

DIRECTORATE FOR EDUCATION AND SKILLS
EDUCATION POLICY COMMITTEE**In-depth analysis of the labour market relevance and outcomes of higher education systems: Analytical framework and country practices report****Enhancing Higher Education System Performance
Informal Working Group on Higher Education**

This document presents the report, "In-depth analysis of the labour market relevance and outcomes of higher education systems: Analytical framework and country practices". The framework will guide a series of country reviews and reports in 2017-18. It will also inform a final synthesis report to be published in 2019. This exercise is part of the OECD "Enhancing Higher Education System Performance" project that is being developed by the Higher Education Team, Skills beyond Schools Division, Directorate for Education and Skills. This report has benefited from the advice of the Informal Working Group on Higher Education (IWG).

The report looks at what skills are needed in the labour market and how they can be developed in higher education. It explores the reasons behind variations in higher education graduate labour market outcomes, and examines how public policy levers can influence practices within higher education systems to improve these outcomes. The report also models how various policy levers may work in combination with each other.

The final chapter of the report summarises a questionnaire to OECD member countries that sought information about the outcomes of their higher education graduates; labour market relevant practices in their higher education systems; and the policy levers they use to enhance labour market relevance and outcomes.

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CHAPTER 1. ANALYTICAL FRAMEWORK FOR THE IN-DEPTH ANALYSIS OF THE LABOUR MARKET RELEVANCE AND OUTCOMES OF HIGHER EDUCATION SYSTEMS

Why labour market relevance and outcomes matter

1.1 One of the main objectives of higher education is to provide its graduates with the skills needed to succeed in the labour market. This mission is especially important in the context of today's innovation-driven, skills-based, globalised economies. It also corresponds to one of the main expectations of students, namely that they will be able to get a good job at the conclusion of their studies.

1.2 To achieve this mission, higher education systems strive to produce graduates with strong technical, professional and discipline-specific knowledge and skills, whatever their field of study. These skills, as signified by an academic degree, diploma or other qualification, send a signal to employers that a graduate has the competencies, interest and aptitude to work in certain jobs (OECD, 2014). And for many jobs, a higher education qualification is an essential requirement.

1.3 In addition, higher education systems seek to develop a second broad category of skills, referred to as transversal skills in this report. Transversal skills include a range of skills that are needed to perform tasks across a variety of workplace settings. They enable people to adapt to changing demands within a job or move easily from one job or role to another during their careers as the labour market evolves.

1.4 Transversal skills include key cognitive skills such as literacy, numeracy; problem solving, analytical reasoning and critical thinking; and social and emotional skills such as communication, teamwork, perseverance, initiative, leadership and self-organisation (OECD, 2015a). These skills are often hard to measure, but are essential to the success of individuals and firms.

1.5 On average, higher education graduates in OECD countries have developed skills that allow them to do well in the labour market. This is reflected in graduate earnings premiums and employment rates (OECD, 2016). However, the distribution of graduate earnings premiums indicates that a significant minority of graduates are not achieving the labour market success that might otherwise be expected of them (OECD, 2015b). In particular, some higher education graduates have trouble transitioning to the labour market, while others are unable to find jobs that correspond to their academic training and qualifications. This brings into question the relevance and quality of the skills being produced in higher education.

1.6 These weaker-than-expected outcomes raise multiple concerns. They are a disappointment for individual graduates and their families, who have invested in higher education and expect a good return in the form of well-paying jobs. Weak returns are also a concern for governments, which play a major role in funding higher education systems. Policymakers expect higher education to produce the skills that will foster productivity and innovation and raise the overall quality of life of citizens. And employers express frustration that some higher education graduates do not have the skills that would enable them to be immediately productive employees. Meanwhile, higher education systems and institutions are trying to respond to the demands of stakeholders and balance labour market requirements with other priorities.

1.7 These concerns reflect the importance of the labour market relevance and outcomes of higher education systems. Good labour market outcomes for higher education graduates have a positive impact on a range of areas of society. They support overall wellbeing; ensure value for public investments; provide private returns to individuals who invest in their education; and build the supply of skills needed for economic success.

1.8 The following sections explore in more detail some of these reasons why the labour market relevance and outcomes of higher education matter for policymakers, students and their families and society at large.

The role of income and employment in wellbeing

1.9 Traditionally, the attainment of a higher education qualification (e.g. a short-cycle tertiary education diploma, a bachelor's degree or equivalent, a master's degree or equivalent, or a doctoral degree or equivalent) has been a good predictor of success in the labour market. These qualifications have long been read by employers as a signal that an individual has achieved a certain level of technical, professional and discipline-specific competencies and possesses good transversal skills (OECD, 2014).

1.10 As a result, individuals with these higher education qualifications have generally been able to find employment comparatively quickly, hold well-paying jobs, develop rewarding career paths and successfully adapt to changes in the labour market (OECD, 2014). This labour market success enables individuals not only to meet their own basic needs, but also to support a family, pursue their interests, engage in leisure activities, and achieve long-term goals.

1.11 Holding a higher education qualification is closely linked to higher earnings, labour market security, and a good working environment. These are all key factors shaping an individual's wellbeing, as shown by the OECD's Better Life Initiative (<http://www.oecd.org/statistics/better-life-initiative.htm>), the OECD Job Quality Framework (<http://www.oecd.org/statistics/job-quality.htm>), and research in the fields of psychology, economics and sociology (Cazes et al, 2015).

1.12 As noted in the OECD's Better Life Initiative, people with higher levels of education have better health, are more likely to be civically engaged and less likely to be involved in criminal activity. Overall, they are more likely to be satisfied with their lives (Box 1.1). Better-educated people also tend to live longer. For example, in the 15 OECD countries where data are available, a 30-year-old man with a tertiary education can expect to live eight years longer, on average, than a man without an upper secondary education – but the size of this gap ranges from 18 years to just four years, depending on the country (OECD, 2015c). These outcomes of higher levels of education make critical contributions to personal and collective well-being.

Box 1.1: Social benefits of higher education

Healthier lives and longer life expectancies: Across the OECD, adults with higher education live on average two years longer than individuals who have only completed upper secondary schooling, and six years longer than those whose highest educational attainment level is less than upper secondary. Higher education may promote the adoption of healthier lifestyles, enable better decision making about health issues, and facilitate the ability to access and navigate the health care system (OECD, 2015d). This leads to better quality of life for individuals, while lowering health care costs for governments.

An equalising role in society: Higher education can provide opportunity for people from traditionally disadvantaged groups such as ethnic minorities, migrants, and people of lower socio-economic status. And when government support helps disadvantaged individuals access higher education, they are not just assisting to those individuals themselves. They are also enabling greater social mobility for ensuing generations (Causa and Johansson, 2011). However, higher education systems, especially if they are not carefully designed and monitored, can in fact simply maintain – or even potentially enhance – inequality. This can happen, for instance, in systems where “academic merit” is the primary factor determining student access to education, but where the criteria that assess merit are themselves partly tied to socio-economic factors such as the extra preparation opportunities (e.g. high-quality tutoring) to which students from better-off families may have greater access.

Engaged citizenship and greater civic participation: Various surveys have shown that people who hold a higher education credential are more likely to engage in activities such as voting, charitable giving, and volunteerism. These linkages generally hold even after controlling for individual demographic and socioeconomic differences (OECD, 2010). Across the OECD, 80% of young adults (25-34) with tertiary education report that they vote in elections – compared to 67% of young adults who have completed upper secondary, and 54% of those with less than lower secondary education (OECD, 2012a). Voting and other forms of civic participation support civil society by reinforcing citizenship values such as tolerance, and by building social cohesion.

Enhanced public safety: Individuals with higher education credentials are less likely to commit a crime, especially a violent one. This spares other individuals from becoming the victims of crime (OECD, 2010). And it also reduces the need to devote scarce public resources to policing, prosecution and the incarceration of offenders, freeing this funding for more productive uses.

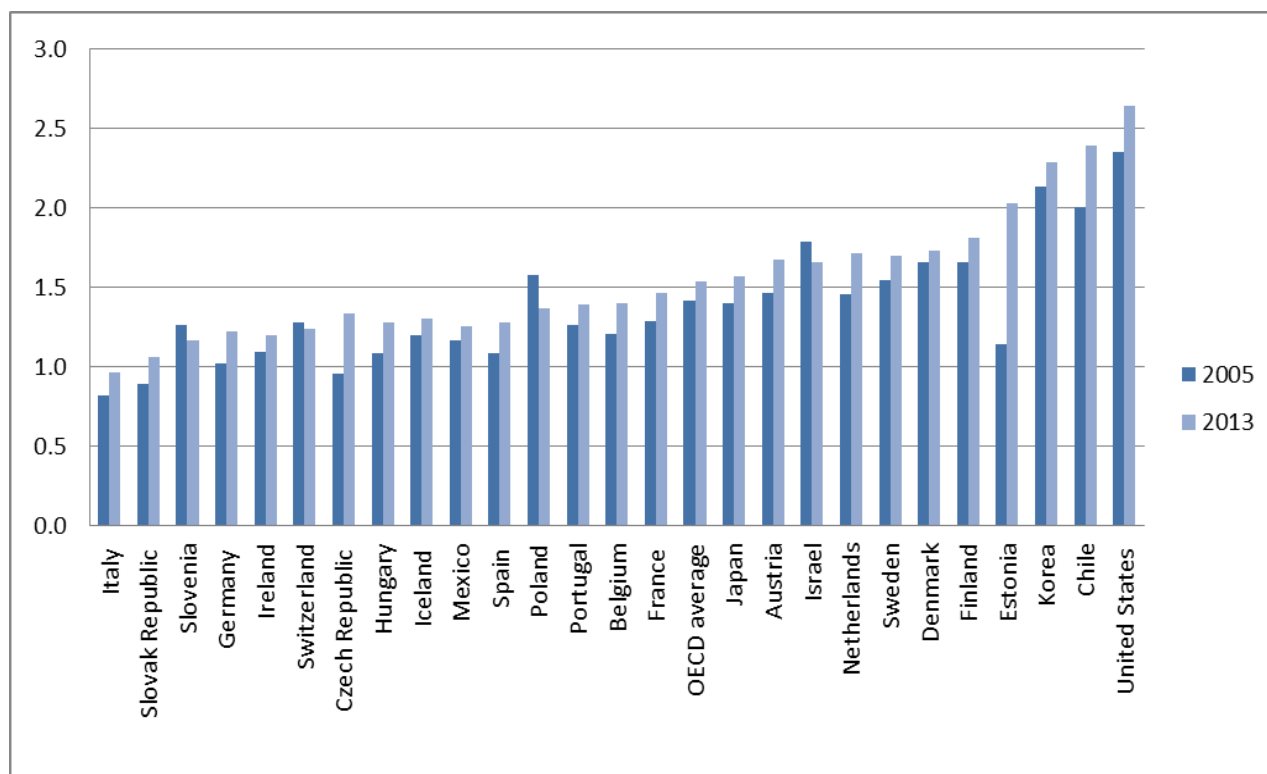
Transmission of cultural heritage: As UNESCO observes, education plays an important role in fostering dialogue between different cultures. At the same time, it preserves, explains and explores the means, practices, representations, expressions, knowledge and skills that various communities and groups recognise as part of their cultural heritage (UNESCO, 1998). Higher education reinforces a sense of continuity in individuals, communities and nations, and promotes respect for cultural diversity and human creativity.

The generation and application of knowledge: Research activities in higher education help support the innovation that spurs growth and productivity in the economy, and that identifies solutions to social challenges. Both fundamental and applied research enhances prosperity and well-being in modern societies. And when it is embedded in the education process, research can lead to graduate “know-how” that is transferred to the workplace and to society more generally.

Personal development: Higher education plays a key role in personal development. In some countries, such as the United States, the relative importance that students ascribe to this benefit has declined somewhat over the past several decades (Pryor et al, 2012). But it remains an important why many students choose to attend higher education.

Public returns on investments in higher education and value for money

1.13 Governments have a direct stake in higher education through the significant investments they make in higher education institutions and their students (OECD, 2016). After some recent decline in investment, higher education spending is beginning to rise again (OECD, 2016). For example, with the exceptions of Israel, Poland, Slovenia and Switzerland, all OECD countries spent a larger percentage of their GDP on tertiary education in 2013 than they did in 2005 (Figure 1.1).

Figure 1.1: Expenditure on tertiary educational institutions as a percentage of GDP (2005 & 2013)

Source: OECD (2016), *Education at a Glance 2016: OECD Indicators*, OECD Publishing. DOI: <http://dx.doi.org/10.1787/eag-2016-en>.

Notes: See applicable notes in Education at a Glance 2016, Table B2.2.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. 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.

1.14 Whether these investments are provided directly to higher education institutions, or indirectly through support for higher education students, governments generally expect that higher education will help students develop the skills needed to succeed in the labour market. They expect that these skills will in turn foster economic growth and augment tax revenues, so that public funding for higher education generates a net public benefit.

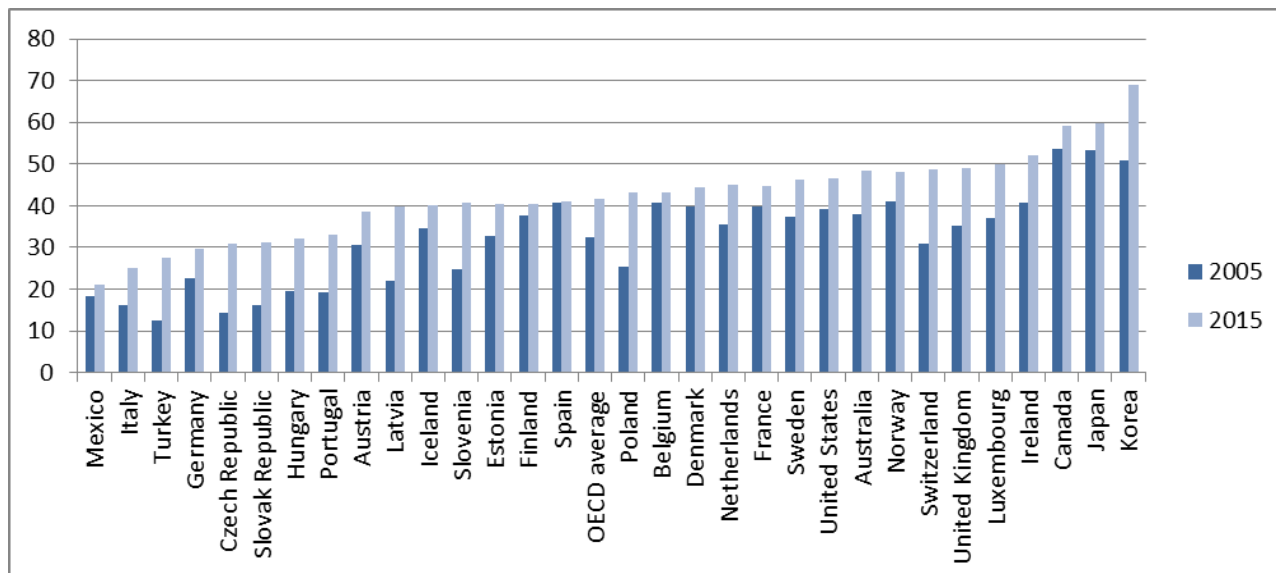
Private returns for graduates who have invested in their education

1.15 Significant opportunity costs are associated with enrolling in higher education. Students who choose higher education forego the immediate financial return of paid work for what they expect to be better financial returns in the long run. This trade-off may seem starker to students in OECD countries that have significant tuition fees, although opportunity costs generally dwarf the tuition costs of higher education, and access to student financial assistance (including income-contingent loans) can reduce the immediate impact of tuition fees.

1.16 However, a great many individuals feel that the risk is worth taking: they view higher education as a central way to prepare for the labour market. This helps explain why the proportion of young adults aged 25-34 who hold a tertiary level qualification increased from 32% in 2005 to 42% in 2015 in OECD countries (Figure 1.2). As this report shows, the expectation that a higher education qualification will help individuals achieve success in the market is largely met. On average, adults with tertiary education

qualifications (from short-cycle to doctoral or equivalent) earn more than those with upper secondary school education across OECD countries (OECD, 2016).

Figure 1.2: Share (%) of 25-34 year olds with tertiary attainment in OECD countries



Source: OECD (2016), *Education at a Glance 2016: OECD Indicators*, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/eag-2016-en>.

Notes: See applicable notes in *Education at a Glance 2016*, Table A1.3.

Supply of skills needed for economic success

1.17 As outlined in the OECD Skills Strategy (OECD, 2012a), the effective development and use of skills is central to economic and social development. Higher education helps produce advanced skills and generate new knowledge and innovation. It can also play a key role in up-skilling and re-skilling individuals throughout their lives to enhance employability.

1.18 Higher education is well placed to serve the needs of an economy that increasingly values advanced skills. For example, technological advances are eliminating jobs that involve routine manual and cognitive tasks, and are creating new jobs that require digital skills. A recent OECD analysis indicated that these developments may put around 9% of jobs at risk of complete automation, and an additional 30-35% of jobs may experience substantial changes in the way tasks are performed (Arntz et al, 2016).

Broader concerns about higher education system performance

1.19 The in-depth analysis of the labour market relevance and outcomes of higher education systems is part of the broader OECD project on *Enhancing Higher Education System Performance*, which is designed to help countries to address the following key questions:

- How well is each country's higher education system performing (overall and in different areas)?
- Why are some systems performing better than others?
- What can each country learn from the experience of others, and how can they use this experience to help improve the performance of their higher education system?

