and revenue and therefore improving standards and rankings was a high priority. The global crisis combined with changes in technology has led to a re-examination of priorities and a desire for a more focussed and efficient institution."

Changes in funding and national priorities are having an effect, not just in absolute but in relative terms, resulting in (unintended) consequences. For example, participating HEIs say the proportion of funds coming from the ministry – which pays for core teaching and learning – are decreasing in contrast to research grants, particularly in science and technology disciplines, which are increasing. In parallel, because human resources constitute the major component of the budget, this is increasing relative to other operating costs – thereby (negatively) affecting teaching and learning. As a result, reductions or restrictions are commonly sought in administration support, faculty recruitment, travel to conferences and meetings, and library budgets. At the same time, government funding, whether for institutions or for research, is increasingly tied to targeted objectives and outcomes, threatening institutional autonomy and scientific inquiry.

One of the key questions facing educators and policymakers concerns the impact of the crisis on quality. Here, the evidence from the survey is surprising. While HE leaders are concerned about quality, almost 31% of respondents think that the crisis has improved the quality of education at their institution with an equal percentage noting no change. This may be due to, as one respondent says, focusing on "what really needs to be offered, both in programmes and in services. Focus on the NEED to HAVE and less on the NICE to HAVE (sic)." It has also "brought to surface what people actually think of teaching and learning and success", coupled with greater policy and institutional emphasis on accountability and competitiveness. Where quality is being affected, participants cite inability to attract or retain talented faculty and students, increases in academic workload and reductions in services, module choice, salaries and private funding.

The crisis is also having consequences for student participation. Overall, respondents foresee the percentage of full-time students decreasing over the coming years as the crisis continues, a view compatible with the U.S. experience (Long, 2013), while distance learning, part-time students and international students will increase. The latter is due to deliberate national and institutional strategies to increase revenue by way of international

or, in the U.S., out-of-state students who are charged higher tuition fees. At the same time, and somewhat alarmingly, participants anticipate a decline in the percentage of students from low socio-economic backgrounds, those requiring financial aid and mature students; this includes students from the local area and students living with parents, although this group still remains the greatest proportion of total students admitted. Scholarship students, in contrast, are expected to increase, placing a greater financial strain on institutions, while also reflecting aspects of the above-mentioned strategy to target talented students.

Finally, respondents indicated that changes in academic work, including terms and conditions of employment, have been a significant feature of the new environment. The most significant changes are leading to greater accountability, increased faculty/staff ratio, more part time staff and more contract staff, although there was little evidence of performance or research-related pay being introduced. Almost 67% reported that faculty recruitment strategies and practices had changed over recent years, including using testing to ensure top level recruitment, with the same percentage indicating changes to promotional practices. Perhaps not surprisingly, respondents report that faculty spend more time on research and less time on teaching, although they also cite an increase in the amount of time faculty spend on out-reach or engagement activities – which may reflect the increasing value now given to such activity.

With respect to the changes being experienced, non-tenured faculty are the most realistic about the challenges confronting the institution, according to institutional leaders. This is probably not surprising; given that tenured faculty are relatively cushioned, non-tenured faculty are more likely to be affected by changes in the labour market and recruitment practices.

Institutional resilience: what works?

While much of the survey evidence and public commentary point to an overall negative impact on higher education, the crisis also highlights the resilience of higher education. There is sharper attention to mission and strategy, engaging directly and mutually with the region, developing new educational programmes and services for all kinds of students of all ages, and meeting the needs of society and the economy. Despite significant differences in capacity and capability of the participating HEIs, there is a remarkable similarity to their focus on remedial actions and strategies. This includes: increasing faculty/student ratios; increasing teaching load; increasing tuition fees and/or international/out-of-state student recruitment; aligning tuition fees to real costs; reducing non-personnel costs; consolidating administration/support services – including outsourcing some services to other parts of the world; decreasing support to students; reducing module choice and/or changing programme offerings; and increasing the use of on-line provision – even though it is not always clear that this results in real cost savings.

HEIs report that they are weathering-the-storm by, among other things, controlling costs, more efficient practices and greater scrutiny of expenses. Leadership is a critical factor for success. Several respondents indicated that they had chosen to protect current academic staff and academic programmes, albeit the extent to which they will be able to continue this practice is reaching its limit. One downside of this approach has been the reduction in new staff, tenured and non-tenured. And, while 92% of respondents said they were seeking new sources of funding, they had not found the “magic bullet” to replace declining public investment, not least because many of the private sources are also under strain.

But it is also evident that the range of choices pursued are simply “coping strategies” (Hoareau, 2011). There appears to be an absence of strategic considerations regarding their future position within the national or global landscape. There is an underlying assumption that the “good times” will return, and an absence of scenario planning or consideration of the future shape of higher education or their institution.

Implications for higher education and policy

The research throws up some disquieting contradictions between stated policy objectives and reality, requiring further consideration of the policy trade-offs. A few such issues are identified below.

For example, respondents report an increasing dissonance between research and teaching encouraged by reductions in public funding that support teaching and learning, and increases in research grants. There is

evidence also that faculty spend more time on research than teaching, probably in response to valorisation tied to recruitment and promotion. HEIs report research publications and citations, and resources available for research have all improved in contrast to faculty/student ratio and total funding per student, which has registered the greatest decline since 2008. Research funding is most prevalent for science and technology disciplines and adversely for other disciplines.

The demand for higher education participation is accelerating in parallel with the global battle for talent to drive the knowledge economy. Widening participation has been both a social and economic imperative. Yet, evidence from the survey suggests a reversal in previous positive trends. Given the need to counter declines in public funding, HEIs and governments are (reluctantly) increasing tuition fees, some of which is being reallocated for scholarships. As the search continues for talented students, which strongly correlates with socio-economic status, the premium on elite students and elite institutions is rising – threatening to unwind many government objectives and leading to increasing stratification within and between higher education systems based on levels of public investment.

If Usher (2012) is correct that the “point of maximum public investment in higher education” has been reached, then the crisis is only phase one of a much more profound set of changes in store for publicly-funded mass higher education. “Doing more with less” was a useful catch-cry in 2008; however, this study suggests we need deeper consideration about sustainability and the long-term effects of many of the short-term solutions being adopted today.

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Philip G. Altbach

The academic brain drain is alive – many scientists and scholars from developing and middle-income countries are attracted to the North to teach and conduct research. These academics, despite the global knowledge economy, are largely lost to their home countries. Increasingly, the policies of the rich countries favour encouraging international graduates to remain by boosting “stay rates” to counteract demographic declines. The loss of top talent from Africa, especially, and other developing areas is quite considerable. Do the universities and governments of the North have any responsibility to the academic systems and economies of the developing world?

The world is, contrary to the views of Thomas Friedman, far from flat (Friedman, 2006). So also is academe fraught with deep inequalities and characterised by global centres and peripheries. The rich countries, mostly OECD members, not only dominate the global university rankings, they produce the most research, control the key journals and other means of knowledge distribution, educate the top PhD holders, employ most postdocs, and are most attractive to the internationally mobile knowledge elites. With the emergence of the global knowledge economy, the traditionally powerful countries have reinforced their positions.

How do global academic inequalities impact both higher education and society and what responsibilities do academic institutions, systems, and governments in the rich countries have to ameliorate inequality or at least to be aware of ramifications?

For this discussion, the central realities are the domination by the rich countries, and particularly of the English-speaking academic powerhouses, over the flows of cross-border students; employment of skilled personnel, including academic staff from around the world; and of knowledge itself. In addition, the attractiveness of both academe and other elements of society in the rich countries have created a largely one-way flow of talent and ideas.

There has been much discussion in recent years of the concept of knowledge exchange and the idea that, in the era of the Internet, easy global transportation and increased use of English as the *lingua franca* of science, higher education, and professional life have levelled the “playing field” (Montgomery, 2013). Even if skilled people from developing countries settle in the North, it is argued, their “brains are not lost” in a “flat” globalised world. The reality is that location still matters a great deal – particularly for the academic profession. Once embedded in universities and the academic culture of one country, professors from other countries seem to focus their attention mainly on the adopted environment, even if, as is common, they also collaborate on research projects and publications with colleagues from their countries of origin. A few of the most prominent may accept part-time appointments “back home”, but they are mainly committed to the institutions and countries where they work.

Current trends

The “brain drain” is alive and well, as are significant subsidies from the developing world to the rich countries in terms of “export of talent.” International study is one example. More than three million students study outside the borders of their home countries – a significant majority of them from developing and emerging economies. The 764 000 international students studying in the United States contribute more than USD 22 billion annually to the American economy (IIE, 2012). Estimates are that international student mobility generates at least USD 70 billion. Even countries such as Germany and France, where tuition costs are lower and scholarships more plentiful, realise significant income from the living costs of international students.

Perhaps of greater concern are the subsidies provided by emerging and developing economies – through their doctoral graduates, who remain to work or join the academic profession in the rich countries. Here are examples from India and China – the two largest “brain exporters” in the world. It should be noted that these statistics are suggestive, since details are unavailable and data points vary.

- In 2012, 100 000 Indian students were studying in the United States, mostly at the post baccalaureate level. The large majority of these students remain after earning their degrees, and many join the American professoriate (Kim, Bankart and Isdell, 2011). Using UNESCO statistics, a rough estimate is that it costs the Indian taxpayer around USD 7 600 in purchasing power parity (PPP) to educate a student from primary schooling through a bachelor’s degree. It can be estimated that an Indian family may invest a similar amount in the education of a child – particularly since many of the young people who qualify for admission to overseas universities have been educated in private English-medium schools in India – for a total estimate of USD 15 000. Thus, the approximate Indian investment in America, by paying for the education of 100 000 young people through the bachelor’s degree, is approximately USD 1.5 billion annually.
- The China figures are likely even higher. Although figures on public expenditures on education are not available, research shows the average Chinese family invests USD 39 000 PPP dollars to educate a student from primary through the completion of a bachelor’s degree. There were 194 000 students from China studying in the United States in 2012 (IIE, 2012). One can estimate that Chinese families were spending USD 7.6 billion in brainpower in the United States last year alone. Significant additional funds from Chinese state sources were also spent, although figures are unavailable.

Of course, not all Indian or Chinese students graduating from American universities remain in the United States, although significant numbers do stay – approximately 80 percent of Chinese and Indian graduates have not returned home over a 20-year period, and the proportion of non-returning doctoral graduates is higher (Kim, Bankart and Isdell, 2011). And recent research indicates that international students constitute more than 90 percent of doctoral students in many American universities – particularly in fields such as electrical engineering and computer science (Redden, 2013).

A recent international study of the academic profession provides some insights on the national origins of academics in various countries. A significant proportion of senior academics working in Canada (36%), the United States (20%), the United Kingdom (17%), and Australia (46%) were citizens of another country at birth. While not all of these academics come from the developing world, it can be assumed that a significant proportion do (Teichler, Arimoto and Cummings, 2013, p. 85).

The African brain drain

The exodus of African talent is longstanding and dramatic and will serve as a good example of how the brain drain affects developing areas (Hoba and Marfouk, 2011). For example, sub-Saharan Africa has the lowest number of researchers in the world – 79.2 per million population, as compared with 442 per million in the next lowest region, Latin America, and a world total of 1 080 (Hoba and Marfouk, 2011). Similarly, sub-Saharan Africa has 1.9% of the world’s physicians for 12% of the world population – a total of 129 000 compared to France, with 207 000 physicians (Hoba and Marfouk, 2012). At the same time, large numbers of highly skilled Africans, including medical doctors and other health professionals, emigrate to the OECD countries, and particularly to the European Union. African migration has become, in considerable part, composed of the well-educated. From 1990 to 2000, the number of high-skilled African-born workers, those with tertiary qualifications, migrating to OECD countries and mainly to the EU, grew by 90% (Hoba and Marfouk, 2011, p. 42).

Compared to the rest of the world, Africa spends a large share of national resources on education. On average, 17.5% of government resources have gone to education in sub-Saharan Africa, compared to 12.2% in North America and Western Europe. Thus, Africa spending on education in part supplies the needs of the rich countries. The point of the African example is to illustrate the extent of migration of brainpower from the developing world to the North. While Africa is an extreme case, other developing regions show similar patterns.

Rich country strategies

Hans de Wit and Nannette Ripmeester provide an excellent summary of some of the policies in developed countries aimed at increasing “stay rates” of higher education graduates through changes in immigration policy, the provision of scholarships, closer links between universities and employers, and others (de Wit and Ripmeester, 2013). There is wide agreement in Europe and North America that new initiatives are a good idea to entice the “best and brightest” international students whom they educate to stay and join the local labour force. Efforts to liberalise visa regulations; open employment opportunities; permit postgraduate work; ease degree recognition; improve co-operation between universities, governments, and industry; and many other initiatives are being discussed and in some cases implemented.

An underlying concern in much of the rich world, especially in Western Europe and Japan, are looming demographic realities. The number of university age young people is falling, and inevitably there will be fewer domestic graduates. Further, relatively few domestic students in these countries are choosing STEM (science, technology, engineering, and mathematics) fields. These realities are beginning to shape academic and immigration policies.

Countries such as the United Kingdom and Australia that recently implemented more stringent immigration limits are rethinking their policies. The U.S. National Academy of Sciences and American universities advocate liberalising visa regimes to make it easier for foreign graduates to remain and work in the United States. The United States tightened visa regulations and the possibilities for remaining after degree completion after 11 September 2001 – resulting in a temporary dip in international student numbers. After pressure from the higher education community and high-tech employers, regulations have been loosened to some extent.

International study policies – including tuition costs, scholarship availability, and immigration policies in general – in the rich countries are determined without exception by national political, economic, and demographic concerns and in no case by a concern for the developing world.

There is absolutely no recognition of any contradiction between, for example, Millennium Development Goals, which stress the necessity for educational development in emerging nations, and policies aimed at attracting the best brains from developing to developed countries.

African countries such as South Africa and Botswana, which have relatively advanced higher education systems and pay relatively attractive salaries, also lure talent from elsewhere in Africa. Further, the academic brain drain operates between the major “academic powers,” as well. For example, Germany tries hard to attract its postdocs and doctoral graduates working in the United States back to Germany, although with only limited success. The more stable academic career structure and somewhat higher salaries in the United States are attractive, and American universities try to keep the brightest international graduates, whatever their nationality.

One thing is extraordinarily clear – the policies of the rich countries are, without exception, related to their own national manpower needs, demographic prospects, patterns of domestic student enrolment and study choices, and political realities.

Ameliorating the brain drain

Do universities and academic systems in countries that attract substantial numbers of academics from the developing world have a responsibility to mitigate the brain drain? A sense of responsibility for encouraging doctoral graduates from the developing world to return home, to build universities, and to improve the quality of emerging academic systems is entirely absent from the current discussion.