1.20 The benchmarking strand of this project will answer these questions by analysing the performance of the three key functions of higher education: education, research, and engagement with the wider world. This will ensure a rounded analysis of higher education systems and build a better understanding of the relationships between the different functions. It will differ markedly from many other benchmarking and performance assessment approaches by providing not only information about the outputs and the outcomes of higher education, but also information on how and why systems are achieving those results. This will provide countries with fresh insights into the performance of their higher education systems.

1.21 The in-depth analysis of higher education topics, starting with labour market relevance and outcomes, will answer the project's overarching questions by providing countries with a comprehensive assessment of the performance of higher education systems in key policy areas. By selecting a new topic every two years, countries will ensure the analysis is focussed on current concerns.

1.22 The importance of the labour market relevance and outcomes of higher education is reflected in a range of initiatives that countries and other jurisdictions are taking to get a better understanding of the issue (Box 1.2).

Box 1.2: Examples of current initiatives examining the labour market relevance and outcomes of higher education

The labour market relevance and outcomes of higher education are of ongoing concern for policymakers. Included below are some examples of recent initiatives that focus on the interactions between higher education and the labour market.

European Union (EU): The EU has commissioned a study on the relevance of higher education, focusing on three objectives for the teaching function of higher education: personal development; sustainable employment of graduates; and active citizenship. The report, *Promoting the Relevance of Higher Education: Trends, Approaches and Policy Levers*, will be published in 2017.

Canada: The Conference Board of Canada (with support from the Government of Canada, provincial and territorial governments, higher education institutions and business partners) has launched the [Centre for Skills and Post-Secondary Education](#). This is a five-year initiative that examines the advanced skills and education challenges facing Canada. The Centre published [Aligning Skill Development to Labour Market Need](#) in May 2016.

Poland: In 2014, the National Centre for Research and Development conducted research on the competencies and qualifications needed for the labour market. The final report, [The Analysis of Key Competencies and Qualifications for Increasing the Chances of University Graduates in the Labour Market](#), examines the types of skills that lead to strong labour market outcomes, and provides recommendations for how to better align the skills developed in Polish higher education with the needs of employers.

The State of Texas (United States): The 2015-2030 Texas Higher Education Plan ([60x30TX](#)) has set a goal that 60% of Texans aged 25-34 will have obtained a certificate or degree by 2030. The plan also includes a goal that all graduates from Texas public higher education institutions will have completed programmes with identified marketable skills. These skills include the capacity to think critically; communication skills and an ability to solve complex problems; ethical judgment and integrity; intercultural skills; and a capacity for continued learning.

New Zealand: The New Zealand Productivity Commission has recently undertaken an [inquiry into new models of tertiary education](#). The inquiry focusses on how various trends, including changing skills demand, may drive change in business models and delivery models in the tertiary education sector. It is examining how new models of higher education can deliver the skills required by graduates in the 21st century.

Purpose of the in-depth analysis

1.23 Given the importance of the labour market relevance and outcomes of higher education systems, OECD member countries have asked the Secretariat to undertake an analysis of this topic and develop recommendations that can help them ensure that higher education students develop knowledge and skills that support good labour market outcomes.

Aim

1.24 The overarching policy question for the in-depth analysis of the labour market relevance and outcomes of higher education systems is “What can countries do to ensure that higher education graduates develop the skills needed for good labour market outcomes?”

1.25 The aim of the in-depth analysis is to assist countries in improving the labour market relevance and outcomes of their higher education systems through a better understanding of:

- the links between the knowledge and skills developed in higher education and graduate outcomes; and
- how policies and practices can stimulate and enhance the development of more labour market-relevant knowledge and skills.

Objectives

1.26 The main objectives of the in-depth analysis of the labour market relevance and outcomes of higher education systems are to:

- identify the knowledge and skills needed for success in the labour markets of countries, taking into account other factors that are beyond the realm of the higher education sector
- assess how well higher education systems are developing these labour market relevant skills
- identify approaches in higher education that facilitate the development of labour market relevant skills
- explore the potential of policy levers that policymakers can use (individually or in combination) to influence the development of labour market relevant skills in higher education and good labour market outcomes for graduates
- identify concrete policy options that could help improve the labour market outcomes of higher education graduates.

Context

1.27 Social, economic, cultural and political contexts have an important influence on labour market outcomes and the performance of a higher education system. The higher education system itself often has little or no control over some of these factors that may influence graduate labour market outcomes.

1.28 While the focus of the in-depth analysis will be on what governments and higher education systems can do to enhance labour market relevance and outcomes, it will also take account of these broader contextual factors. These include the state of the economy and labour market regulation as well as broader

policies that could influence labour market relevance and outcomes in higher education. In addition, it will take account of graduate characteristics such as gender and socio-economic status that can also influence labour market outcomes.

Key concepts

Labour market relevance

1.29 Labour market relevant knowledge and skills drive and support economic growth, innovation and the evolving needs of the labour market.

1.30 Labour market relevant skills include technical, professional and discipline-specific knowledge and skills, as well as broader transversal skills (i.e. generic cognitive skills, and social and emotional skills). Such skills are most effective when coupled with a range of values and attitudes that support good performance in the workplace.

1.31 Knowledge and skills can be relevant to two different stages of the labour market: the present and short-term future labour market, and the labour markets of the longer-term future. The supply of skills in the labour force can also shape future labour markets, by enabling or encouraging certain kinds of economic activity.

Labour market outcomes

1.32 Labour market outcomes are the outcomes of higher education graduates who are part of the labour force. They include employment status, earnings and the match between the level of their skills and the skills required at work, etc. Outcomes also take account of graduates who are not enrolled in further schooling, and are not part of the labour force.

Approach

1.33 The in-depth analysis will be underpinned by a comprehensive analytical framework informed by work conducted by the OECD and other organisations and researchers on labour market outcomes and skills needs; system-level data; and evidence from countries on current policies and practices to enhance labour market relevance and outcomes of their higher education systems.

1.34 The framework will be applied to specific countries to examine and analyse the performance of higher education systems through country reviews. The country reviews will draw on quantitative data (international and national) and qualitative information to assess the performance of the higher education system in developing labour market relevant knowledge and skills and ensuring good labour market outcomes for graduates.

1.35 Participating countries will receive a report with detailed and tailored analysis of the performance of their higher education systems in terms of their labour market relevance and outcomes. These reports will also provide countries with policy advice and recommendations that help them improve the labour market relevance and outcomes of their higher education systems.

1.36 The analytical framework will also support a broader cross-country synthesis of findings. The final synthesis report will bring together the findings from the country reviews with research and analysis on the labour market relevance and outcomes of higher education. It will examine and compare the performance of the individual countries that participated in the country reviews and analyse the factors driving their performance in order to determine what works in different national or system contexts. This analysis will provide countries with policy advice and recommendations for improving the labour market

relevance and outcomes of higher education systems that could be applied in various national or sub-national contexts.

Level of analysis

1.37 The in-depth analysis will look at the labour market relevance and outcomes of higher education at a system level. This could be at the national level or at the state or provincial level (e.g. in a federation). It will consider the role of government(s) in steering and supporting the higher education system to enhance labour market relevance and outcomes.

1.38 The in-depth analysis will also look at the performance of the higher education system as a whole in terms of outputs and outcomes. However, through the country reviews, the in-depth analysis will also consider policies and practices to enhance labour market relevance and outcomes at the level of institutions and types of institutions.

Functions and scope of a higher education system

1.39 Higher education systems are complex, with a variety of higher education institutions delivering programmes in different fields of study and at different levels. Higher education institutions within a national system may have very different missions and perform a wide range of functions. For the purposes of the in-depth analysis, it is important to define the functions of higher education and identify a working boundary for higher education systems.

1.40 Higher education systems perform three main functions: education (learning and teaching); research; and engagement with the wider world, i.e. with industry, government and society (often referred to as the ‘third mission’ of higher education). The in-depth analysis of the labour market relevance and outcomes of higher education systems will focus on the first of these three functions: education.

1.41 The scope of the higher education system for the in-depth analysis will include all programmes at ISCED 2011 levels 5, 6, 7 and 8 regardless of the institutions in which they are offered. The ISCED 2011 levels 5, 6, 7 and 8 are as follows (OECD et al., 2015):

- Level 5: short-cycle tertiary education programmes
- Level 6: bachelor’s or equivalent first degree programmes
- Level 7: master’s or equivalent programmes
- Level 8: doctoral or equivalent programmes

Analytical framework

Enhancing higher education system performance

1.42 The analytical framework for the in-depth analysis is consistent with the conceptual framework for the benchmarking higher education system performance strand of work under the overarching *Enhancing Higher Education System Performance* project [[EDU/EDPC\(2017\)1](#)]. It applies the performance model from the benchmarking strand, focusing on the performance of systems in helping enable good labour market outcomes for graduates.

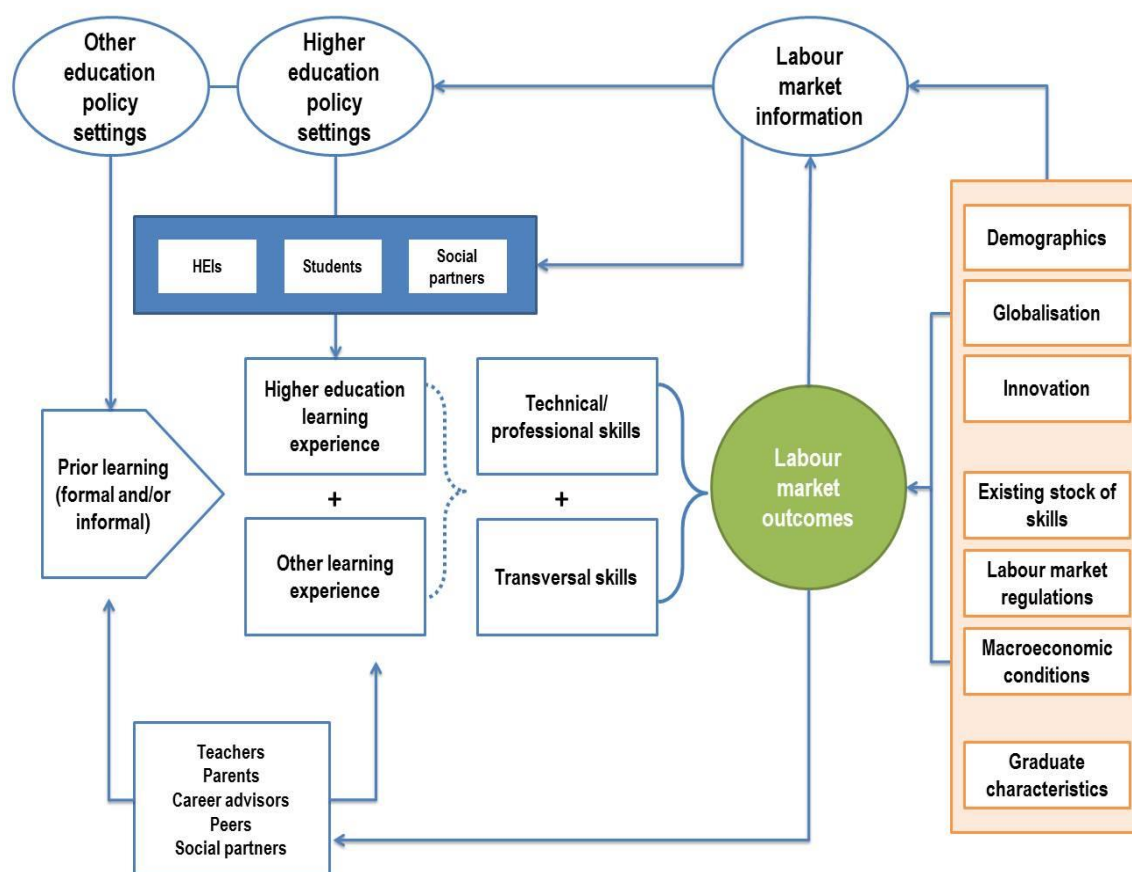
1.43 Using this model, the in-depth analysis will look at how public policies influence activities within higher education in ways that support the labour market relevance and outcomes of the systems. It will

assess the effectiveness of those policies and practices by measuring outputs (graduates of higher education) and outcomes (labour market outcomes). In this way, the framework will provide a basis for understanding the reasons behind the performance of higher education systems. This approach will enable the development of evidence-based policy advice to countries on how they can improve the labour market relevance and outcomes of their higher education systems. By sharing good practice, it will also help policymakers learn from each other.

Issues for analysis

1.44 Figure 1.3 presents a framework that shows the interactions between higher education systems and labour markets, and the main factors to be considered in an assessment of the labour market relevance and outcomes of higher education systems.

Figure 1.3: Analytical framework for the in-depth analysis of the labour market relevance and outcomes of higher education systems



1.45 Graduate labour market outcomes are influenced by their learning experiences in higher education and by other activities (e.g. extra-curricular activities, part-time jobs) while they are students. Through these experiences (and prior learning), students develop technical/professional and transversal skills and knowledge. In addition, graduate outcomes are influenced by factors such as demographics, ongoing processes of globalisation and innovation, macro-economic conditions, labour market regulations, and the existing stock of workforce skills. Graduate outcomes also depend on the individual characteristics of graduates such as gender and socio-economic status.

1.46 Public policy settings play an important part in shaping the learning experiences that students have while enrolled in higher education programmes. Governments use a range of policy levers to encourage or discourage, enable or impede the behaviour of students, higher education institutions, social partners (employers and trade unions), and other higher education actors.

1.47 Student learning is also influenced by many other actors, both before and during higher education. These include for instance parents, career advisors, peers, social partners, and teachers (outside the classroom).

1.48 Labour market information plays an important role in the various interactions between higher education, students, and the labour market. This term refers to information that is collected and disseminated (e.g. by governments, educational institutions or the media), and to information that is shared between individuals.

1.49 Labour market information about graduate outcomes (and more generally about the various forces that affect the labour market) shapes higher education policy settings. Policymakers make use of it to steer higher education towards labour market relevant approaches. It also shapes the decisions that students themselves make, with these effects often mediated by the advice, example or pressure of teachers, parents, career advisors, peers and employers. And labour market information also shapes the behaviour of higher education institutions themselves.

1.50 Using this framework, the in-depth analysis of the labour market relevance and outcomes of higher education systems will focus on four key issues:

- the knowledge and skills relevant to the labour market and important for successful labour market outcomes in the short, medium and longer term
- the performance of higher education systems in developing labour market relevant skills and ensuring good labour market outcomes
- the approaches within higher education to enhance labour market relevance and graduate outcomes
- the policy levers that influence the labour market relevance and outcomes of higher education systems and can be used to enhance them.

1.51 The in-depth analysis will consider these issues through the following four steps.

I. Identifying and analysing the knowledge and skills relevant to successful labour market outcomes

- The in-depth analysis will use a variety of evidence to identify the knowledge and skills needed in the labour market. It will examine published research, surveys, and labour market data to identify the kinds of knowledge and skills that are likely to support the labour market success of individuals and meet labour market needs. The analysis will look at skills from the perspective of their quality and relevance (i.e. the labour market relevant technical and professional skills developed in specific fields of study and the labour market relevant transversal skills that are developed within all fields of study).
- Quantitative labour market data, coupled with economic and social projections, can provide some measure of the demand for technical, professional and discipline specific knowledge and skills at the national level. Demand for cognitive and social and emotional

skills may also be revealed by quantitative data. But much of the evidence will come from qualitative reports from students and their families, recent graduates and social partners (employers and trade unions).

- The in-depth analysis will also consider the knowledge and skills needed for the future labour market. One of the ways that governments attempt to understand future labour market needs and the knowledge and skills that will be needed to address them is through labour market forecasting or projections. While these are inherently uncertain, they are a useful tool to help understand future labour market needs.

II. Analysing the performance of higher education systems in developing labour market relevant skills and ensuring good labour market outcomes

- The performance of higher education systems in delivering labour market-relevant skills and good graduate outcomes will be measured in three ways.
 1. The in-depth analysis will look at quantitative labour market outcomes of higher education graduates. These primarily include:
 - the wages (or self-employment income) of higher education graduates, compared to those of other individuals and how this ratio evolves over time
 - employment rates of higher education graduates compared to those of other individuals, including how this ratio evolves over time
 - the characteristics of graduate jobs, measured through indicators such as:
 - the match between the level of knowledge and skills that jobs require and the level of skills that graduates bring to the labour market (i.e. whether graduates are over- or under-skilled for their jobs)
 - the match between the level of academic credential that jobs require and the level of credential that graduates have obtained (i.e. whether graduates are over- or under-qualified for their jobs)
 - type of contract
 - employment status (formal or informal)
 2. The in-depth analysis will consider reports by employers and graduates taking into account the extent to which:
 - employers are able to reliably identify the knowledge and skills they require and provide an estimate of how well new higher education graduates meet these needs
 - new graduates are able to reliably observe the knowledge and skills requirements of the jobs they are working in or seeking, and to gauge how well higher education prepared them for these jobs

3. The analysis will also examine assessments of the knowledge and skills of students such as the Survey of Adult Skills and measures of learning outcomes.

III. Identifying and analysing approaches within higher education to enhance labour market relevance and graduate outcomes

- There are various practices and behaviours within higher education systems that help develop labour market relevant knowledge and skills, such as:
 - the capacity of higher education institutions to respond to labour market demand
 - informed student choice
 - student admissions policies and practices
 - academic support for students
 - curriculum design and delivery
 - learning and teaching policies and practices
 - work-based learning
 - extra-curricular activities
 - co-operation between higher education and social partners
 - internationalisation
 - career advice and support
- A survey of OECD countries in 2016 provides examples of current practices to enhance labour market relevance and outcomes. The country reviews will identify the different approaches being taken in the higher education systems of participating countries and assess their effectiveness.

IV. Identifying and analysing policy instruments to enhance the labour market relevance and outcomes of higher education systems

- The in-depth analysis will look at how government policymakers can use a range of policy levers to encourage, support or require practices and behaviours within higher education systems that enhance labour market relevance and outcomes. For the purposes of analysis, policy levers will be grouped into four categories: funding, regulation, information and organisation.
- The analysis will consider how policy levers (individually and in interaction with other policy levers) can help policymakers improve the labour market relevance and outcomes of their higher education systems. It will also seek to identify policy levers that constrain or prevent good labour market outcomes.

- The 2016 survey of OECD countries also provides examples of current policy levers used to enhance labour market relevance and outcomes. The country reviews will identify the main policy levers currently in use in participating countries and explore how they steer and support higher education to enhance labour market relevance and outcomes, or how they might hinder good labour market outcomes. The reviews will consider the interactions of these specific levers with other policy levers that are aimed at other areas of higher education or beyond, and that may influence labour market relevance and outcomes. Reviews will also explore how the policy levers used by different levels of government in some countries may interact with each other to affect labour market relevance and outcomes.
- The in-depth analysis will evaluate policy levers (individually and in combination) using the following criteria:
 - effectiveness: whether they accomplish their policy aim
 - efficiency: how well they use available resources to achieve that aim
 - equity: whether the benefits of a policy lever are more or less evenly distributed, or whether benefits are directed to certain individuals or institutions (e.g. those who most need them, or who might best respond to them)
 - manageability: the ease or difficulty of implementing a lever
 - legitimacy: the extent to which broader public perceptions view a policy lever as reasonable and acceptable (Salomon, 2002).

Guiding principles

1.52 The in-depth analysis of the labour market relevance and outcomes of higher education systems will assess how well higher education systems are performing in a key policy area. It should therefore be underpinned by a set of guiding principles (UKPISG, 2014).

1.53 The principles set out in Box 1.4 will guide the OECD in-depth analysis in its assessment of the performance of higher education systems and help develop robust, evidence-based policy advice. These principles are guiding in nature, rather than binding.

Box 1.4: Guiding principles for the in-depth analysis of the labour market relevance and outcomes of higher education systems

Theoretical justification

- The in-depth analysis should be based on a theoretically justified analytical framework.

Breadth

- The in-depth analysis should reflect the entirety of higher education provision, from short-cycle tertiary education to doctoral level.
- The in-depth analysis should be context aware, i.e. acknowledge the economic, social and cultural context in which higher education operates.
- The in-depth analysis should recognise that countries have different system features, constraints, challenges and policy priorities that need to be taken into account to enable meaningful comparisons.

Quality of data

- The in-depth analysis should use international comparable indicators produced by the OECD and other credible organisations, such as UNESCO and Eurostat. When it uses other indicators and data which is not strictly comparable, e.g. national-level data, this will be explicitly noted and all caveats stated.
- The in-depth analysis should be evidence-based and statistically robust, conforming to recognised best practice in the production of statistical information.
- Data used for the indicators should be of high quality, and collected in a consistent way across the countries (or relevant jurisdictions). Indicators should have a good sample base, use consistent definitions, and use a transparent methodology.

Dissemination

- The results of the in-depth analysis should be published.
- Details of the methodology and in-depth analysis should be made available at the same time for the benefit of all users: governments, higher education representative bodies, and all relevant higher education stakeholders.
- The publication of the results of the in-depth analysis should include guidance for readers to support appropriate interpretation of the results.

Enhancement

- The in-depth analysis should provide governments with evidence and data to strengthen policy making and support the development of the higher education sector.
- The in-depth analysis should take account of context and different system characteristics in order to support a peer learning approach.
- The project should be informed by a broad stakeholder dialogue process to ensure that the views, insights and perspectives of higher education institutions; their representative bodies such as national rectors' conferences; regional and international networks and groupings of higher education institutions; and other stakeholders are properly taken into account. Additional stakeholders will include student groups, employers and unions, representatives of academic and other staff, foundations and research centres working in higher education.

Data collection

- Whenever possible, the in-depth analysis should use existing data, and connect to the work of the OECD and other inter-governmental organisations.
- The in-depth analysis should provide information on identified data gaps to help drive better data collection.

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CHAPTER 2. SKILLS NEEDED IN THE LABOUR MARKET

2.1 Chapter 1 of this framework outlined why labour market relevance and outcomes matter. But, in order to assess whether higher education is producing skills that are relevant for the labour market, it is essential to have a good understanding of what kinds of skills these are. There are various sources of information available: social partners (employers and trade unions), students and their parents, policymakers, labour market information, and skills and labour market projections techniques. This chapter will outline some of the considerations that apply when using these information sources, and highlight key pieces of evidence that various sources provide about skills that are in demand.

Which skills matter

2.2 To succeed in the labour market, individuals need a mix of knowledge and skills. And the success of economies as a whole requires that the skills of individual workers contribute to a good overall skills mix. These skills can be classified in various ways, but the core definition for this project will be the one provided by the OECD *Skills Strategy*, i.e. skills are “the bundle of knowledge, attributes, and capacities that enable individuals to successfully and consistently perform an activity or task, and that can be built up and extended through learning” (OECD, 2012). This report will focus on three broad sets of skills that are important for good labour market outcomes.

- Good **technical, professional and discipline-specific knowledge and skills** reflect a solid theoretical and/or practical understanding of subject matter. At the higher education level this subject matter is typically codified by academic disciplines. Skills are not developed solely to meet labour market needs, and some disciplines develop technical skills that do not have an obvious labour market match. However, many technical and professional qualifications do send a signal to employers that a given individual may have the skills, interest and aptitude required to engage in quite specific types of work. And a given level of a concrete set of technical and professional skills is an essential requirement for many jobs (OECD, 2014). Employers often use these qualifications as a first lens to screen individuals for jobs (Montt, 2015). At the level of the overall labour market, an adequate supply and mix of these skills is an important precondition for good economic growth.
- Good **generic cognitive and information processing skills** involve the understanding, interpretation, analysis and communication of complex information, and the ability to apply this information in situations in everyday life (OECD, 2015a). These are general skills that people use in all kinds of work, and that support effective participation in social and economic life (OECD, 2015a). They also help individuals adapt in a changing economy. For instance, good information processing skills have been shown to support productivity, reduce errors and accidents in the workplace, and improve customer service. They also enable individuals to successfully take part in a range of non-formal, informal and formal education and training opportunities. Similarly, cognitive skills such as critical thinking (the ability to think strategically and apply rules to new situations to solve problems) support positive outcomes in the workplace by allowing individuals to proactively and effectively deal with non-routine challenges (OECD, 2015a). The ability to

undertake analysis and synthesis (to sift through large amounts of available information, evaluate it and make judgements) is increasingly important for labour market success.

- The **social and emotional skills** involved in achieving goals (perseverance, self-control and passion for goals), working with others (sociability, respect and caring) and managing emotions (self-esteem, optimism and confidence) are also very important in the world of work (OECD, 2015a; OECD, 2015b). These skills are often hard to measure. But they allow individuals and companies to thrive, help build synergies within and across teams, and enable individuals to deal effectively with clients and others. While employers have traditionally hired graduates for their advanced technical skills, there is evidence to suggest that they are more and more prioritising social and emotional skills (American Association of Colleges and Universities, 2013).

2.3 Taken together, cognitive and social and emotional skills make up a broader category which this report will refer to as “**transversal skills**”. These go beyond the confines of specific fields of study and specific occupational applications. They are skills that graduates can readily take from one employment context to another.

2.4 These three primary skillsets are all supported by “metacognitive skills”, a term which describes the ability of individuals to recognise their own knowledge and skills, their attitudes and values, and their unique way of learning. Metacognitive skills help individuals step back from what is simply assumed, apparent or accepted, and bring other perspectives to a situation.

2.5 Finally, the three skillsets work in conjunction with personal **attitudes and values** which include beliefs, behaviours and actions such as adaptability; openness to others, new ideas and new experiences; curiosity; a global mind-set; pro-activeness; respect for others (including cultural diversity); trust; responsibility; and integrity and equity.

Understanding skills needs

2.6 Determining the types of skills needed in the labour market is complex since they can vary over time and from one location to another. In addition, the current supply of skills can influence future labour market needs.

Variation over time

2.7 There are inevitably differences between the skills needed in the current labour market and those that will (or may) be needed in future labour markets. Some of the trends driving changes in skills needs over time are explored in the next section of this analytical framework. Overall, these trends suggest that the demand for skills is increasing. But the future is uncertain: it is difficult to predict the pace of change and the degree to which specific skills will be in demand.

2.8 Certain technical and professional skills have been susceptible to unforeseen shocks to the economy, e.g. the impact of the dot.com bust in the early 2000s on the need for computer science graduates; the financial crisis in the late 2000s on employment in the financial services industry; and the decline in oil prices in 2014-2015 on employment in the commodities sector. On the other hand, key transversal skills have continued to be important during economic transitions. These skills will undoubtedly remain relevant to the jobs of the future.

Variation across geography

2.9 Segments of national and regional economies may have different levels of demand for skills and for specific skills mixes. Regional differences can make it challenging to reliably predict national-level

skills needs and to identify how they will be met. Much depends on the mobility of workers, which varies in different OECD countries. Low mobility means that certain regions of a national economy may have surplus of skills, while other regions may show a deficit.

2.10 In Australia for example, the Government's *2016 Skills Shortage List* shows that the resource-based and more sparsely populated region of Western Australia, and the more urban and populated New South Wales region share certain similar skills needs (e.g. for medical professionals and civil engineers). But the different structures of these two economies mean that they generally require different mixes of skills, both in the shorter-term (as the *Skills Shortage List* observes) and in the longer-term. In Western Australia for instance, there is a need for veterinarians that is not observed in New South Wales; meanwhile a shortage of architects in New South Wales is not identified in Western Australia (Government of Australia Department of Employment, 2016).

Dynamic effects

2.11 Economies need to produce certain mixes of skills to meet labour market demand. But at the same time, the current supply of skills can actively influence future labour market needs. This effect can work in two ways.

2.12 Employers are likely to invest and/or locate in areas where relevant skills are in abundance, and this investment can drive further demand for other skills. For instance, the economic growth experienced by Ireland in the 1990s is attributed in part to the policy of developing a highly skilled labour force at a time when there was not an obvious high demand for these skills measures (Handel, 2012).

2.13 This effect is also observed when a "clustering" of people with advanced skills in a specific location serves to attract employers (Florida, 2002). Examples of this effect can be seen in American cities and regions such as Portland, San Francisco, Boston, Silicon Valley and North Carolina's Research Triangle. In these areas a clustering of knowledge professionals (e.g. engineers, professors, software designers, marketing and communication specialists) has played a role in fostering good economic outcomes through creative self-employment, start-ups, and entrepreneurship.

2.14 However, it is by no means certain that dynamic effects will bring economic growth if some of the other economic conditions that support growth are not present. In such cases, an over-supply of skills may increase the risk of skills mismatch and of skills atrophy. Such atrophy is particularly likely to impact technical and professional skills (Handel, 2012).

Key trends driving the needs for skills

2.15 Efforts to analyse skills needs must also take account of the context of broad social and economic trends. Changes in society and in the economy are leading to changes in the mix and kinds of skills that will be required in the labour markets of OECD member countries.

Technology

2.16 Advances in technology (e.g. cloud computing, the mobile internet, big data and artificial intelligence) have altered, and will continue to alter, the demand for skills. Demand for individuals who can perform routine tasks is declining, while demand for problem-solving and interpersonal skills is increasing (OECD, 2016a). Technological advances are eliminating some types of jobs, changing the skills requirement within other occupations and creating new employment opportunities. For instance, high-tech employment across the European Union grew by 20% from 2000 through 2011, compared to 8% in all other sectors of the economy combined: in a total of 22 EU countries, high-tech growth outpaced total employment growth (Goos et al, 2014). Meanwhile in the United States, the Department of Labour

forecasts that software developers will experience the fastest job growth between 2014 and 2024 (United States Government Department of Labour, 2016).

Economic history shows that, after a period of disruption following major technological advances, economies have continued to generate enough jobs for their workforce. However, some would argue that the rapidly falling cost of digital technologies and their potential for carrying out many tasks may lead to a much larger impact on jobs than any other technology before. As noted in chapter 1, 9% of jobs in OECD countries are at risk of complete automation and an additional 30-35% of jobs may experience substantial changes in the way tasks are performed (Arntz, Gregory and Zierahn, 2016). Some experts suggest that technological change in advanced economies has had a larger impact on the destruction of routine skilled jobs than offshoring (Goos et al, 2014). But there is still a great deal of uncertainty about the magnitude and speed of digitalisation's impact on future jobs and skills needs, not least because already available technology with the potential to carry out sophisticated tasks is not always widely deployed.

2.17 Ensuring that individuals have the relevant skills for an increasingly digital and globalised world is key to spurring innovation, productivity and inclusive growth. But even in a digitalised world, innovation can take many forms. Some innovation requires highly advanced and often technically-specialised digital skills to develop new technologies. But innovation may also arise from harnessing existing digital technology to develop new products and services or produce them in new ways. What is becoming increasingly clear is that specialist technical skills are not enough to drive innovation. They need to be coupled with a range of other skills such as entrepreneurship, organisational knowhow and design. (OECD, 2016b).

2.18 In order to make the most of the benefits that innovation generates, individuals also need to develop foundation skills such as literacy, numeracy and problem solving in technology rich environments, as well as complementary transversal skills, attitudes and values such as openness to new experiences, adaptability, resilience, communication and teamwork, and the ability to learn new skills. These skills enable people to adjust to the impacts of innovation on their jobs and not only cope, but thrive, in a rapidly changing world. The pace of technological change helps explain why over a quarter of young (age 25-34) higher education graduates in Europe feel they lack the rights skills to do their current job (Cedefop, 2015).

The changing structure of work

2.19 Non-standard work (temporary, part-time and self-employment) has been on the rise in OECD countries over the last decade, and now represents one-third of total employment in the OECD. This figure ranges from a low of under 20% in eastern European countries (except Poland), to almost 50% in the Netherlands and Switzerland (OECD, 2015c). These numbers suggest that it is becoming more common for individuals to work for multiple employers, in multiple positions, over the course of a career.

2.20 The evolution of the labour market towards non-standard work puts a premium on skills and traits such as entrepreneurship, resilience, creativity, and adaptability. While non-standard work is sometimes thought to have an impact only on low-skilled jobs, much of the growth in high-skilled work in countries like Austria, Germany, Italy, the Netherlands and Switzerland has largely been driven by non-standard employment (OECD, 2015c).

2.21 Advances in technology are also playing a role in the expansion of non-standard work by enabling the rise of the sharing economy and the peer-to-peer business model (e.g. Uber, Airbnb, Alibaba, Blablacar and Hopwork). Firms using this model are able to connect consumers to independent contractors who provide a service through digital platforms. Such models are often less expensive for consumers because the independent contractors are not treated as employees: firms may then forego many of the costs

that their more traditional competitors must meet (e.g. pension contributions and employment insurance premiums).

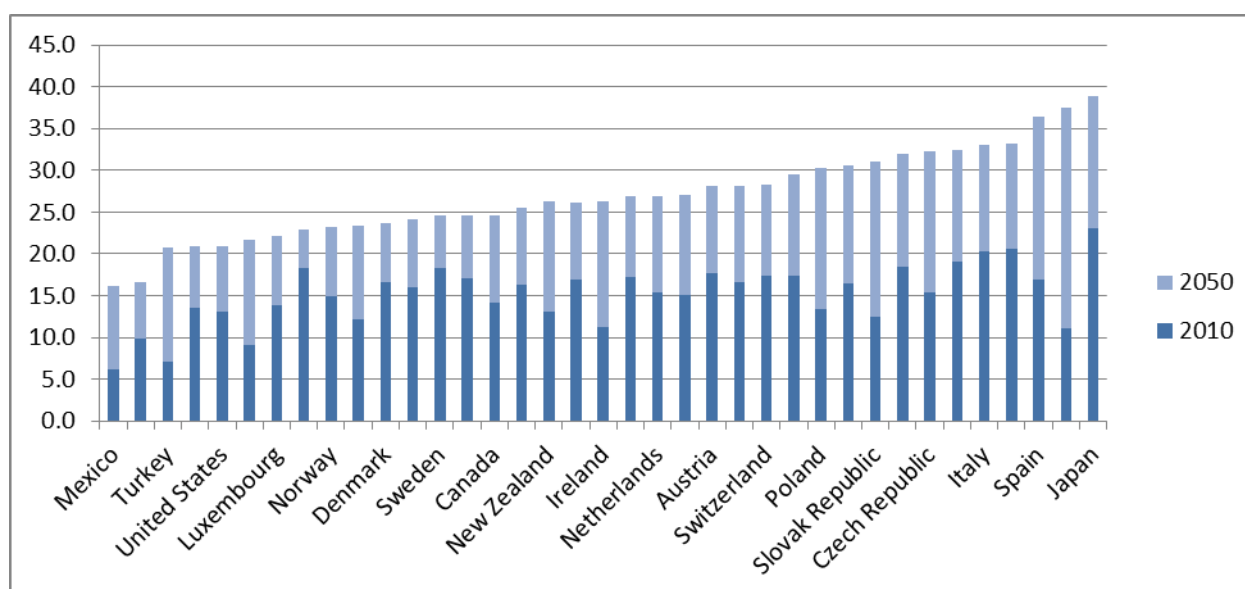
2.22 The pioneers of the sharing economy listed above have gained a significant share of the marketplace and this share is likely to grow as more users become aware of, and comfortable with, the underlying technology (PricewaterhouseCoopers, 2015). An estimate of the impact of the sharing economy in Europe suggests that over 275 peer-to-peer business model firms operate in the United Kingdom, France, Germany, Belgium, the Netherlands, Spain, Sweden, Italy and Poland, and that these companies generated over €4 billion in revenue and facilitated over €28 billion worth of transactions in 2015 (Vaughan and Daverio, 2016).