A combination of factors contributing to current patterns of academic mobility all but guarantees the continuation of the brain drain. In developing and many middle-income countries, the conditions of academic work and of the universities themselves are, to say the least, unattractive. Salaries tend to be low, both by the standards of the middle-class within the respective country and by international academic comparisons (Altbach et al., 2012). With some exceptions, it is difficult to earn an adequate middle-class living in the academic profession. Academic culture is often characterised by rigid hierarchies, sometimes corruption, lack of an attractive career path, high teaching loads, and other negative aspects (Cao, 2013). In developed and

middle-income countries, salaries and working conditions are much better, and some academic systems, such as Saudi Arabia and several others in the Arabian Gulf countries, have come to depend on foreign academics. Western European and North American universities also hire significant numbers of overseas academics and make it possible for them to remain in the country. In the era of global academic mobility, the pattern of migration is by now well established and very much to the disadvantage of developing countries.

What can be done?

If it can be agreed that universities in the North and others that hire larger numbers of developing country scholars have some responsibility, there are several steps that can be taken to, at least in small ways, ameliorate the situation.

- The rich countries can, in the spirit of the Millennium Develop Goals, remit to the developing countries that are major exporters of talent, the costs incurred by those countries for educating their non-returning young academics. As noted earlier, the sums would be substantial and would permit developing country universities to build up capacity and perhaps keep some of their best brains at home.
- Joint doctoral degrees between universities in the rich countries and those in developing world can provide high-quality PhD degrees, while at the same time ensuring that doctoral students keep strong ties to their local academic institutions. Joint doctoral degrees would also build up capacity in doctoral education, a key need in developing countries.
- Encouraging top-quality doctoral graduates from developing countries to return home by offering joint appointments so that links can be kept between institutions in developing countries and in the North.

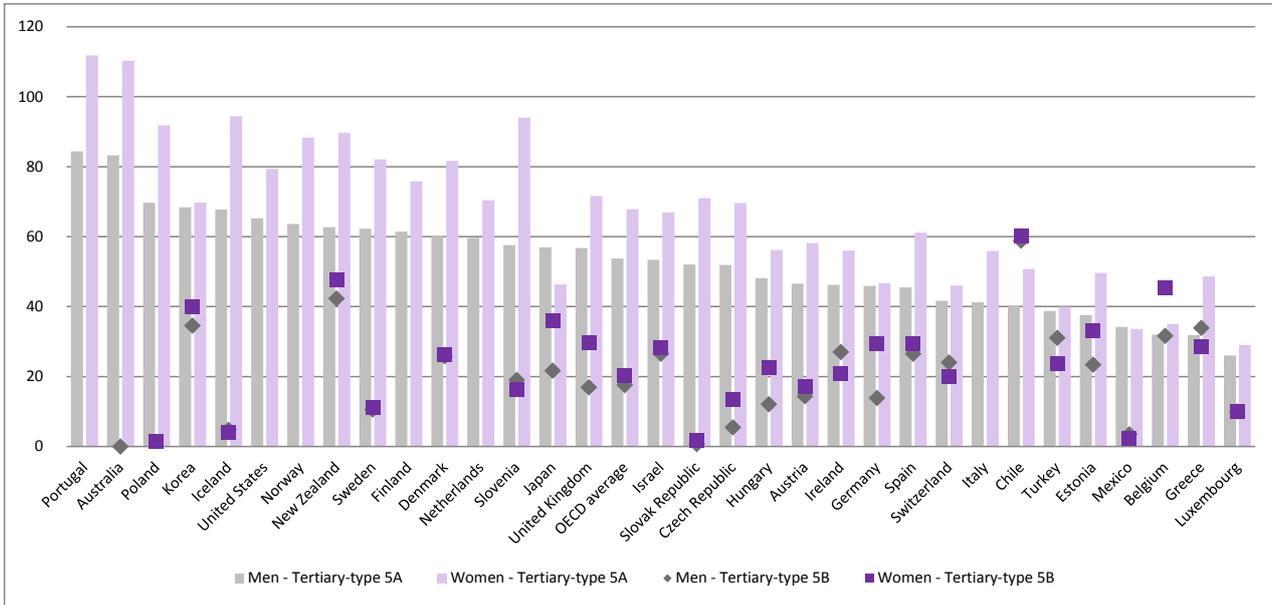
None of these initiatives will fundamentally alter the structural inequalities that exist today, but at least they would build capacity while recognising that there is indeed a problem and that the rich countries have some responsibility.

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ANNEX: OECD HIGHER EDUCATION STATISTICAL SNAPSHOT

Figure A.1 Trends in entry rates at tertiary level, by gender (2011)



Note: Luxembourg refers to 2010.

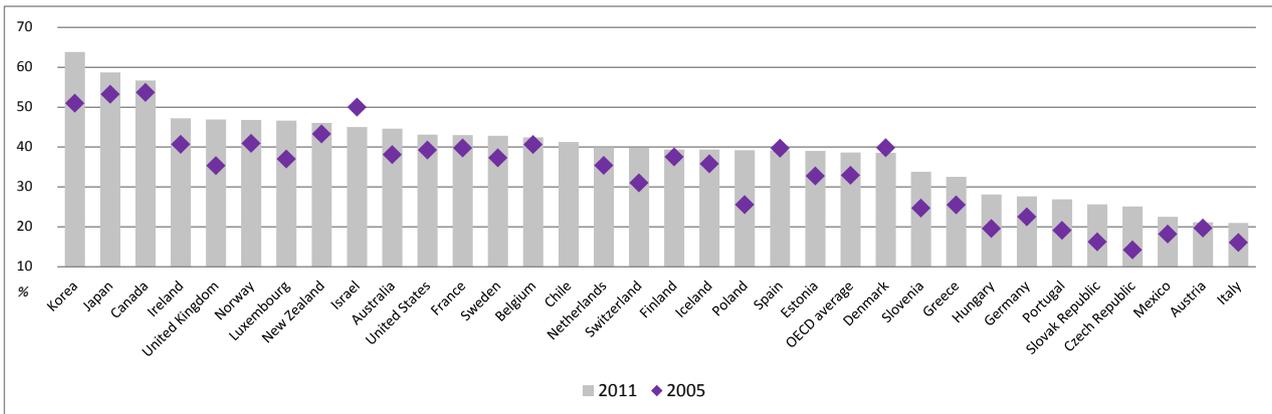
Note: Please refer to Annex 1 in the source material for information on the method used to calculate entry rates (gross rates versus net rates) and the corresponding age of entry.

1. Break in the series between 2008 and 2009 due to a partial reallocation of vocational programmes into ISCED 2 and ISCED 5B.

Definition: Tertiary-level entry rate is an estimated probability, based on current entry patterns, that a young adult will enter tertiary education during his or her lifetime.

Source: OECD (2013), *Education at a Glance 2013: OECD Indicators*, OECD Publishing, Table C3.2b (Web only <http://dx.doi.org/10.1787/888932850642>). See Annex 3 for notes (<http://www.oecd.org/edu/educationataglance2013-indicatorsandannexes.htm>). Please refer to the Reader's Guide for information concerning the symbols replacing missing data.