2.23 Currently, the sharing economy is not necessarily producing the types of jobs that higher education graduates occupy. But it is quite conceivable that the peer-to-peer business model will in the future expand in a more significant ways into more fields of work that require advanced skills. And it is worth observing that the founders of the companies listed above are higher education graduates who studied in a range of discipline areas.

Ageing societies

2.24 Fertility rates in many OECD countries have declined dramatically over the past few decades, falling from an average of 2.8 children per woman of childbearing age in 1970 to 1.7 in the early 2000s (OECD, 2016c). Meanwhile, life expectancy continues to increase (Figure 2.1). These demographic shifts will have a pronounced impact on higher education systems. They will also influence labour market needs for skills.

Figure 2.1: Share of the population over age 65 in 2010 and 2015



Source: OECD (2015d), *Health at a Glance 2015: OECD Indicators*, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/health_glance-2015-en

Notes: See applicable notes in *Health at a Glance 2015*, Table 11.1.

2.25 The shrinking youth cohort is a challenge for countries that have traditionally relied on the youth population to meet existing and future labour market demand. As the demand for skills rises, it will be important to ensure that as many youth as possible have the skills needed to successfully enter the labour

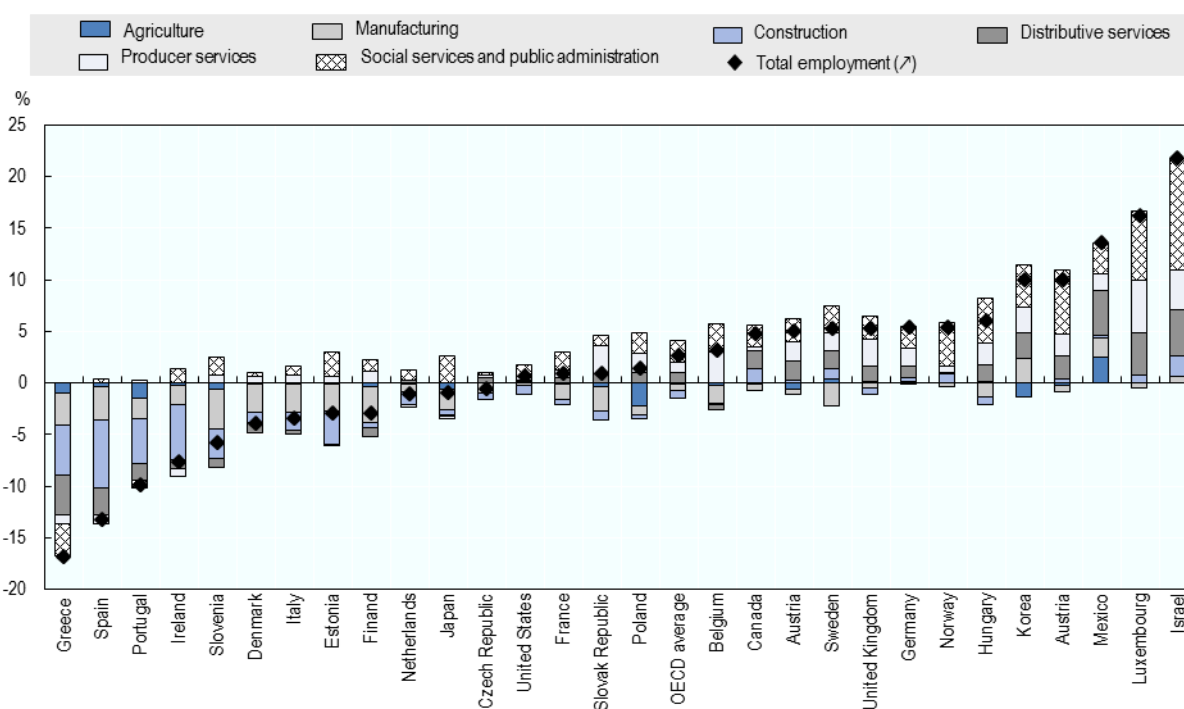
market. In addition, as youth cohorts shrink, it will be critical for higher education to adjust in ways that better support the skills development of the existing adult workforce.

2.26 The ageing population will also have an impact on demand for skills. While the current generation of senior citizens may be more active and healthier than previous generations, the ageing process means that they will inevitably require greater support and health care resources. This will in turn likely increase the demand for aged care and health-related skills and professions.

Globalisation and trade

2.27 Globalised and liberalised systems of trade mean that regional and national economies within OECD countries are competing on a global scale. In many OECD countries, this has led to a decline in manufacturing jobs and a drop in the need for the skills associated with manufacturing. At the same time, many OECD countries have seen an increase in employment in the service sector (Figure 2.2).

Figure 2.2: Percentage change in employment by industry, 2008 to 2015



Source: OECD (2016d), OECD Employment Outlook 2016, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/empl_outlook-2016-en

Notes: See applicable notes in *OECD Employment Outlook 2016*, Figure A2.1.

2.28 But globalised trade is not simply about trading finished goods and services between two countries. One of the most significant impacts of globalised trade has been in the creation of global value chains (GVCs) where different stages of the production process are located across different countries. Where each stage is located will depend in part on the comparative advantage of each country's workforce, e.g. in physical labour, routine non-cognitive tasks, or non-routine cognitive tasks. This means that the manufacturing of goods will often take place outside of OECD countries. But GVCs are complex systems that require strong management skills and processes to minimise coordination costs; intercultural

understanding; advanced legal skills to navigate intellectual property rights and contract enforcement; and good creative skills to sell products in multiple markets (OECD & World Bank, 2015). The workforce in OECD countries is well placed to play a role in providing these sorts of skills within GVCs, and this has clear implications for higher education in developing those skills.

Current and emerging skills needs: what labour market actors tell us

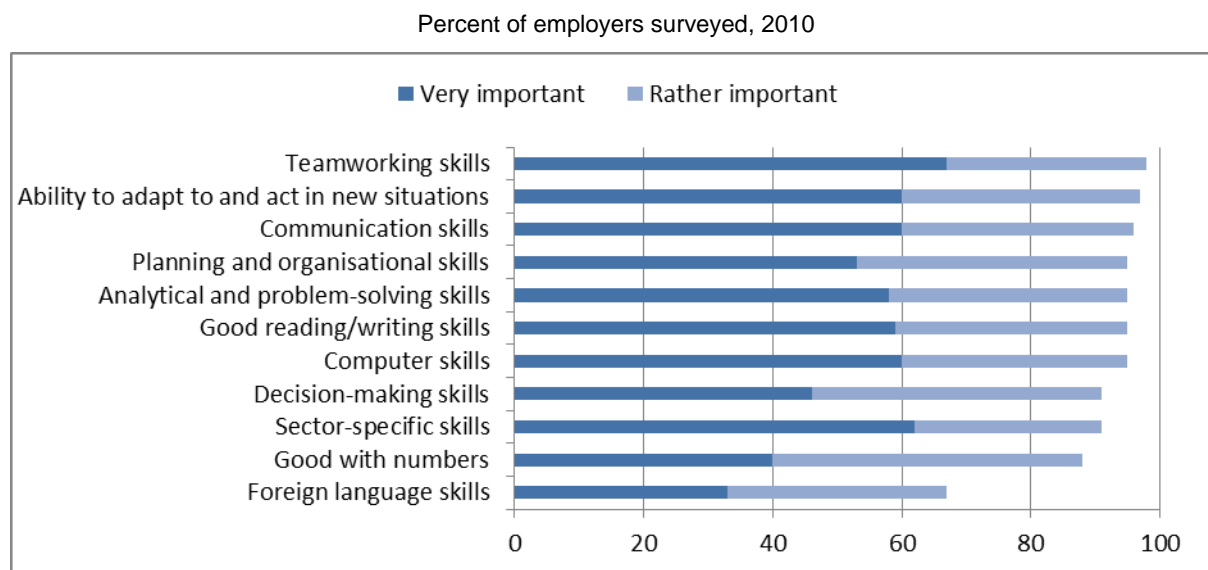
2.29 Various actors in today's labour markets provide important perspectives on the knowledge and skills required by the current and the emerging economy. The focus of this section is on the advanced skills that higher education typically produces (noting that it is not the only way that individuals acquire many of these skills). This section looks at what social partners (employers and trade unions) are saying about the skills that higher education graduates need to bring to the labour force. It also looks at how the decisions of students, and the aspirations of parents, provide indirect evidence on labour market needs. Government initiatives can also tell us about which skills are needed in the labour markets. In the next section, these sources of information will be complemented by the more rigorous, quantitative data that labour markets themselves produce.

Employer perspectives

2.30 Employers and employer associations can provide important first-hand information about the skills that the labour market requires. When asked about higher education graduates, employers on the whole say that they are looking for people who have specific technical, professional or discipline-specific knowledge and skills, as signalled by an academic qualification in a given field of study (Humburg, van der Velden and Verhagen, 2013). A relevant higher education qualification (e.g. a degree, diploma or certificate) is especially important in many professional occupations such as law, medicine, engineering and teaching, where it is usually a pre-requisite for employment (although many of these occupations also require additional certificates or licences acquired outside higher education in order to practice in the profession).

2.31 Challenges in finding people with the right professional and technical skills are one of the main reasons why 38% of employers reported problems finding the right employees in a recent global survey. The problem is particularly acute in the Asia/Pacific region where 83% of Japanese companies, 51% of New Zealand companies and 42% of Australian companies reported having difficulty finding new recruits (Manpower Group 2015). A number of the hardest to fill positions require higher education, e.g. engineers, management/executives, accounting and finance staff, and information technology staff (Manpower Group, 2015). Similarly, a survey in Norway found that employers report the most difficulty finding higher education graduates in the fields of health, engineering, information communication and technology, and teacher training (NAV, 2013).

2.32 Employers typically also place a high premium on transversal skills. One study finds that employers seek graduates with a minimum level of both professional and technical expertise and transversal skills, and that outstanding performance in one skillset is not sufficient to offset serious weakness in the other (Humburg, van der Velden and Verhagen, 2013). The strength of an individual's transversal skills can often be the deciding factor for employers when choosing among multiple candidates with the same academic qualification. Another survey found that European employers are nearly unanimous in their view that key transversal skills such as teamwork, adaptability, problem-solving, and communication are important considerations when hiring new graduates (Figure 2.3).

Figure 2.3: Importance of skills and capabilities for employers when recruiting higher education graduates

Source: The Gallup Organization (2010), *Employers' Perception of Graduate Employability*, Flash EB Series, # 304, European Commission, Brussels, http://ec.europa.eu/public_opinion/flash/fl_304_en.pdf.

2.33 In some situations, employers may even view transversal skills as more important than skills that are closely linked to a student's field of study. A survey of Canada's largest employers found that they prioritise the quality of key transversal skills such as leadership, people skills and team building over technical and professional skills for both entry and mid-level jobs (Hewitt, 2016). Similarly, an American survey found that nine out of ten employers agree with the following statement: "a demonstrated capacity to think critically, communicate clearly, and solve complex problems is more important than [a candidate's] undergraduate major" (American Association of Colleges and Universities, 2013).

2.34 Good transversal skills may even be able to compensate in part for weak professional and technical skills. For example, a study by the International Association of Administrative Professionals found that 67% of human resource managers would hire candidates with strong transversal skills, even if their technical abilities were weak. But just 9% would hire someone with strong technical qualifications and weak transversal skills (Feffer, 2016). This may be especially relevant for the many jobs that do not correspond closely to a specific field of study.

2.35 Ultimately, both technical and transversal skills matter to employers. But so do other important behaviours and attitudes. For example, a United States survey which found that employers are likely to value a graduate's internship experience, employment experience, volunteer experience, and extra-curricular experience more than the specific courses taken in higher education (Cappelli, 2015).

2.36 Employers can provide valuable insights into the skills needed in the labour market, but these insights need to be treated with caution (Box 2.1). Employer information may reflect certain biases (e.g. towards a larger pool of available workers). The skills employers say they need are also dependent on the size of the employer, the type of industry, the employer's expectations, and their willingness or ability to train new recruits. They may also be influenced by the perspective of the respondent within the firm (e.g. human resources professionals, front-line managers, or company presidents and chief executive officers) (Allen, 2015). Information from employers should therefore be understood in combination with information from other sources.

Box 2.1: Do employers want what they say they do? A Norwegian example

In Norway, the Business Survey is carried out twice a year by the Norwegian Labour and Welfare Administration (NAV). The larger Spring Survey asks more than 12 000 enterprises about their labour needs. Norway's Graduate Survey, carried out by the Nordic Institute for Studies in Innovation, Research and Higher Education, collects data from new graduates in May-June, and asks about their labour market situation in November (i.e. approximately five to six months later).

The Autumn 2011 Business Survey indicated that 16 000 additional engineers and ICT workers were needed; in May 2012 the category of engineers and ICT-workers represented the single largest unmet demand for labour, with 8 000 places that could not be filled. This is consistent with reports from other countries: a shortage of graduates with advanced ICT skills is one of the most often-heard claims from employers.

However, while Norway's November 2011 Graduate Survey of new master's graduates showed good transitions to the labour market overall, it showed poor outcomes for ICT graduates: 13% were unemployed six months after graduation. The coexistence of employer claims of significant skill shortages, and of graduates with qualifications in the same field facing significant difficulty in finding jobs, is difficult to explain. At the very least it suggests that employer surveys should be interpreted with caution.

Source: Business Survey, www.nav.no/; Graduate Survey, www.nifu.no/

Trade union perspectives

2.37 Trade unions, professional associations and workers are another important source of information on skills needs. Trade unions in particular are well placed to assess skills, since they are on the front lines of the workforce and know both the skills requirement of jobs and the skills that are present in a local or sectoral workforce (TUAC, 2016). Unlike in the case of employers though, this information is typically not captured by surveys. Rather, it is reported in regular interactions between trade unions (and workers more generally) and other key actors in the labour market and skills system.

2.38 The role that trade unions play can vary significantly, both from country to country and across sectors of the economy. In countries such as Switzerland, Germany and Austria, where there is an advanced apprenticeship model and a long tradition of co-management, trade unions have their role enshrined in legislation, and tend to play a significant role in teaching, measuring, endorsing and accrediting many skills. In other countries, trade unions work with employers either informally or via the collective bargaining structure to identify the skills and knowledge that are required in the workplace. Through collective bargaining, trade unions also often negotiate learning agreements which outline the time and support that employers need to provide for professional development (TUAC, 2016).

Student, graduate and parent perspectives

2.39 Students view higher education as a critical pathway to develop the skills that lead to a good job and a successful career. In some countries at least, rising student interest in labour market outcomes represents a significant shift in thinking. For example, the proportion of incoming first-year students in the United States who cite "to be able to get a better job" as a very important reason for attending college reached a high of 87.9% in 2012, a significant increase from a low of 67.8% in 1976 (Pryor et al, 2012).

2.40 Student applications for higher education can provide a good indication of the types of skills that students are interested in, and what they think is relevant for the labour market. Unlike enrolments, which are constrained by the number of places available in various programmes at higher education institutions, applications can show where demand is concentrated and how it changes over time. Trends from the Ontario University's Application Centre show, for instance, that applications for programmes in music,

social work, journalism and forestry have been on the decline since 2014, while applications for engineering, science, physical education and environmental science have been on the rise (OUAC, 2016). And in recent years, as it became apparent that the teaching workforce was saturated, student interest (as expressed by applications) fell dramatically.

2.41 Parents also have their own perceptions and expectations about which study paths are most relevant to the labour market. A global survey found that almost 80% of parents see an undergraduate degree or higher qualification as essential if their children are to achieve important life goals (HSBC, 2015). The survey also found that most parents would like their child to study a career-focused subject. For example, 25% of Turkish parents and 21% of Mexican parents would like their child to study medicine. In the United States, China and Singapore, the single most desired field of study among parents is business. In the United Kingdom and Brazil, that field is engineering (HSBC, 2015).

2.42 While parents generally value the technical and professional skills that come with a particular field of study, 45% report that enhanced confidence and social skills are the most valuable aspects of a university education (HSBC, 2015). In particular, parents cite independence, confidence, leadership and cultural competencies as four of the five top skills developed in higher education (HSBC, 2015).