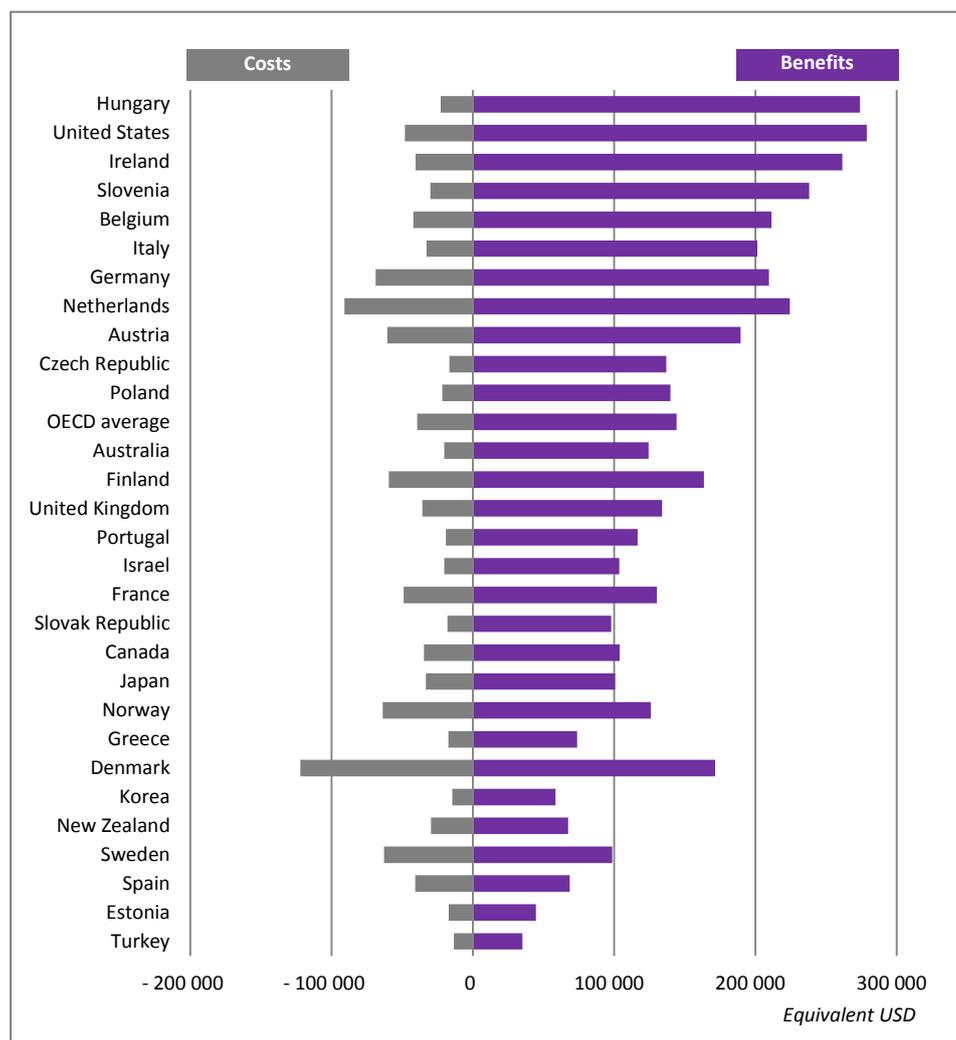
Figure A.2 Trends in tertiary attainment, 25-34 year-olds, and average annual growth rate (2011)



Note: Figures for 2011 for Denmark, Estonia and the Netherlands in this table may differ from figures in other tables of Indicator A1 because the source of the figures is different. This table uses EU-LFS for all years.

Source: OECD (2013), *Education at a Glance 2013: OECD Indicators*, OECD Publishing, Table A1.4a (<http://dx.doi.org/10.1787/888932848115>). See Annex 3 for notes (www.oecd.org/edu/eag.htm). Please refer to the Reader's Guide for information concerning the symbols replacing missing data.

Figure A.3 Public costs and benefits for a man attaining tertiary education (2009)



Note: Values are based on the difference between men who attained a tertiary education compared with those who have attained an upper secondary or post-secondary non-tertiary education.

Notes: Turkey refers to 2005. Japan refers to 2007. Italy and Poland refer to 2008. Cashflows are discounted at a 3% interest rate. Countries are ranked in descending order of the private net present value.

Definition: This indicator sums up these types of costs and benefits:

Direct costs are a reflection of how much is spent on students per year from all sources (public, private and households), and are relative to the length of schooling.

Foregone earnings while in education depend largely on the level of earnings that a non-student can expect to receive and the duration of studies. The individual's foregone earnings are net of taxes, social contributions and social transfers.

Foregone taxes on earnings include the taxes, social contributions and social transfers not received by the public sector.

Gross earnings benefits are estimates of the earnings an individual will receive when in the labour market.

The income tax effect is the estimated amount received by the public sector from taxes. It is usually the main source of public revenue from investments made in education. It is more pronounced at the tertiary level of education because of progressive income taxes.

The internal rate of return indicates at what real interest rate the investment breaks even.

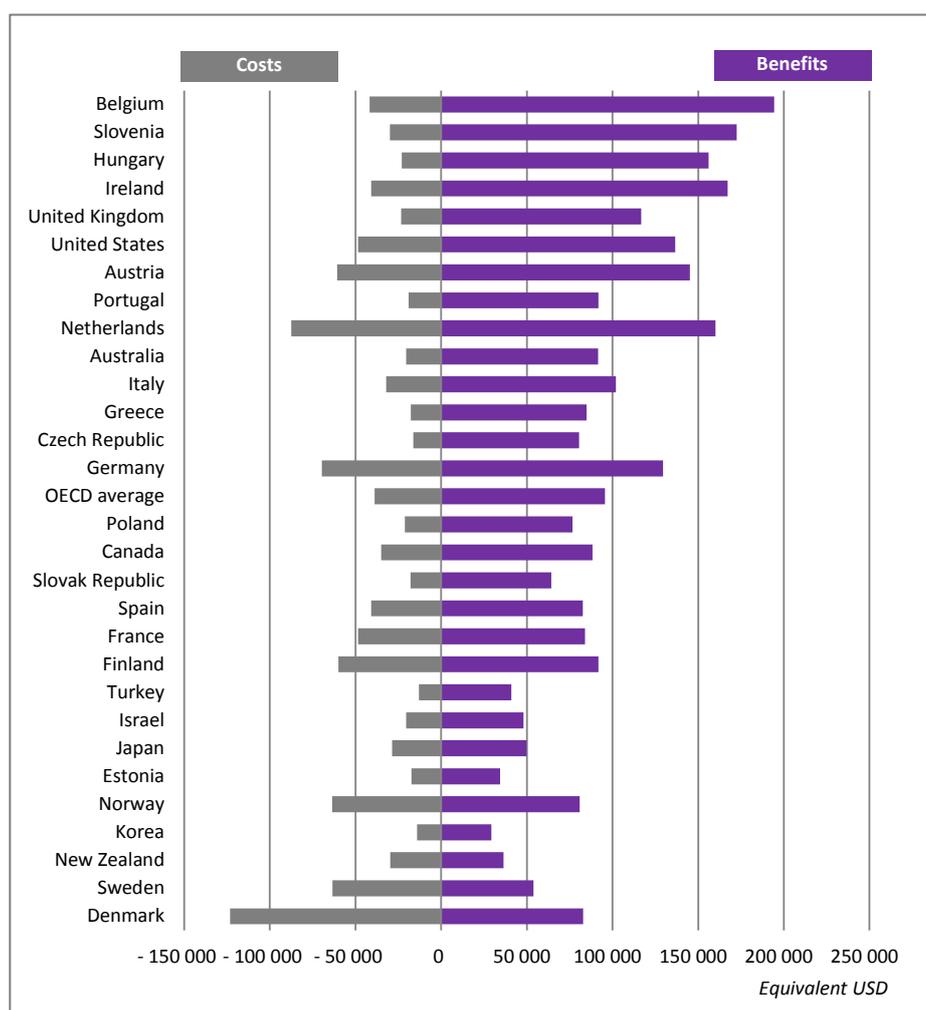
The net present value is the difference between the discounted benefits and the discounted investment costs, and represents the additional value that education produces over and above the 3% real interest that is charged on these cash flows.