Policymaker perspectives

2.43 Government policies and initiatives provide another viewpoint on the skills that are needed in the labour market. Some governments may focus on the development of specific technical and professional skills in response to labour market demands for graduates with those qualifications. For example, the Government of Latvia is currently taking steps to maintain the number of students graduating with science, technology, engineering and mathematics (STEM) qualifications (OECD, 2016e). And the Czech Republic is providing additional funding to support extra nursing places in higher education to meet the demand for qualified nurses with a bachelor's level qualification (OECD, 2016e).

2.44 Governments in OECD countries have also identified the development of transversal skills as a priority. For instance, the Norway Opening Universities programme is providing funds to stimulate new teaching methods in entrepreneurship (OECD, 2016e), and Austria has included a requirement for institutions to demonstrate entrepreneurial activities in all fields of study in their 2016-2018 performance agreements (OECD, 2016e). The Flanders region of Belgium has developed a pilot project to enhance the transversal skills of PhD students in order to assist in their transition to the labour market. And in 2015, Poland launched the first round of its Competencies Development Programme that is aimed at strengthening labour market skills and competencies (particularly transversal skills) in higher education students. The programme places a strong emphasis on cooperation between higher education institutions and employers and includes training sessions and workshops to help build key skills such as entrepreneurship; courses delivered jointly with employers; project-based learning; and career guidance (OECD, 2016e).

2.45 The importance of both technical and transversal skills is also reflected in the European Union's new skills agenda (*A New Skills Agenda for Europe*), which seeks to improve the quality and relevance of skills formation in tertiary education. The development of technical skills will be supported by a range of measures, including targets for tertiary-level education attainment; support for the use of forecasting to promote better anticipation of future skills needs; and use of a qualification framework to encourage better matching between skills and labour market needs (European Union, 2016). The *New Skills Agenda* also calls for enhanced development of key transversal skills such as communication in one's mother tongue, foreign languages, digital skills, literacy, learning to learn, social and civic responsibility, initiative and entrepreneurship, cultural awareness, and creativity (European Union, 2016).

Current and emerging skills needs: what labour market data tell us

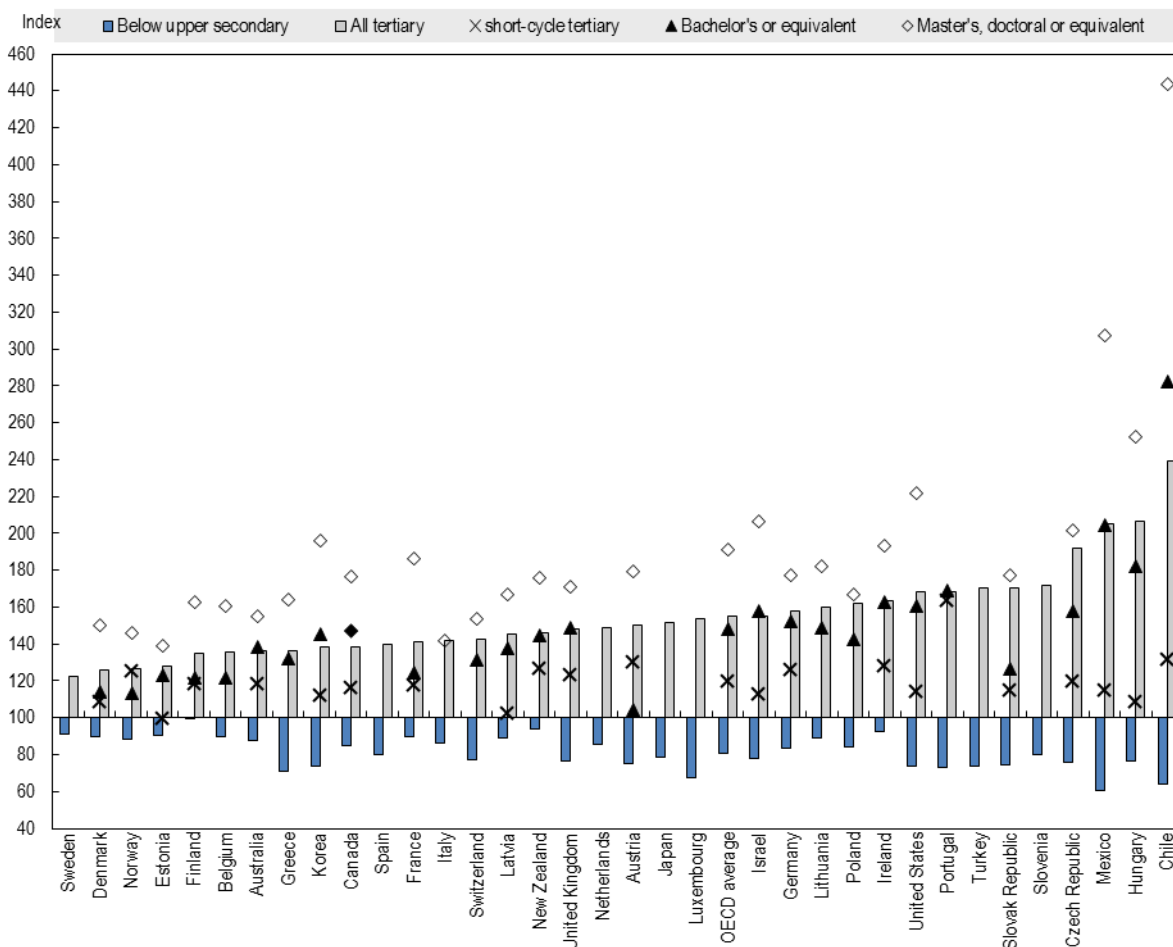
2.46 Data on the outcomes that individuals experience in the labour market can also be highly indicative of the demand for, and relevance of, certain skillsets. For instance, if the labour market outcomes of workers with certain skillsets are high compared to those of others, then it is fair to surmise that these skillsets may be in particular demand. This is especially the case if their outcomes are rising over time when compared to those of other workers. On the other hand, if certain workers' labour market outcomes are poor or declining, then the opposite is quite possibly true: their skills may not be in great demand. A concrete example of this might be seen for instance in the wages and employment/unemployment rates of people who trained for jobs in the manufacturing sector, in cases where that sector is in decline.

2.47 While it is far from a perfect proxy, an educational qualification can be used as a rough indication of the skillsets that graduates have. This can particularly be the case for younger workers who have less labour market experience. Because they have had fewer years in the workforce than other workers, the skills acquired in formal education will tend to make a relatively greater contribution to the outcomes of younger workers (OECD, 2016f).

Earnings

2.48 The earnings of graduates can provide particularly strong information about the skills that are valued in the labour market. Across the OECD, the average tertiary education graduate (25-64 years of age) in full-time employment earns 55% more than the average upper secondary education graduate also in full-time employment (OECD, 2016f). As with employment rates, but to an even greater extent, earnings suggest strong labour market demand for individuals with the most advanced skills (as measured by an advanced qualification). On average across OECD countries, adults with a master's degree, or with a doctoral degree or equivalent, earn almost twice as much as those with upper secondary education. Those with a bachelor's or equivalent degree earn 48% more, while those with a short-cycle tertiary education degree earn about 20% more (Figure 2.4).

Figure 2.4: Relative earnings of adults working full-time, by educational attainment (2014) 25-64 year-olds with income from employment; upper secondary education = 100



Source: OECD (2016f), Education at a Glance 2016: OECD Indicators, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/eag-2016-en>

Notes: See applicable notes in OECD Education at a Glance 2016, Figure A6.1.

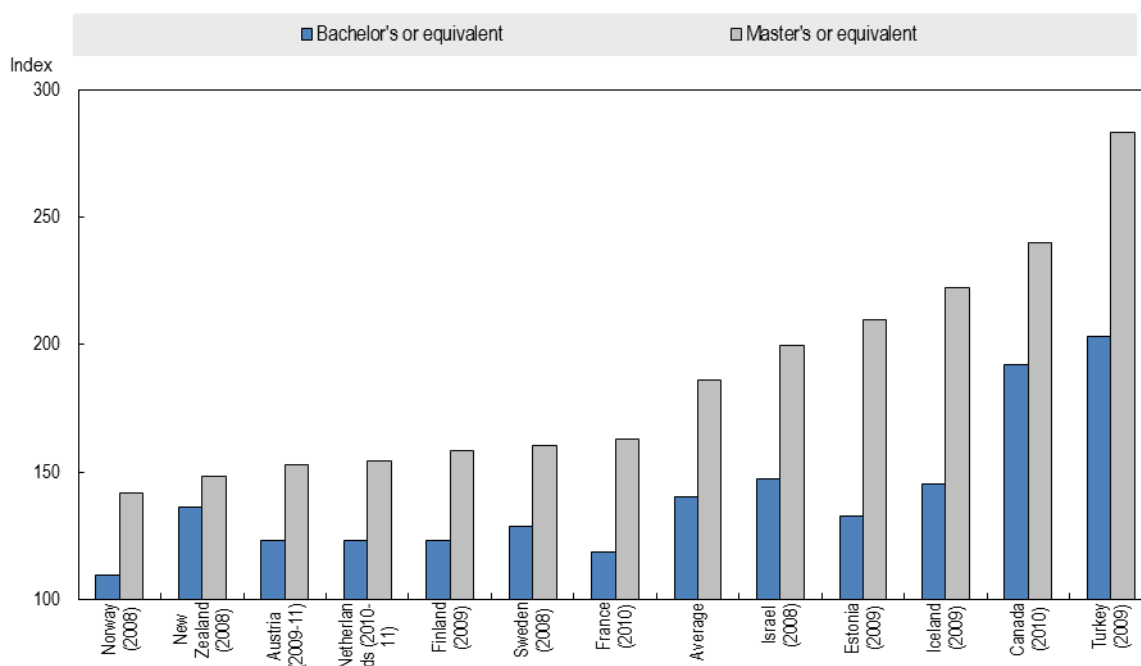
2.49 Younger workers experience similar differences in outcomes (Figure 2.5). This suggests that the labour market typically values the same types of skillsets in new entrants (i.e. individuals who make up the new labour market “in-flow”) as it does in workers as a whole (i.e. the labour market “stock”). There are some cases where this does not hold: employment in a specific sector may be well paid but the labour market may be saturated, so that new entrants experience poor outcomes. However, the relationship does appear to hold in general terms.

2.50 At the bachelor’s level or equivalent, young tertiary education graduates typically have a clear earnings advantage over young adults with upper secondary school as their highest level of education. This advantage exists even though bachelor’s graduates typically have less work experience than their peers who have been in the labour market for some time. On average across the OECD, the premium for young tertiary education graduates is 40% when measured three years following graduation (i.e. when they are typically between 23 and 30 years of age) (OECD, 2016f). The premium varies by country though, with variation reflecting for instance local labour market structures, or strong domestic returns to certain other

levels of education such as vocational education and training at the ISCED 3 level. The premium for bachelor's graduates ranges from 9% in Norway to 103% Turkey.

Figure 2.5: Relative median earnings of young tertiary education graduates in select countries, three years after completing a bachelor's or master's degree

Young tertiary education graduates with income from employment (upper secondary education = 100), average across countries



Source: OECD (2016F), Education at a Glance 2016: OECD Indicators, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/eag-2016-en>

Notes: See applicable notes in OECD Education at a Glance 2016, Figure A6.a

2.51 The earnings premiums enjoyed by younger graduates are noteworthy given recent pronounced growth in higher education enrolment and attainment. For example, from the mid-1990s through the mid-2000s, the percentage of the working-age population in the workforce that held a higher education qualification increased in all OECD countries. This was mostly due to young recent graduates entering the labour market. In countries such as Poland, Luxembourg, Ireland, the United Kingdom and Korea, the proportion of youth with a higher education qualification increased by over 20 percentage points between 2000 and 2013 (OECD, 2016f).

Box 2.2: Caveats when looking at relative wages

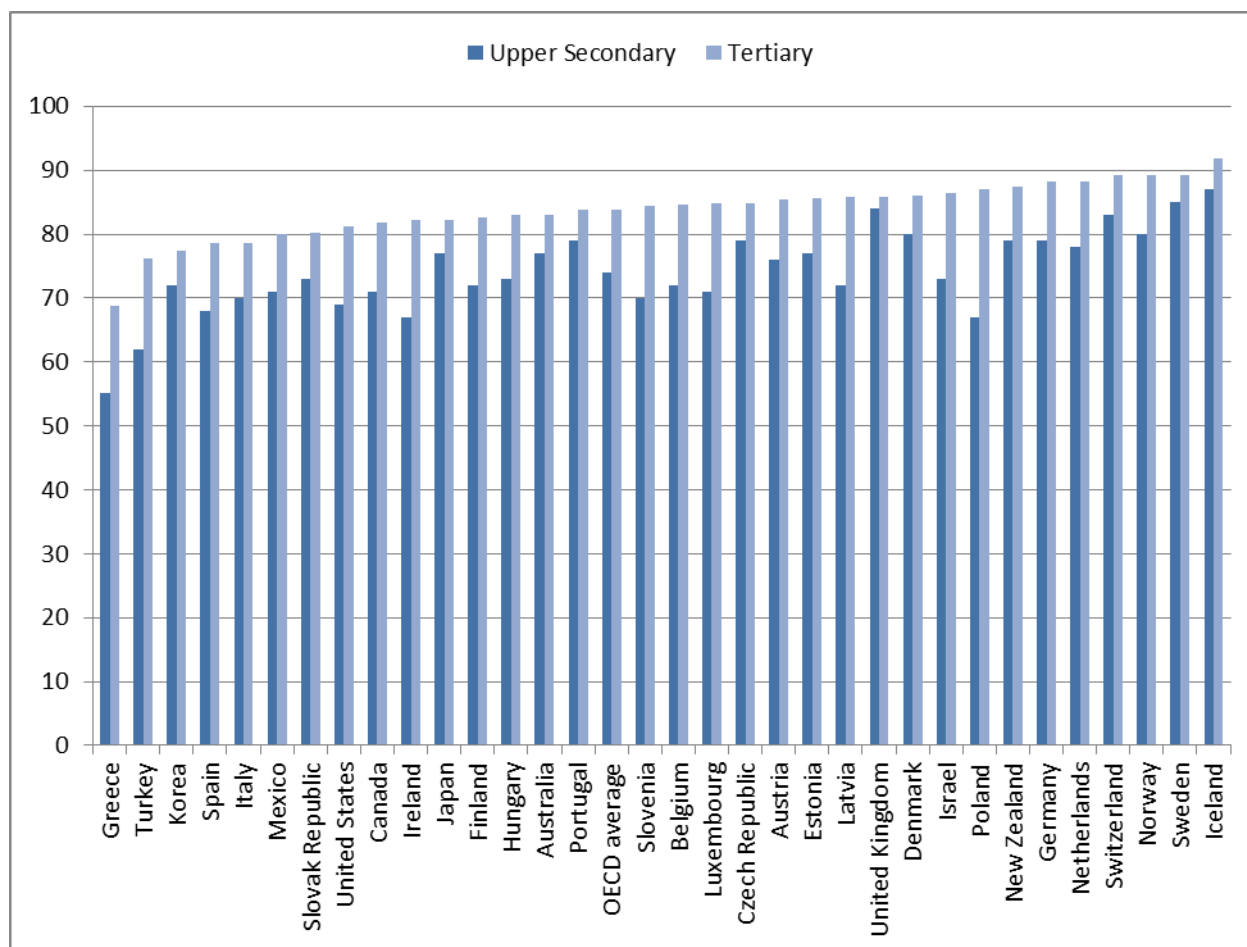
Wages are an important source of information on relative labour market demand for graduates. But there are a number of considerations to take into account when looking at this data.

- Certain disciplines that do not do well in terms of relative earnings may nonetheless serve as key entry points to higher level programmes that do have very good labour market outcomes.
- Earnings data do not take into account the various non-wage outcomes (e.g. entrepreneurial self-employment) of graduates of certain disciplines.
- Employment regulation may affect different occupations (and thus, indirectly graduates) in different ways. For instance, professions to which entry is limited will often be able to command higher earnings, but that does not mean that a large number of students can graduate from these programmes and hope for good outcomes. And boundaries between jurisdictions that limit the movement of workers can further complicate the interpretation of labour market indicators.
- In certain sectors, e.g. the public sector, market forces may play a reduced role in wage setting,
- Students with greater natural ability may enroll in fields of study that are seen to be better investments, and thus potentially drive down the relative earnings of less popular fields. A study of graduates in Denmark found that this accounted for most of the variation across fields of study (Dalgaard et al, 2009).

Employment

2.52 Employment rates are an indicator of labour market demand for individuals with given skillsets. Higher education graduates, on average, do well on this measure: OECD employment data show that they typically have higher employment rates than other individuals. Across OECD member countries, 84% of tertiary-educated individuals (25-64 years of age) are employed, compared to 74% of individuals with an upper secondary school or non-tertiary post-secondary qualification, and 56% of people with less than an upper secondary education (OECD, 2016f). Tertiary graduates have higher employment rates than upper secondary graduates in all OECD countries (Figure 2.6).