The social contribution effect in the calculations only concerns those paid by individuals and not those paid by employers. The latter are an additional source of public income. In most OECD countries individuals pay social contributions on a flat rate and, as such, differences between education levels are smaller and proportional to earnings levels.

The transfers effect concerns the social transfers related to a given level of earnings. The unemployment effect is translated into monetary gains by using the level of earnings for different education categories over the working life.

Source: OECD (2013), *Education at a Glance 2013: OECD Indicators*, OECD Publishing, Table A7.4a (<http://dx.doi.org/10.1787/888932849217>). See Annex 3 for notes (www.oecd.org/edu/eag.htm).

Figure A.4 Public costs and benefits for a woman attaining tertiary education (2009)



Note: Values are based on the difference between men who attained a tertiary education compared with those who have attained an upper secondary or post-secondary non-tertiary education.

Notes: Turkey refers to 2005. Japan refers to 2007. Italy and Poland refer to 2008. Cashflows are discounted at a 3% interest rate. Countries are ranked in descending order of the private net present value.

Definition: This indicator sums up these types of costs and benefits:

Direct costs are a reflection of how much is spent on students per year from all sources (public, private and households), and are relative to the length of schooling.

Foregone earnings while in education depend largely on the level of earnings that a non-student can expect to receive and the duration of studies. The individual's foregone earnings are net of taxes, social contributions and social transfers.

Foregone taxes on earnings include the taxes, social contributions and social transfers not received by the public sector.

Gross earnings benefits are estimates of the earnings an individual will receive when in the labour market.

The income tax effect is the estimated amount received by the public sector from taxes. It is usually the main source of public revenue from investments made in education. It is more pronounced at the tertiary level of education because of progressive income taxes.

The internal rate of return indicates at what real interest rate the investment breaks even.

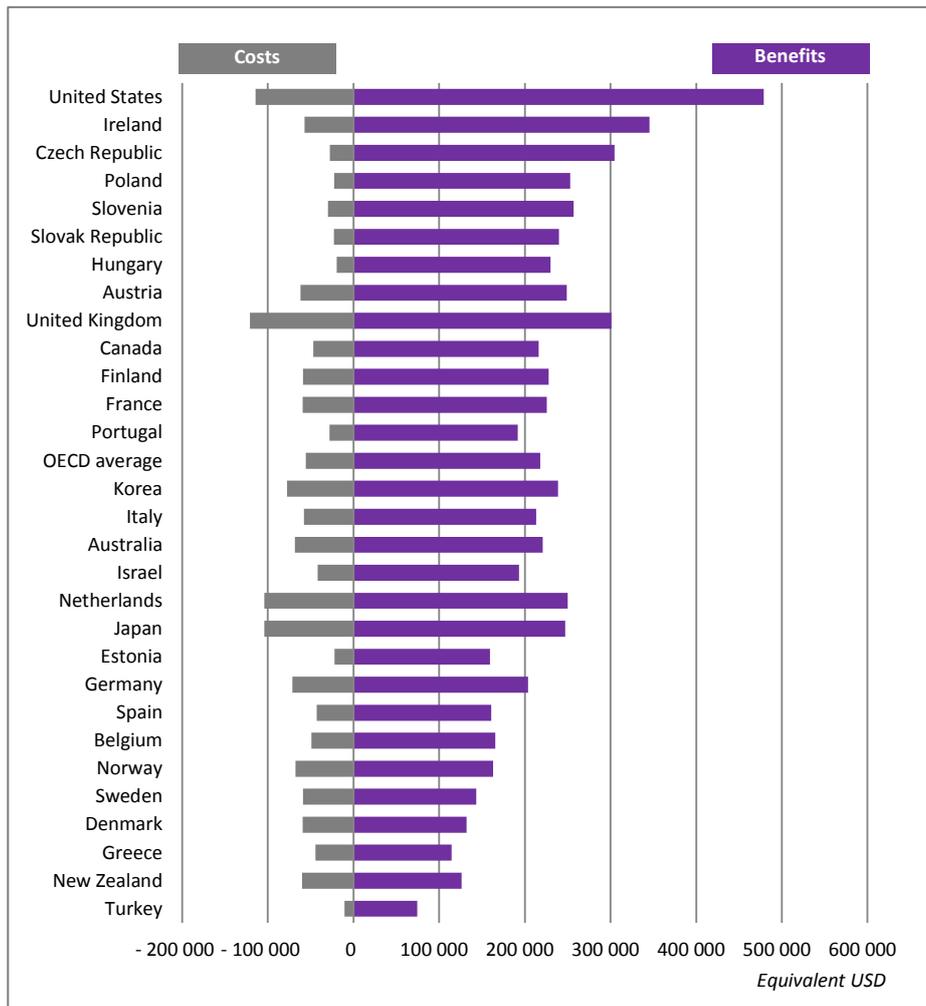
The net present value is the difference between the discounted benefits and the discounted investment costs, and represents the additional value that education produces over and above the 3% real interest that is charged on these cash flows.

The social contribution effect in the calculations only concerns those paid by individuals and not those paid by employers. The latter are an additional source of public income. In most OECD countries individuals pay social contributions on a flat rate and, as such, differences between education levels are smaller and proportional to earnings levels.

The transfers effect concerns the social transfers related to a given level of earnings.

The unemployment effect is translated into monetary gains by using the level of earnings for different education categories over the working life.

Source: OECD (2013), *Education at a Glance 2013: OECD Indicators*, OECD Publishing, Table A7.4b (<http://dx.doi.org/10.1787/888932849236>). See Annex 3 for notes (www.oecd.org/edu/eag.htm).

Figure A.5 Private costs and benefits for a man attaining tertiary education (2009)

Note: Values are based on the difference between men who attained a tertiary education compared with those who have attained an upper secondary or post-secondary non-tertiary education.

Notes: Turkey refers to 2005. Japan refers to 2007. Italy and Poland refer to 2008. Cashflows are discounted at a 3% interest rate. Countries are ranked in descending order of the private net present value.

Definition: This indicator sums up these types of costs and benefits:

Direct costs are a reflection of how much is spent on students per year from all sources (public, private and households), and are relative to the length of schooling.

Foregone earnings while in education depend largely on the level of earnings that a non-student can expect to receive and the duration of studies. The individual's foregone earnings are net of taxes, social contributions and social transfers.

Foregone taxes on earnings include the taxes, social contributions and social transfers not received by the public sector.

Gross earnings benefits are estimates of the earnings an individual will receive when in the labour market.

The income tax effect is the estimated amount received by the public sector from taxes. It is usually the main source of public revenue from investments made in education. It is more pronounced at the tertiary level of education because of progressive income taxes.

The internal rate of return indicates at what real interest rate the investment breaks even.

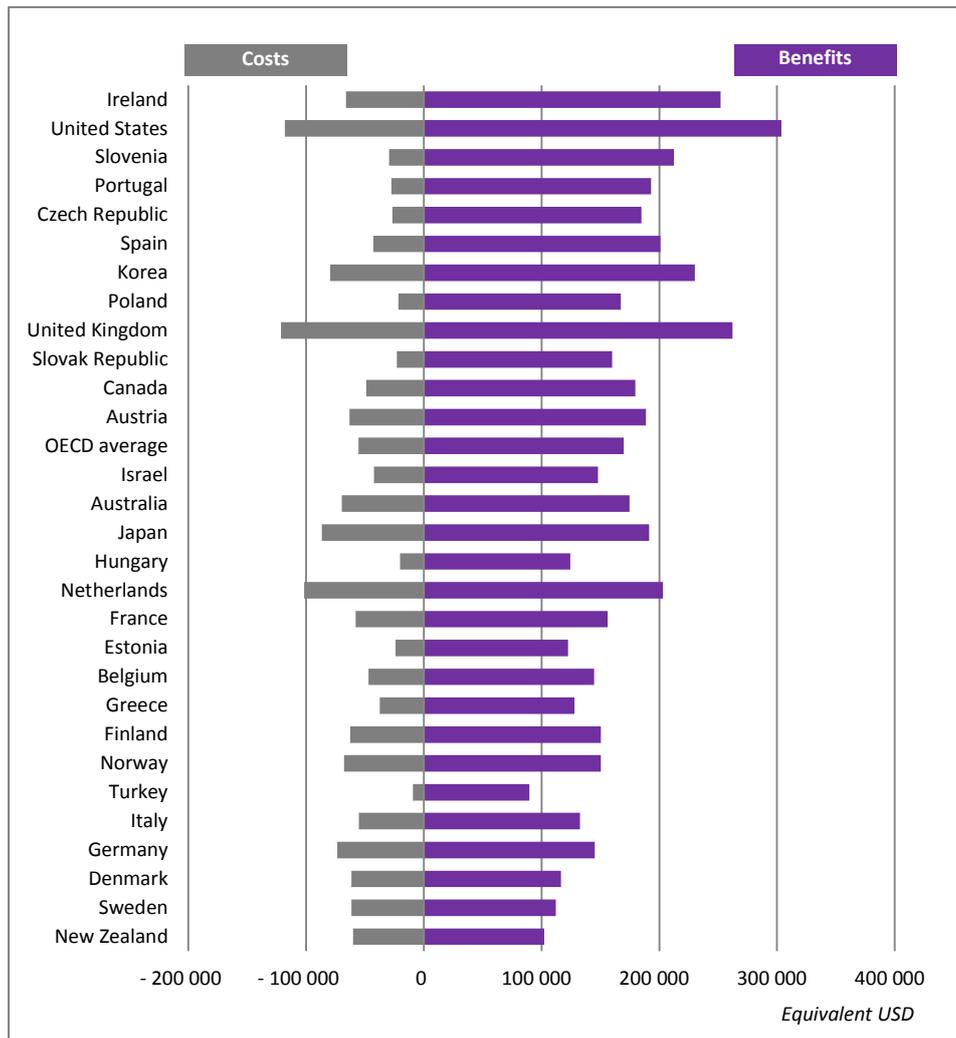
The net present value is the difference between the discounted benefits and the discounted investment costs, and represents the additional value that education produces over and above the 3% real interest that is charged on these cash flows.

The social contribution effect in the calculations only concerns those paid by individuals and not those paid by employers. The latter are an additional source of public income. In most OECD countries individuals pay social contributions on a flat rate and, as such, differences between education levels are smaller and proportional to earnings levels.

The transfers effect concerns the social transfers related to a given level of earnings.

The unemployment effect is translated into monetary gains by using the level of earnings for different education categories over the working life.

Source: OECD (2013), *Education at a Glance 2013: OECD Indicators*, OECD Publishing, Table A7.3a (<http://dx.doi.org/10.1787/888932849179>). See Annex 3 for notes (www.oecd.org/edu/eag.htm).

Figure A.6 Private costs and benefits for a woman attaining tertiary education (2009)

Note: Values are based on the difference between women who attained a tertiary education compared with those who have attained an upper secondary or post-secondary non-tertiary education.

Notes: Turkey refers to 2005. Japan refers to 2007. Italy and Poland refer to 2008. Cashflows are discounted at a 3% interest rate. Countries are ranked in descending order of the private net present value.

Definition: This indicator sums up these types of costs and benefits:

Direct costs are a reflection of how much is spent on students per year from all sources (public, private and households), and are relative to the length of schooling.

Foregone earnings while in education depend largely on the level of earnings that a non-student can expect to receive and the duration of studies. The individual's foregone earnings are net of taxes, social contributions and social transfers.

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The transfers effect concerns the social transfers related to a given level of earnings.

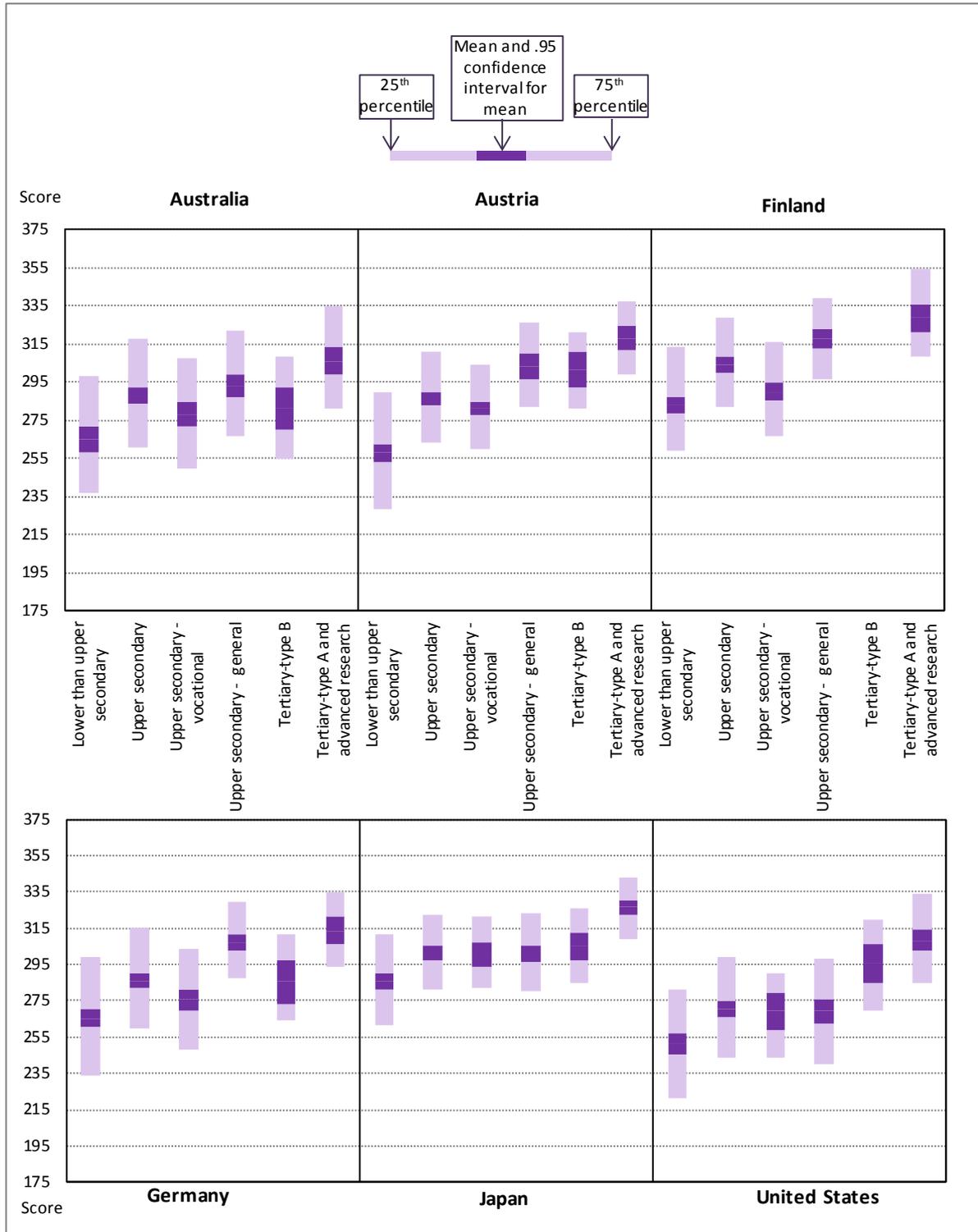
The unemployment effect is translated into monetary gains by using the level of earnings for different education categories over the working life.