Figure 2.6: Employment rates by educational attainment (age 25-64) (2015)

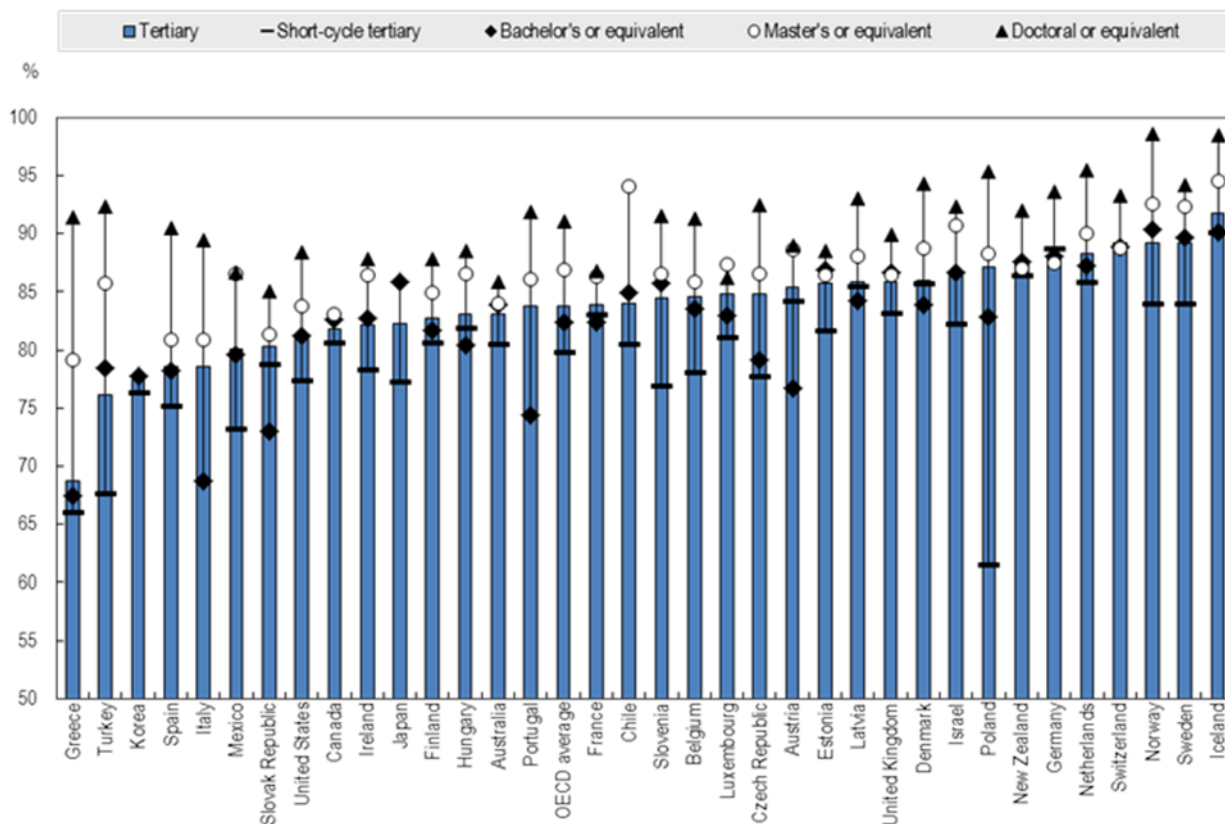


Source: OECD (2016f), Education at a Glance 2016: OECD Indicators, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/eag-2016-en>

Notes: See applicable notes in OECD Education at a Glance 2016, Tables A5.1 and A5.3.

2.53 On average, employment rates improve with each successive level of higher education and graduates with advanced degrees have even higher employment rates than others (Figure 2.7). OECD data indicate that across OECD countries, the employment rate is on average 80% for adults with a short-cycle tertiary education qualification. This rises to 82% for those with a bachelor's or equivalent degree, 87% for those with a master's degree or equivalent, and 91% for individuals with a doctoral or equivalent degree (OECD, 2016f).

Figure 2.7: Employment rates of tertiary-educated adults, by level of tertiary education (2015)



Source: OECD (2016f), Education at a Glance 2016: OECD Indicators, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/eag-2016-en>

Notes: See applicable notes in OECD Education at a Glance 2016, Figure A5.3.

Employment rates alone only tell a partial story, though: the characteristics of jobs that people are employed in also matter. Demand for the skills of higher education graduates may thus be reflected in the type work arrangements that they have (e.g. contract type and employment status).

2.54 On average higher education graduates are more likely to be hired on permanent basis (i.e. they do not have a fixed end date to their work) and are more likely than upper secondary graduates to be working full-time (OECD 2016f; OECD 2014). By hiring higher education graduates on a permanent and full-time basis, employers may in part be signalling the value that they place on the skills of higher education graduates, and their confidence that graduates can apply these skills in the workplace.

Skills assessments

2.55 *On average*, employer confidence in the skills of graduates appears to be well founded. Data from skills assessments provide information about the use of, and demand for, a range of transversal skills in workplace. For instance, the OECD's Survey of Adults Skills finds that skills in reading, writing, numeracy, as well as familiarity with information technology tools and problem solving skills, are heavily used in the labour markets of all OECD countries (OECD, 2016b). The analysis shows that individuals with higher education qualifications have on average higher skills proficiencies, and use these skills in their jobs more intensively than upper secondary school graduates (OECD, 2016b).

Future skills needs

2.56 Policymakers are also concerned with ensuring higher education is able to respond to future labour market needs. Tools such as labour force surveys, population surveys, tax data, and job vacancy data can provide evidence of the skills that are currently in demand and will presumably be in demand into the near future. Such tools are used across most OECD countries (Table 2.1).

Table 2.1: Methods and tools used in skills assessment and anticipation systems in OECD countries

	Employer surveys	Surveys of workers or graduates	Quantitative forecasting models	Sector studies	Qualitative methods	Labour market information system	Other
Australia	X	X	X	X	X	X	X
Austria	X	X	X	X	X	X	X
Belgium (Flanders)		X	X	X	X	X	
Belgium (Wallonia)				X	X	X	X
Canada	X	X	X	X	X	X	X
Chile	X			X	X	X	
Czech Republic			X	X			
Denmark	X	X	X	X	X		
Estonia			X				
Finland	X		X		X	X	
France	X	X	X	X	X	X	
Germany	X	X	X	X	X	X	X
Greece	X			X		X	
Hungary	X				X		
Ireland			X	X		X	
Italy	X	X	X	X			
Japan	X	X		X		X	X
Korea	X	X		X	X	X	
Netherlands	X		X	X	X	X	
Norway	X	X	X	X	X	X	X
Poland		X				X	
Portugal	X	X		X	X	X	
Slovak Republic						X	
Slovenia	X						X
Sweden	X	X	X	X	X		
Switzerland							
Turkey	X	X		X	X	X	
United States		X	X		X	X	X

Source: OECD (2016g), *Getting Skills Right: Assessing and Anticipating Changing Skill Needs*, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/9789264252073-en>.

Note: While it is not reflected in this table, Poland has provided additional information to indicate that it has an employer survey, the Bilans Kapitału Ludzkiego.

2.57 One common approach to identifying immediate skills needs is to examine unfilled job postings. These can point to skills gaps that explain persistent vacancies (OECD, 2016g). For example, the Australian Department of Employment combines discussions with employers and recruitment professionals with quantitative analysis of recently advertised vacancies to classify occupations as “in shortage”, “in recruitment difficulty” or “in no shortage” at the national, state/territory and metropolitan area levels (OECD, 2016g). However, caution is required in analysing job vacancies data to ensure that they do not merely reflect jobs that have high turnover rates.

2.58 Data on short-term skills needs can be quite important for workforce development authorities. But the use of current labour market information to determine where higher education should focus its efforts has real limitations. For instance, if policymakers expand higher education places in response to current needs, the new graduates they create will only enter the labour force some years later – by which time the labour market need may have dissipated. This is a particular risk for the more specific professional and technical skills that higher education programmes develop.

2.59 As a result, policymakers also use projection models to project the expected future demand for skills. These models use demographic data to calculate how many people will enter the labour market (i.e. new graduates, immigrants and those returning to the labour market after a period of inactivity) and how many will exit the labour market (i.e. those becoming inactive, either temporarily or permanently). To refine these models, policymakers build in assumptions about social, technological and economic trends, and about how these trends will affect the supply and demand for skills (OECD, 2016g).

Box 2.3: Caveats around projections

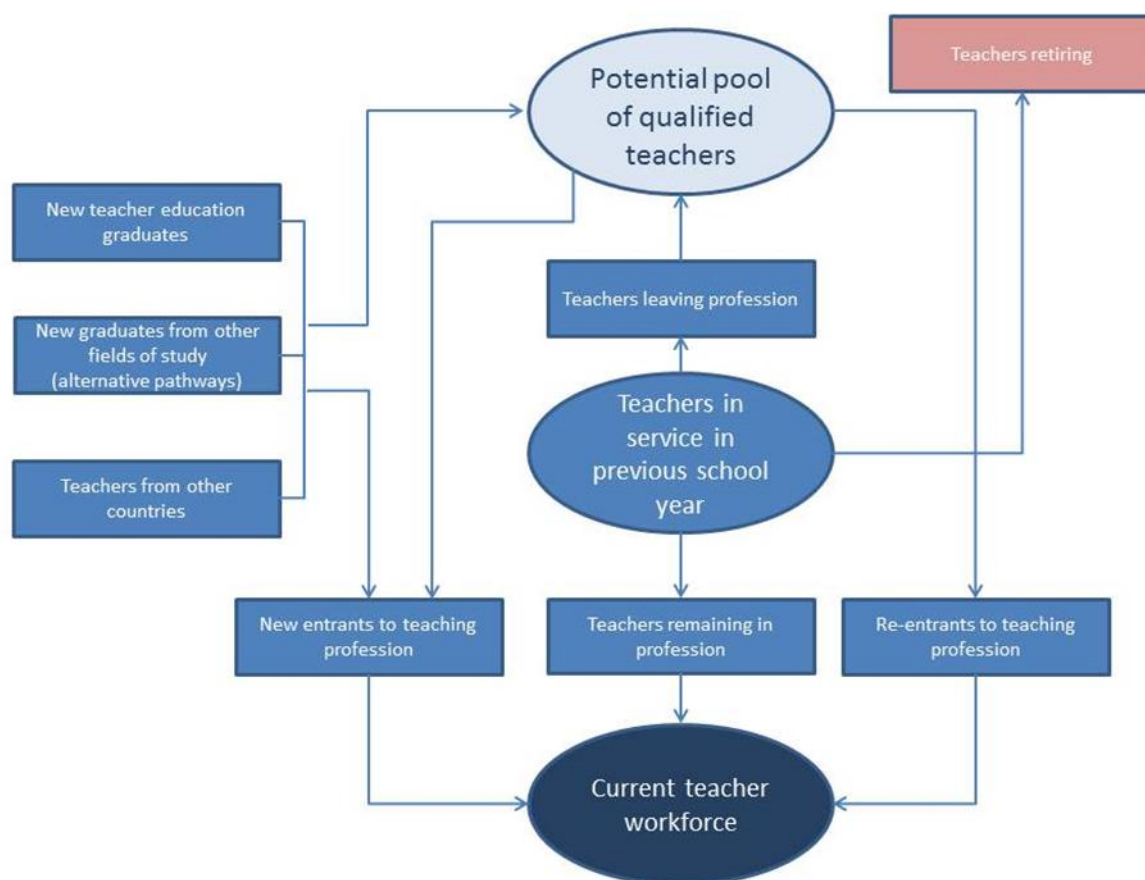
While they are an important component of any labour market effort to align higher education with the labour market, projections of future skills needs are inevitably imprecise, and can be misleading if not used with great caution. To the extent that they are projection-based, they will tend to make strong assumptions. And the more fine-grained they are, and the longer their time horizon, the more they risk missing the mark.

Most projections rely on “dynamic macroeconomic models” and use a top-down approach to projecting labour demand. This kind of modelling has been labelled a “best practice” in international skills projection, but there are limits to its effectiveness. It requires that analysts specify ahead of time a large set of external parameters concerning how the economy will develop, e.g., oil prices and exchange rates. Projections often face particular problems in modelling factors such as future migration and its effects on the skills in a national economy (OECD, 2012).

One way for policy planners to mitigate the risks of projections is to work with several future scenarios, and identify ways in which skills investments might be made that might succeed across a range of scenarios. This approach recognises the inherent limitations of models of the future, and avoids committing to a single prediction of future skills needs.

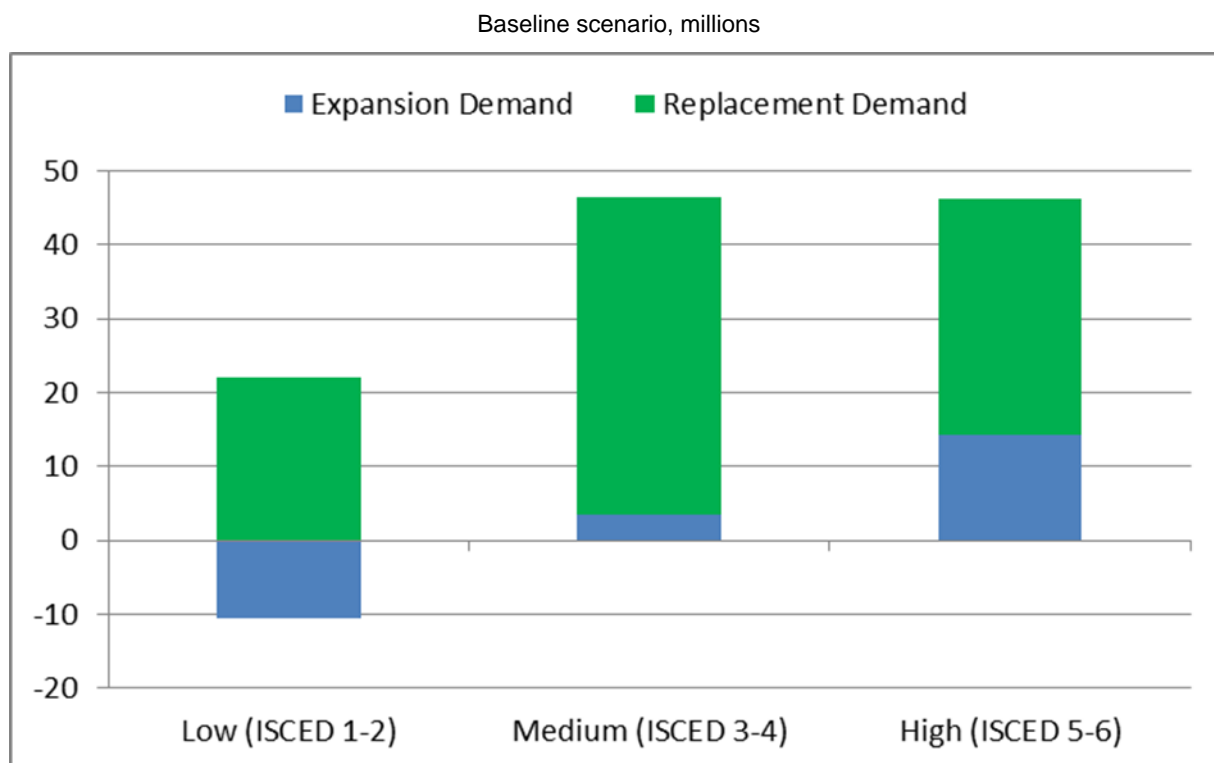
2.60 Many countries also use projection models for specific sectors or occupations. For example, health workforce planning models are common in OECD countries (Ono et al., 2013). Projection models show, however, the complexities involved in projecting future skills needs, especially given uncertainty surrounding the flows of already qualified people into and out of a profession, as illustrated by the flows in and out of the teaching workforce (Figure 2.8).

Figure 2.8: Flows in and out of the teaching profession



Source: OECD (2005), *Teachers Matter: Attracting, Developing and Retraining Effective Teachers*, OECD Publishing, Paris. <https://www.oecd.org/edu/school/34990905.pdf>

2.61 Current projections vary significantly across countries and regions, but there is some convergence in key projections. For instance, there will be a significant number of job openings in Europe for people with higher education credentials over the next decade. But there will be a similar number of jobs (if fewer *new* jobs) opening up for people with upper secondary or non-tertiary post-secondary education qualifications (Figure. 2.9).

Figure 2.9: Job opportunities in the EU-28 countries, Norway and Iceland, forecast for 2015-2025

Source: Cedefop (2016) Skills Forecast 2015-2025, <http://www.cedefop.europa.eu/fr/publications-and-resources/data-visualisations/job-opportunities>

2.62 The trend is similar across OECD countries, and is in part explained by the non-routine jobs that OECD countries are increasingly generating. In the United States, for example, analysis projects that job growth will be fastest for non-routine cognitive jobs, followed by jobs requiring non-routine manual tasks (i.e. non-higher education jobs). Meanwhile, there will not be any growth in jobs that require routine manual and cognitive skills (Dvorkin, 2016).

2.63 Other projections indicate that transversal skills will be increasingly important in the jobs of tomorrow. The World Economic Forum suggests that skills-biased technological change will have a significant impact on the skills that graduates need in both the near future and in the longer-term. It predicts that the skills needed to succeed in the labour market will shift significantly in favour of complex problem solving, creativity, critical thinking, and emotional intelligence (World Economic Forum, 2016). Meanwhile, recent OECD estimates suggest that the pace of the current technological revolution appears to be exceeding that of its predecessors. This means the skills required for jobs will shift towards skills that complement automation, and towards skills that are useful in unstructured and complex situations (such as creativity and social intelligence) (Arntz et al, 2016).