Source: OECD (2013), *Education at a Glance 2013: OECD Indicators*, OECD Publishing, Table A7.3b (<http://dx.doi.org/10.1787/888932849198>).

See Annex 3 for notes (www.oecd.org/edu/eag.htm).

Figure A.7 Literacy proficiency among young adults in selected countries, by educational attainment

Mean literacy proficiency and distribution of literacy scores, by educational attainment, 16-29 year-olds



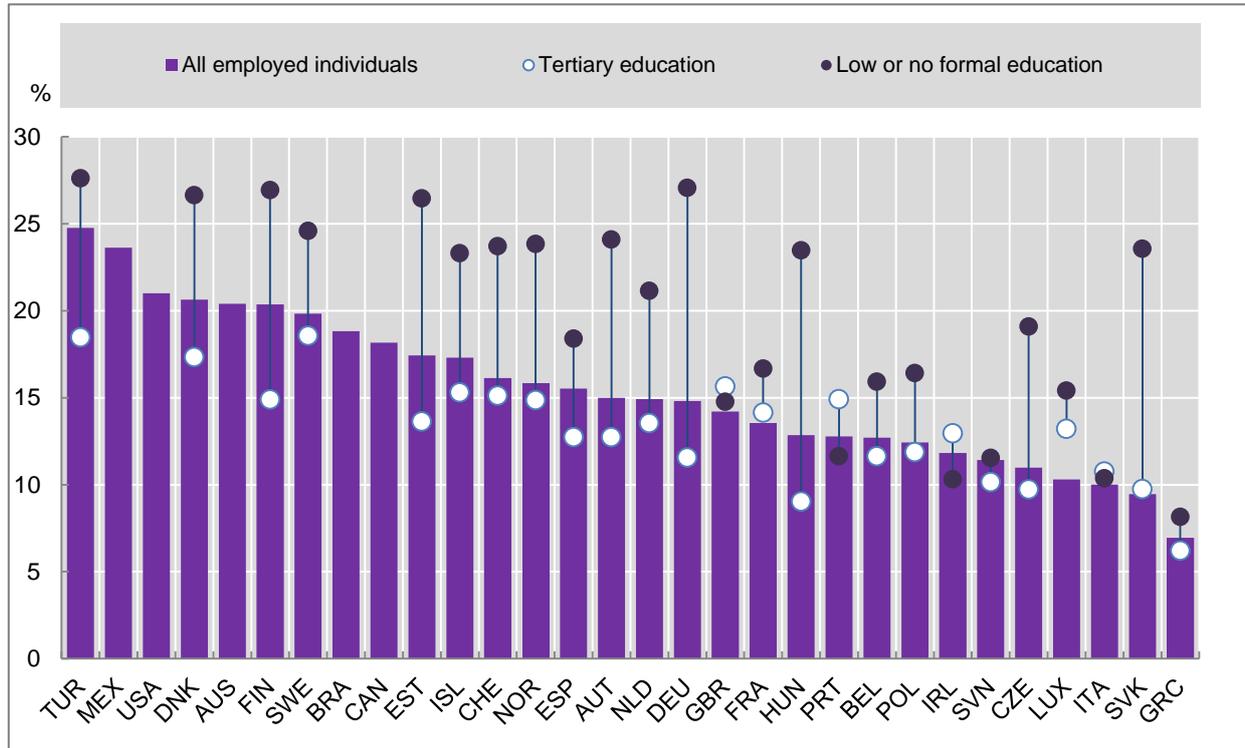
Only a sample of countries are shown as an example

Notes: The estimate for Tertiary-type B for Finland is based on a sample size very close to 30 and is not shown at the country's request

Source: Survey of Adult Skills (PIAAC) (2012), Table A5.5a (L) and Table A5.5b (L).

Figure A.8 Labour turnover, by educational attainment, 2011

Individuals less than one year in their current job, as a percentage of employment



With the exception of the United States, the indicator for all employed individuals is computed on the basis of the OECD Job Tenure Database as a share of declared figures for total employed (dependent employees and self-employed) of all age groups. Estimates by level of educational attainment are based on an ad hoc tabulation of European Labour Force Survey data and computed on a similar basis.

For the United States, data refer to the share of all wage and salary workers age 16 and over with a year or less of tenure with their current employer in January 2012.

Tertiary education refers to individuals who have graduated from tertiary education (ISCED 5 and 6 levels); low or no formal education refers to individuals with at most lower secondary education (ISCED 0, 1 and 2 levels).

For Australia and Canada, data refer to 2010.

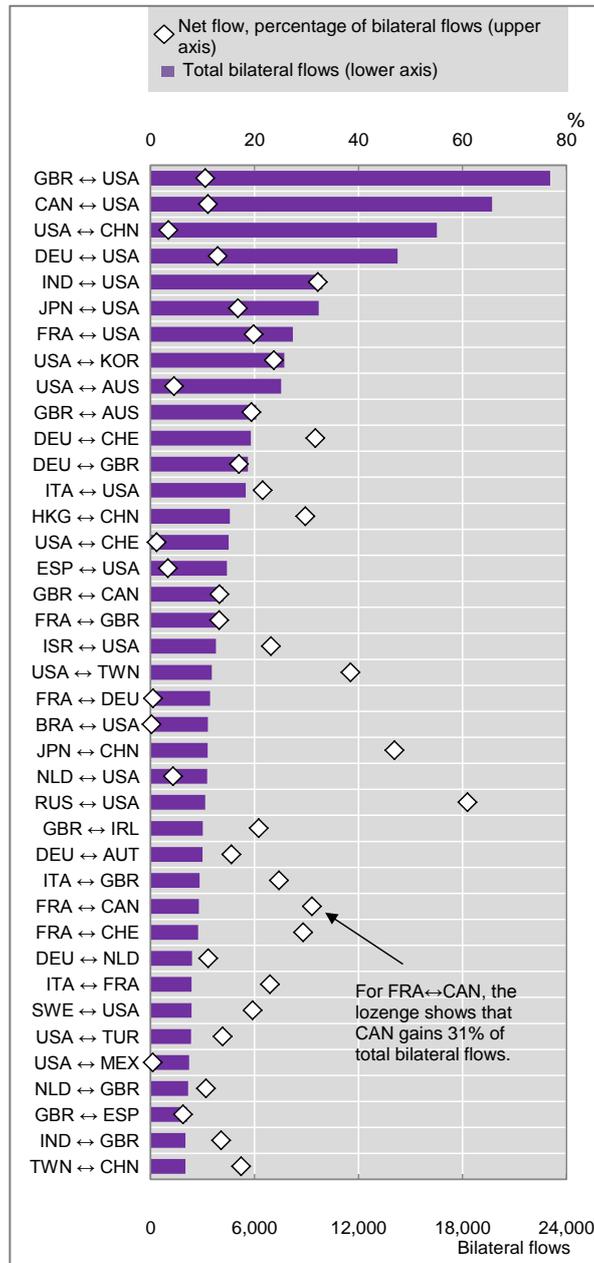
For Brazil, data refer to 2009.

For Mexico, data refer to 2008.

Source: OECD, based on the OECD Job Tenure Database, ad hoc tabulation of the European Labour Force Survey, July 2013 and Bureau of Labor Statistics, Employee Tenure statistics, www.bls.gov/news.release/tenure.nr0.htm, September 2012.

Figure A.9 International flows of scientific authors, 1996-2011

Largest bilateral flows, by first and last affiliation



The minimum threshold for inclusion is over 2 000 bilateral flows.

Israel: The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities or third party. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Source: OECD, calculations based on Scopus Custom Data, Elsevier, version 5.2012, May 2013.

ANNEX: OECD HIGHER EDUCATION STATISTICAL SNAPSHOT

Table A.1 Employment/population ratios by educational attainment, 2011

	Total			Men			Women		
	Less than upper secondary education	Upper secondary education	Tertiary education	Less than upper secondary education	Upper secondary education	Tertiary education	Less than upper secondary education	Upper secondary education	Tertiary education
Australia	65.8	80.7	84.1	76.6	88.9	90.3	56.3	70.1	79.1
Austria	56.2	77.9	86.5	65.7	81.9	89.9	50.9	73.6	82.4
Belgium	47.7	74.0	84.2	57.9	80.7	86.9	37.0	66.7	81.8
Canada	55.0	74.3	81.6	63.8	79.3	85.0	44.2	68.2	78.8
Chile	63.4	72.8	79.4	83.4	89.2	87.7	44.9	57.2	71.2
Czech Republic	42.2	75.3	83.1	50.8	83.6	91.5	38.0	66.2	74.4
Denmark	62.6	79.0	85.8	70.0	81.5	88.2	55.3	75.9	83.9
Estonia	48.4	74.0	80.0	53.6	78.2	84.6	40.7	69.2	77.4
Finland	55.5	74.7	84.3	60.3	77.3	87.2	48.9	71.6	82.2
France	55.7	73.7	83.8	62.7	78.1	87.2	49.4	69.0	81.0
Germany	56.5	77.6	87.9	66.7	82.1	91.0	49.2	73.1	84.0
Greece	52.6	62.6	74.8	67.5	75.9	79.7	37.6	49.4	69.9
Hungary	37.7	66.3	79.3	46.5	71.8	84.7	31.5	60.0	75.2
Iceland	74.4	83.4	88.8	81.5	86.1	90.3	68.3	79.2	87.8
Ireland	45.7	65.1	80.8	54.2	71.9	84.8	35.3	58.3	77.6
Israel	45.6	70.9	82.8	60.6	76.8	85.9	28.8	64.5	80.2
Italy	50.8	71.9	79.0	67.9	81.3	84.9	33.1	62.6	74.3
Japan	^a	72.8	79.6	^a	85.2	92.0	^a	60.6	66.9
Korea	65.2	70.8	76.9	77.7	83.7	89.7	57.2	57.7	60.5
Luxembourg	62.0	70.4	85.0	74.9	79.0	89.8	50.9	61.8	79.4
Mexico	62.5	71.2	79.3	87.2	90.1	87.2	41.7	55.0	70.5
Netherlands	62.1	80.0	87.4	74.4	84.9	89.6	50.9	75.2	85.0
New Zealand	68.0	82.1	84.4	76.5	89.1	90.3	60.5	72.9	80.0
Norway	68.0	81.7	90.5	72.4	85.4	91.9	63.3	76.9	89.3
Poland	39.8	65.9	84.7	49.3	75.0	89.1	30.8	56.0	81.7
Portugal	65.9	79.4	83.4	72.9	81.2	83.5	58.5	77.7	83.3
Slovak Republic	30.2	70.2	81.6	35.4	77.6	87.3	27.0	62.1	77.0
Slovenia	46.7	70.6	86.4	55.5	74.0	87.4	39.5	66.0	85.7
Spain	52.1	67.5	78.9	61.6	74.2	82.1	41.9	60.8	75.8
Sweden	65.2	83.5	88.7	74.5	86.7	89.8	53.0	79.7	87.8
Switzerland	68.4	82.5	88.8	78.7	89.1	93.5	61.7	76.7	81.9
Turkey	50.7	61.7	76.1	75.2	81.7	84.0	26.1	29.9	64.2
United Kingdom	55.9	78.2	83.2	66.1	82.8	87.7	47.9	72.9	78.9
United States	51.1	67.1	80.0	61.0	71.8	84.7	39.7	62.3	75.8
OECD ^b	55.5	73.8	83.0	66.2	81.1	87.6	45.5	65.9	78.4
Brazil	67.1	70.1	85.3	83.9	89.3	91.5	50.4	54.0	80.8
Russian Fed.	49.0	72.8	82.8	56.6	79.3	88.2	40.3	64.9	79.1

Note: The classification of the levels of education is based on the International Standard Classification of Education (ISCED 1997). ISCED 97 is an instrument for compiling statistics on education internationally and distinguishes among six levels of education (ISCED 1-6). Below upper secondary corresponds to ISCED levels 0, 1, 2 and 3C short programmes; upper secondary or post-secondary non-tertiary correspond to ISCED levels 3A, 3B, 3C long programmes, and 4; and tertiary corresponds to ISCED levels 5A, 5B and 6.

a) Data at the lower and upper secondary levels of education are not broken down. Individuals with lower secondary education are included in upper secondary education.

b) Unweighted average.

Source: OECD (2013), Education at a Glance 2013 – OECD Indicators, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2013-en>.

MORE ABOUT THE OECD HIGHER EDUCATION PROGRAMME (IMHE)

The OECD Higher Education Programme (IMHE) is a permanent forum in which education professionals worldwide can exchange experiences and benefit from shared reflection, thought and analysis in order to address issues that concern them.

The Programme's activities have a global reach and include monitoring and analysing policy making; gathering data; and exchanging new ideas, as well as reflecting on past experience. These activities assist members to contribute to the development of higher education internationally, nationally and locally.

The Programme's strategic position within the OECD provides members with access to the OECD's rich evidence base, as well as to a recognised international network, drawing together higher education professionals, leaders, and policy makers, managers and researchers.

Higher education institutions, government departments, agencies and other higher education organisations from across the globe can apply to become members of the OECD Higher Education Programme (IMHE) and benefit from privileged access to a range of products and services developed within the Programme, under the oversight of the IMHE Governing Board.

Products and services for members include:

- Programme member-only workshops that enable members to connect with other members – physically or virtually – to discuss topics of common interest
- A report for members on the State of Higher Education, annually, delivering comparative data, key policy developments in countries and thoughtful analysis of current higher education developments and policy challenges
- A quarterly brief, *What it Means for Higher Education*, designed to help members navigate through the richness and abundance of OECD data and analysis on topics that have an impact on higher education, such as migration trends, demographics, economic growth, public finances, income equality and social mobility.

For more information about the OECD Higher Education Programme (IMHE) and how to join it, please see our website: www.oecd.org/edu/imhe

The State of Higher Education – 2013

This report is the result of carefully culling through OECD publications relating to higher education. Many of the Organisation's in-depth studies and analyses over several years from various Directorates have revealed important information about higher education, yet this information is scattered and sometimes difficult to find among a wealth of data.

The impetus behind this publication was a motivation to provide an essential service to members of the OECD's Higher Education Programme. Sympathetic to higher education leaders under time pressure, yet who can make good use of relevant and timely higher education data, the Higher Education Programme seeks to support the essential work of members working in the field.

The State of Higher Education publication is part of the OECD Higher Education Programme membership package.

The 2013 report is the first of what will be produced as an annual publication for exclusive access by members of the Programme.

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