2.64 All this suggests that higher education will continue to play a key role in developing the skills needed in the labour market. While the technical skills needed may vary over time, the transversal skills developed and enhanced in higher education are likely to be needed whatever the exact shape of the labour market or the economic climate. This holds true for youth entering higher education, but also (even if somewhat differently) for adults at mid-career who are looking to ensure they have the skillsets needed to continue making progress in the workplace. The development of these “no-regrets skills” will place graduates in good stead in future labour markets by providing them with:

- resilience and adaptability so that they can respond easily as the labour market evolves and as their personal circumstances change;
- good interpersonal skills, especially since the ability to work together with others and to communicate clearly have become increasingly important in developing and delivering both goods and services;
- the capacity to sift, evaluate and make judgements about the quality and relevance of information in an increasingly information-rich world.

Box 2.4: Key findings of Chapter 2

Individuals need a good mix of skills (professional/technical and transversal) in order to achieve good labour market outcomes.

This mix of skills helps them deal with labour markets that are shifting as the result of the impact of technology, the changing nature of work, the ageing of societies, and globalisation and trade.

While technical/professional skills will continue to be important, transversal – or “no regrets” – skills position higher education graduates well for an uncertain future.

Reports from employers and trade unions, as well as from students and parents, can all help policymakers identify the skills the labour market requires and that higher education needs to help develop.

Labour market data also helps policymakers identify which skills are relevant to the labour market. Data on the labour market outcomes of higher education graduates suggest that, *on average*, the skills that higher education develops are in labour market demand.

Policymakers should use a combination of stakeholder reports, current labour market data, and labour market projections when making higher education policy. But they also need to recognise the various limitations of these sources of information.

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CHAPTER 3. VARIATIONS IN THE LABOUR MARKET OUTCOMES OF GRADUATES

3.1 Chapter 2 identified ways in which countries can better understand what skills are relevant for the labour market, both now and in the future. But it focussed on the average labour market outcomes of graduates. These averages mask significant variations: not all higher education graduates enjoy good labour market outcomes. For instance, while some graduates achieve very high earnings, others earn much less than the average.

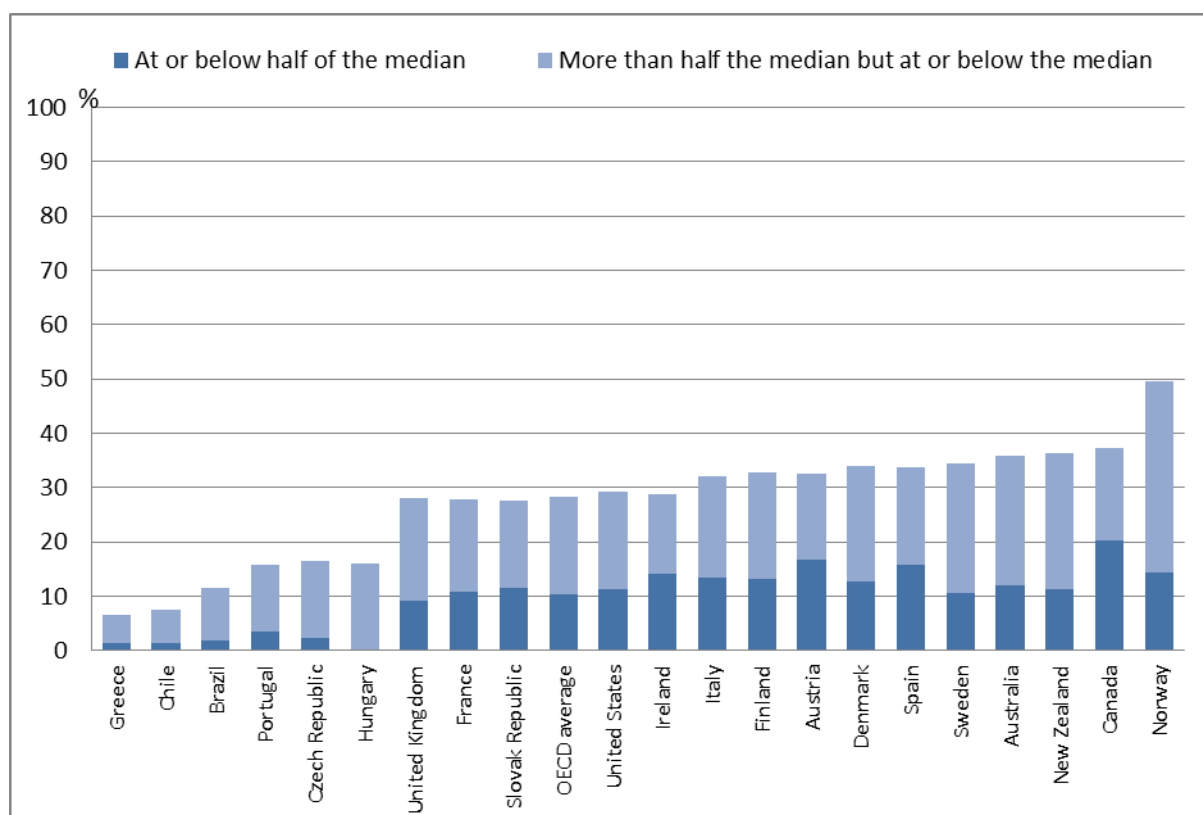
3.2 This chapter will examine the relationship between higher education qualifications and labour market outcomes, explore some of the factors that lie behind variation in graduates outcomes, and point to practices that can help develop labour market relevant skills and lead to better labour market outcomes for graduates.

3.3 Before proceeding, it is worth repeating that the labour market outcomes of higher education graduates (e.g. earnings and employment, including skills and qualification matches and contract type) provide important information about the relevance of the skills developed in higher education, but that they must be interpreted with caution. Labour market outcomes are influenced by many factors, some of which are unrelated to the skills gained in higher education.

Variations by earnings

3.4 As shown in Chapter 2, higher education graduates, on average, earn more than individuals with lower educational attainment. But the earnings of graduates vary significantly from person to person. Across OECD countries, 28% of working-age higher education graduates earn less than the median earnings in their country, and a third of these low-income graduates are actually earning less than half the median (OECD, 2015a) (Figure 3.1). Some care does need to be taken, however, in interpreting these data. For instance, in countries such as Canada where a substantial number of individuals with higher education are immigrants (and thus frequently hold foreign credentials), these data do not precisely reflect the outcomes of the Canadian higher education system itself.

Figure 3.1: Earnings of 25-64 year-olds with a bachelor's, master's, doctorate or equivalent degree relative to the median earnings of all workers (2013 or nearest year)



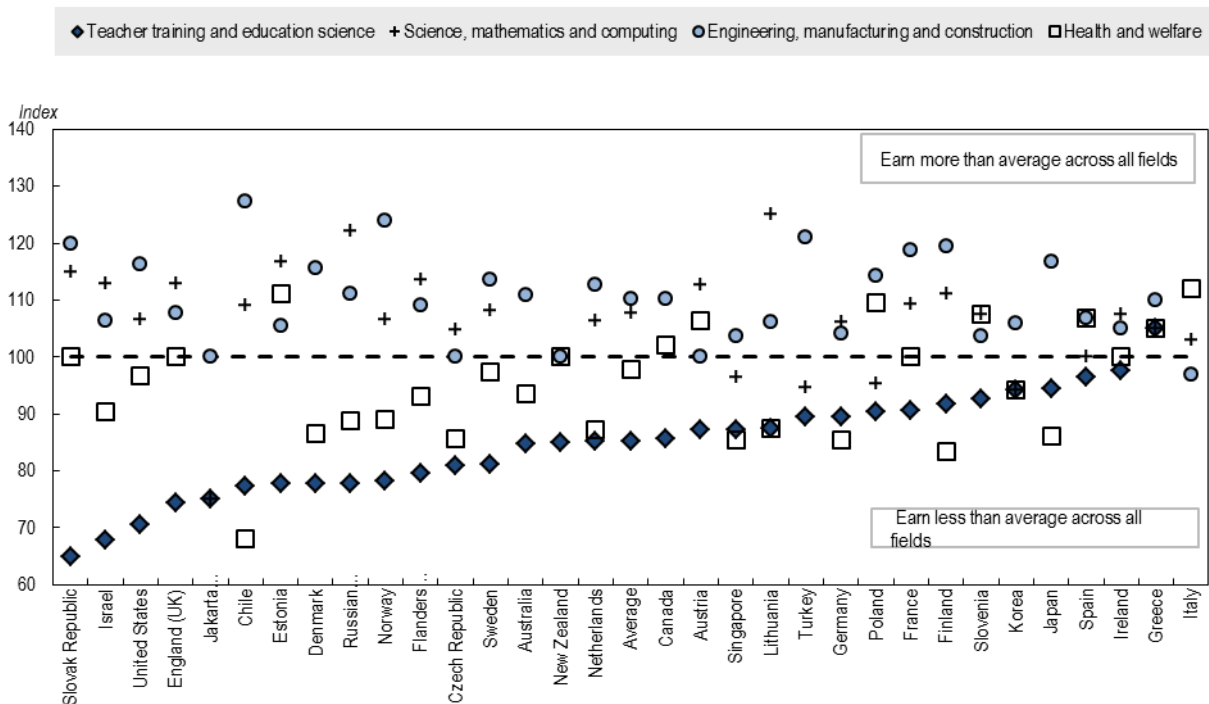
Source: OECD (2015a), Education at a Glance 2015: OECD Indicators, OECD Publishing, Paris, DOI: <http://dx.doi.org/10.1787/eag-2015-en>

Notes: See applicable notes in OECD Education at a Glance 2015 Chart A6.3.

3.5 Part of the variation is due to field of study (Figure 3.2). OECD data finds that graduates from science, mathematics and computing; engineering, manufacturing and construction; and social sciences, business and law report the highest monthly earnings. On average, graduates from these fields earned the equivalent of between 800 and 900 USD more a month than graduates in the humanities, languages and arts (OECD, 2016a).

Figure 3.2: Relative earnings of adults with tertiary education by field of education studied (2012 or 2015)

Survey of Adult Skills, 25-64 year-old non-student, full-time workers; all fields of education = 100

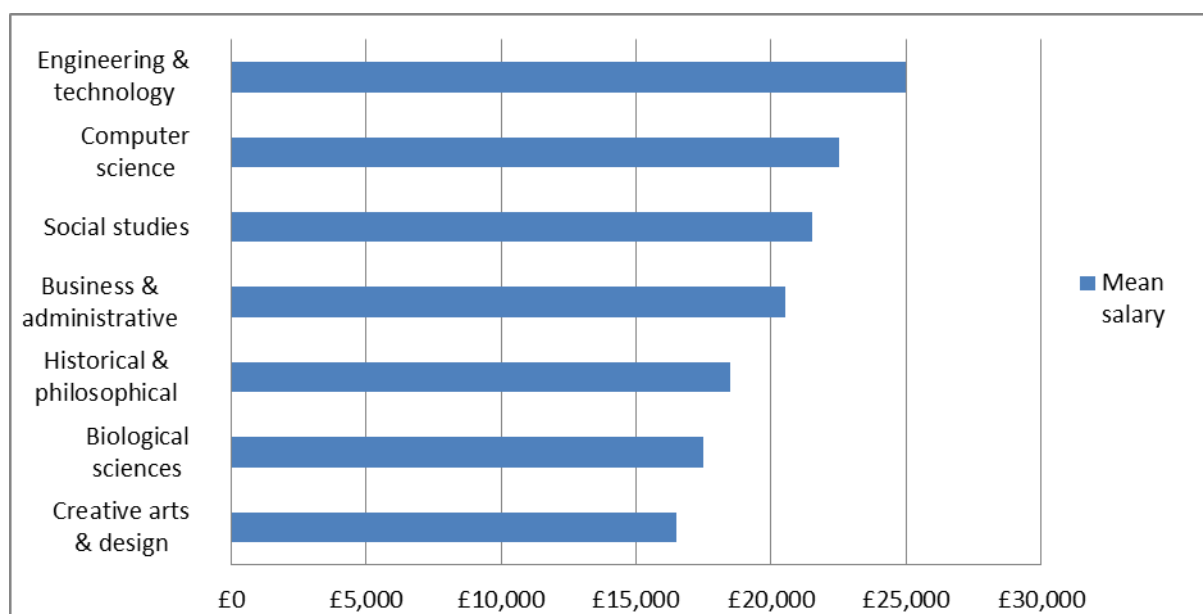


Source: OECD (2016a), Education at a Glance 2016: OECD Indicators, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/eag-2016-en>

Notes: See applicable notes in OECD Education at a Glance 2016, Figure A6.4.

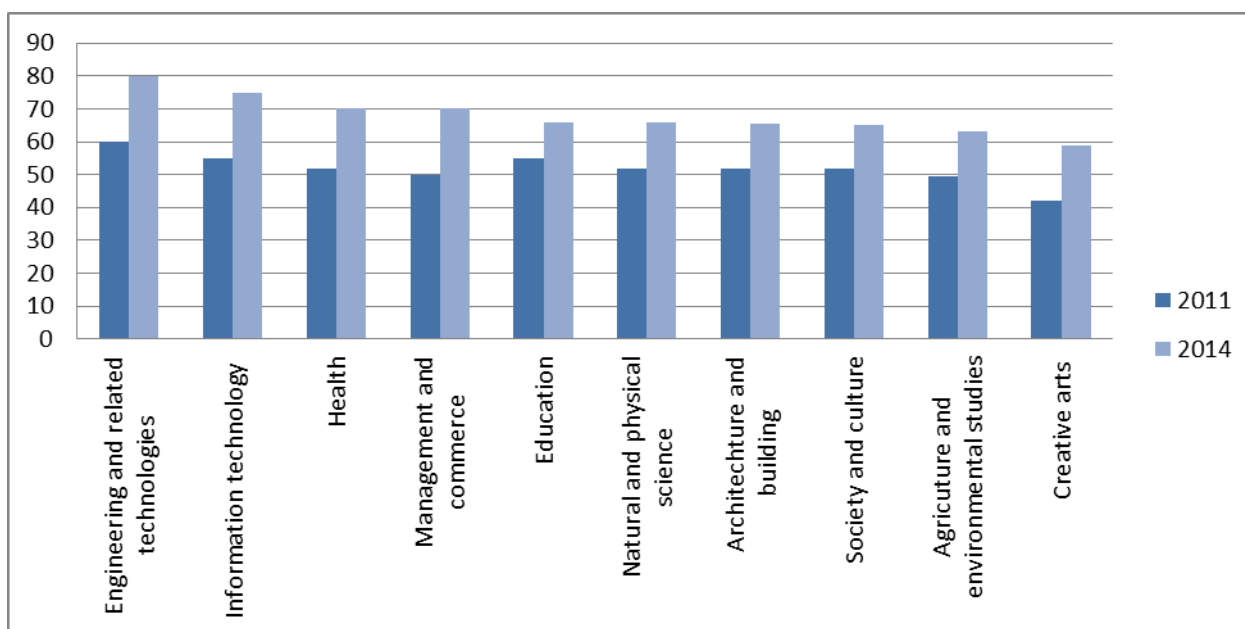
3.6 This variation in earnings by field of study is also shown in national data. For example, six months after graduation, United Kingdom graduates in engineering and technology were earning much higher salaries than those in biological sciences or creative arts and design (Figure 3.3). And in Australia, the earnings advantage for graduates in engineering and related technologies remained strong over the first three years of employment (Figure 3.4).

Figure 3.3: Mean annual salaries of full-time 2013-2014 United Kingdom graduates, six months after graduation by field of study (first degree)



Source: Higher Education Statistics Agency (2014), Destinations of Leavers from Higher Education (database), www.hesa.ac.uk/pubs/dlhe <https://www.hesa.ac.uk/collection/c14018/html/html/>.

Figure 3.4: Median salary of Australian bachelor’s graduates in full-time employment (1000’s of AUD)

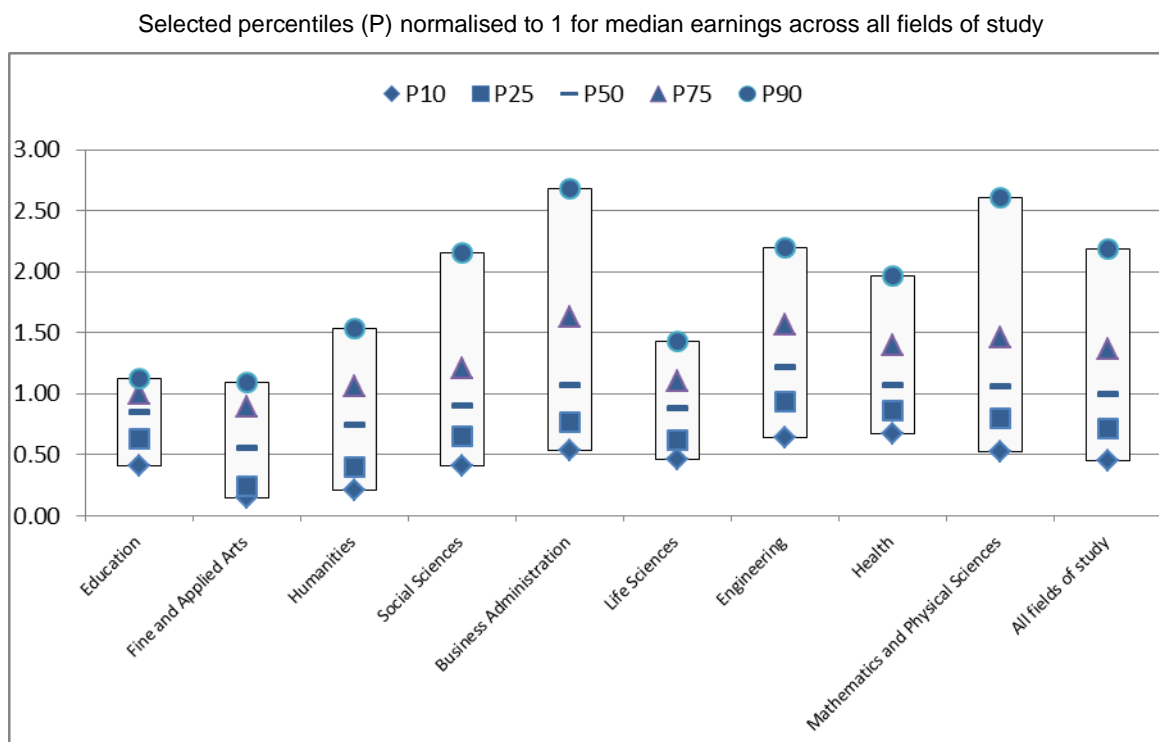


Source: Graduate Careers Australia (2015), “Beyond Graduation 2014: A Report of Graduates’ Work and Study Outcomes Three Years after Course Completion”, Graduate Careers Australia Ltd., Melbourne, http://www.graduatecareers.com.au/wp-content/uploads/2015/07/Beyond_Graduation_2014.pdf

3.7 At least in some cases, these sorts of variation can persist over the course of an entire working life. In Canada for instance, analysis of the cumulative earnings over 20 years for bachelor’s degree and

college certificate graduates, broken down by field of study (Figure 3.5) shows that engineering graduates had the greatest reported cumulative earnings for the period of 1991 to 2011, followed by graduates in health, mathematics and physical sciences, and business administration (Ostrovsky & Frenette, 2014). These same fields have among the highest earnings for new graduates.

Figure 3.5: Normalised cumulative earnings over 20 years for bachelor’s degree, male graduates, Canada



Source: Ostrovsky, Y. and M. Frenette (2014), “The Cumulative Earnings of Postsecondary Graduates over 20 Years: Results by Field of Study”, Economic Insights, Statistics Canada, Ottawa, www.statcan.gc.ca/pub/11-626-x/11-626-x2014040-eng.pdf

3.8 Additional research examining the tax returns of Canadian graduates from 14 higher education institutions over a ten-year period shows that graduates in the fields of health, engineering, mathematics and computer science, and business report the highest average earnings one year after graduation. And graduates from engineering, mathematics and computer science, and business saw the greatest earnings growth over the time period: their premiums, compared to those of graduates of other fields of study, increased over time (Finnie et al, 2016).

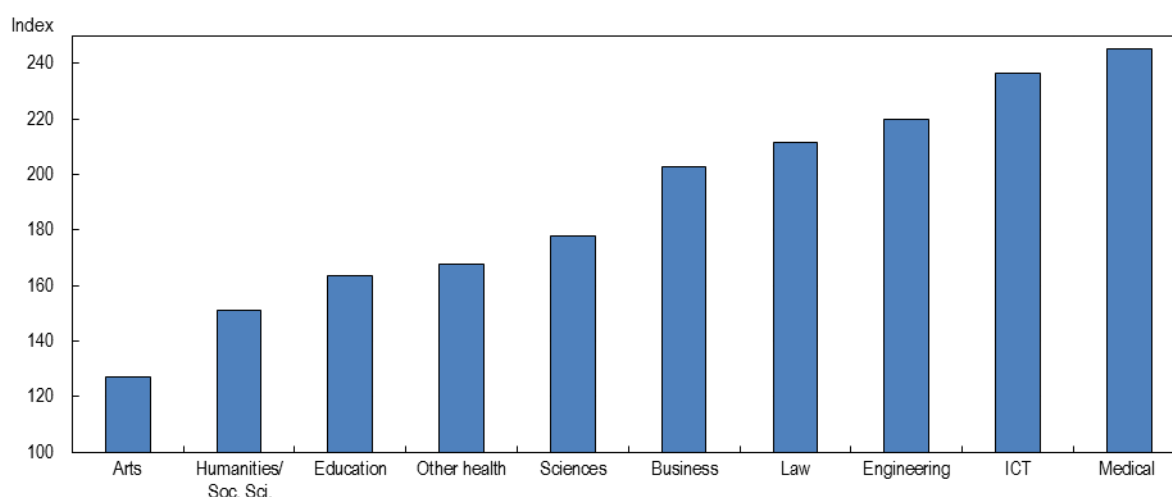
3.9 One important takeaway from this data is that, while on average graduates from a number of science, technology, engineering and mathematics (STEM) fields tend to outperform graduates of other fields, graduates from some STEM fields do less well than those of other STEM fields. This can be seen, for instance, in the United Kingdom where some STEM graduates (especially in of biological sciences; chemistry and material sciences; and earth, marine and environmental sciences) have above average unemployment rates and an above average likelihood of working in a non-graduate jobs (Wakeham, 2016)

3.10 As Figure 3.2 shows, there is also significant variation in the outcomes of graduates within specific fields of study. A fair number of humanities graduates do better than engineering graduates who are at the lower end of the distribution for their field. The same can be said of the best performing life sciences graduates even though, on average, life sciences graduates do less well than graduates from engineering programmes.

3.11 Younger graduates with the advanced skills associated with certain fields report high earning premiums (Figure 3.6). Analysis by field of study at the master's level shows that, in general, graduates with medical degrees earn the most, and those with master's degrees in business, engineering, information and communications technology (ICT) and law also have comparatively high earnings. Graduates of the humanities, social sciences and arts earn less (OECD, 2016a).

Figure 3.6: Relative median earnings of young tertiary graduates three years after completing a master's degree, by field of study

Young tertiary graduates with income from employment (upper secondary education = 100), average across countries



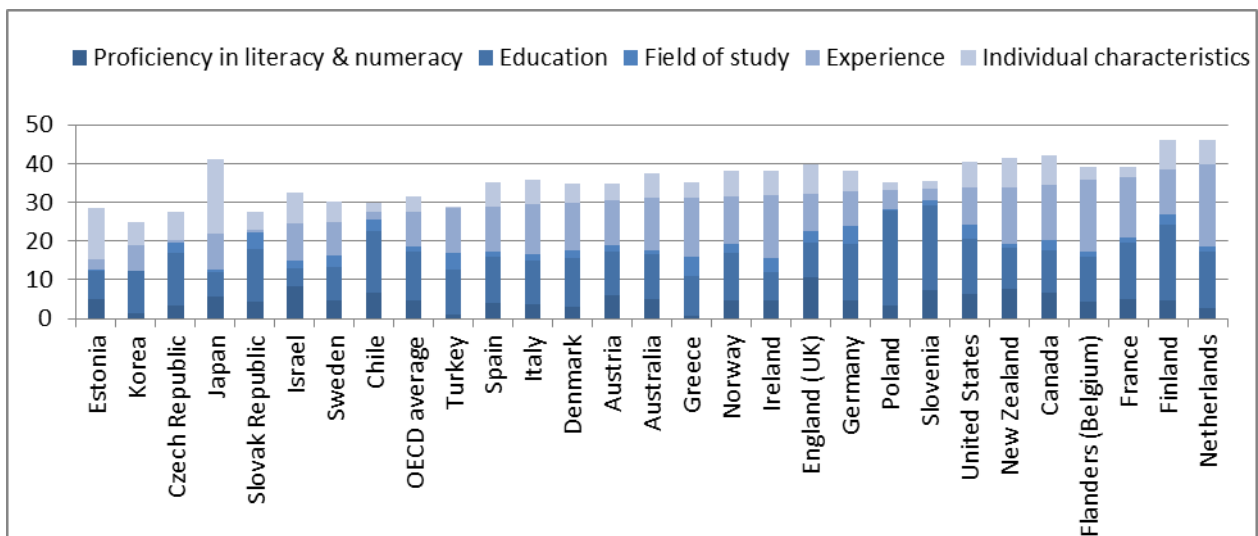
Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/eag-2016-en>

Notes: See applicable notes in OECD Education at a Glance 2016, Figure A6.b.

3.12 Field of study clearly plays an important role in the variation in student outcomes. But the impact of field of study on wages over the course of a career may be less significant than an individual's level of education, literacy levels, work experience, and personal characteristics such as gender, marital status, migration status and language spoken at home (Figure 3.7).

Figure 3.7: Contribution of key factor on the variation in wages

Contribution of each factor to the percentage of the explained variance (R-squared) in hourly wages



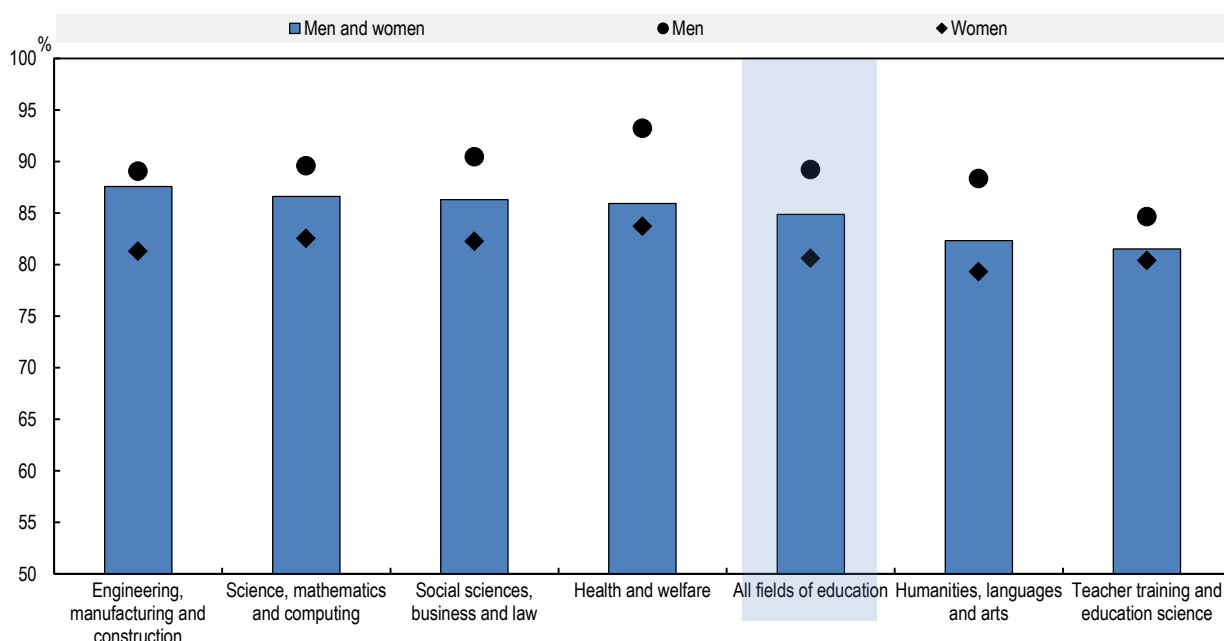
Source: OECD (2016b), Skills Matter: Further Results from the Survey of Adult Skills, OECD Skills Studies, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/9789264258051-en>.

Notes: See applicable notes in Skills Matter: Further Results from the Survey of Adult Skills, Figure 1.5.

Variations by employment rates and characteristics of employment

3.13 As with earnings, employment rates and work arrangements (e.g. contract type and employment status) can suggest which technical and professional skills are most in demand. And while chapter 2 demonstrated that higher education graduates generally have strong employment rates and favourable employment arrangements, there is significant variation here. This variation is in part related to field of study (Figure 3.8).

3.14 For example, for those OECD countries and subnational entities that participated in the Survey of Adult Skills, data found that 88% of individuals who trained in the fields of engineering, manufacturing and construction were employed, as were 87% of those who earned a credential in the fields of science, mathematics and computing. On the other hand – and even though their outcomes were still strong when compared to individuals without a tertiary education – only 82% of graduates from the fields of humanities, languages, arts, and teacher training were employed (OECD, 2016a). These statistics do vary somewhat across countries, though. While engineering, manufacturing and construction has the highest employment rates on average across all jurisdictions for which data are available, in more than half of these jurisdictions a different field had the highest employment rates. In five jurisdictions, it was health and welfare; in six jurisdictions, science, math and computing; in three jurisdictions, social sciences, business and law; and in one jurisdiction (Slovenia), humanities, languages and the arts.

Figure 3.8: Employment rates of tertiary-educated adults (25-64), by field of education studied (2012 or 2015)

Source: OECD (2016a), Education at a Glance 2016: OECD Indicators, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/eag-2016-en>

Notes: See applicable notes in OECD Education at a Glance 2016, Figure A5.4.

3.15 These comparisons across field of study need of course to be interpreted with caution. Some of the employment advantage for a given field of study may, for instance, reflect extraneous factors such as the proportion of male to female graduates in that field. Men overall tend to have a higher labour market participation rates than women. This higher rate of participation for men, combined with their higher enrolment rates in many of the fields of study associated with the highest employment rates, may thus explain some of that difference in employment rates across fields.

3.16 For instance, graduates of engineering, manufacturing and construction have the highest employment rates, but graduates of these fields are predominantly male. The share of tertiary-educated men who studied engineering, manufacturing and construction is 31%, much higher than the 7% share of women who did so. On the other hand, the share of tertiary educated women who studied teacher training and education science is 18%, higher than the 7% share among tertiary-educated men (OECD, 2016a).

3.17 Variation exists not just in the employment rate, but also exists in the characteristics of graduates' employment. While most graduates work in full-time and on permanent contracts, a significant number of tertiary graduates are working in temporary or part-time jobs. Both temporary and part-time jobs generally have lower rates of pay, fewer non-monetary benefits and weaker labour market security (OECD, 2014).

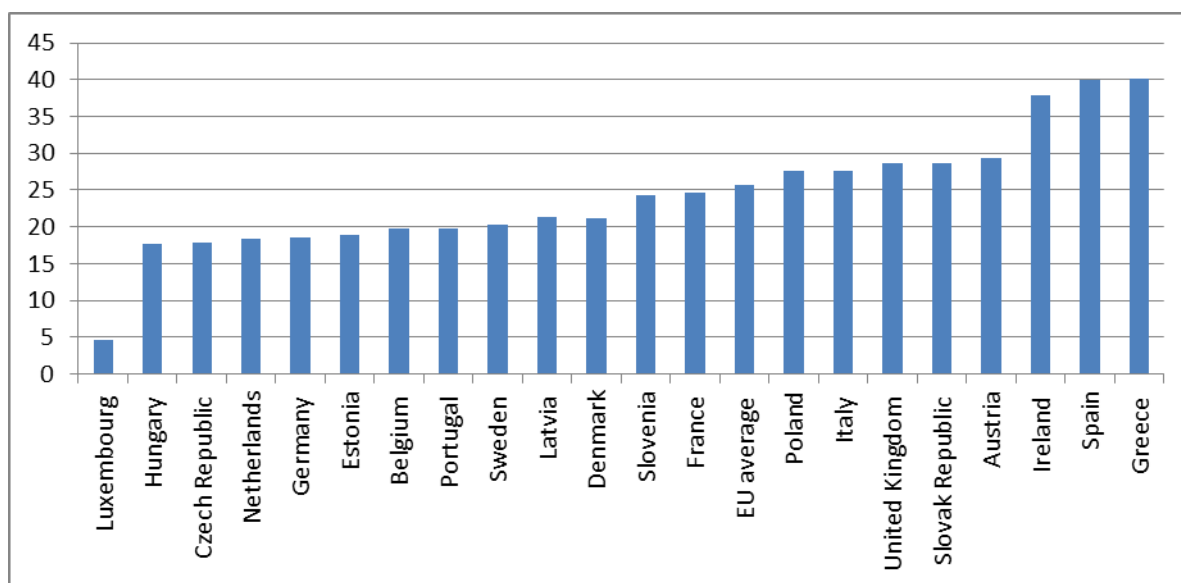
3.18 Across the OECD, 22% of all tertiary graduates (age 25-64) are working part-time (OECD, 2016a). Many of these graduates are working part-time for voluntary reasons (e.g. to better reconcile work and family life responsibilities). But others would prefer to work full-time if given the opportunity. In terms of contract type, the percentage of higher education graduates (age 25-54) working on temporary contract ranges anywhere from a high of almost 25% in Portugal to a low of less than 2% in Estonia (OECD, 2014).

Variations in skills or qualification match

3.19 A partial explanation for the variation in graduate labour market outcomes (earnings, employment) is the variation in the match, or mismatch, between the qualifications that graduates have and the qualifications that their jobs requires. Qualifications mismatches can have significant implications. For graduates, they can affect job satisfaction and wages. At the firm level, they increase the rate of turnover and may reduce productivity (OECD, 2016b).

3.20 Over-qualification (i.e. cases where graduates are employed in jobs that do not require higher education) in particular is a concern because it leads to weaker labour market outcomes for graduates, because their full skillset is not being used. An OECD analysis of countries that participated in the Survey of Adult Skills found that, on average, overqualified workers earn about 14% less than well-matched workers with the same qualifications (OECD, 2016b). In the long run, over-qualification can also lead to skill atrophy, job dissatisfaction, unemployment and disillusionment with higher education (Green and Henseke, 2016). Recent European data suggest that across the European Union, a quarter of young (aged 25-34) higher education graduates (ISCED 5 or 6) are employed in jobs that do not require a higher education qualification (Figure 3.9).

Figure 3.9: Percentage of young higher education graduates (aged 25-34) who are overqualified for their job, 2014

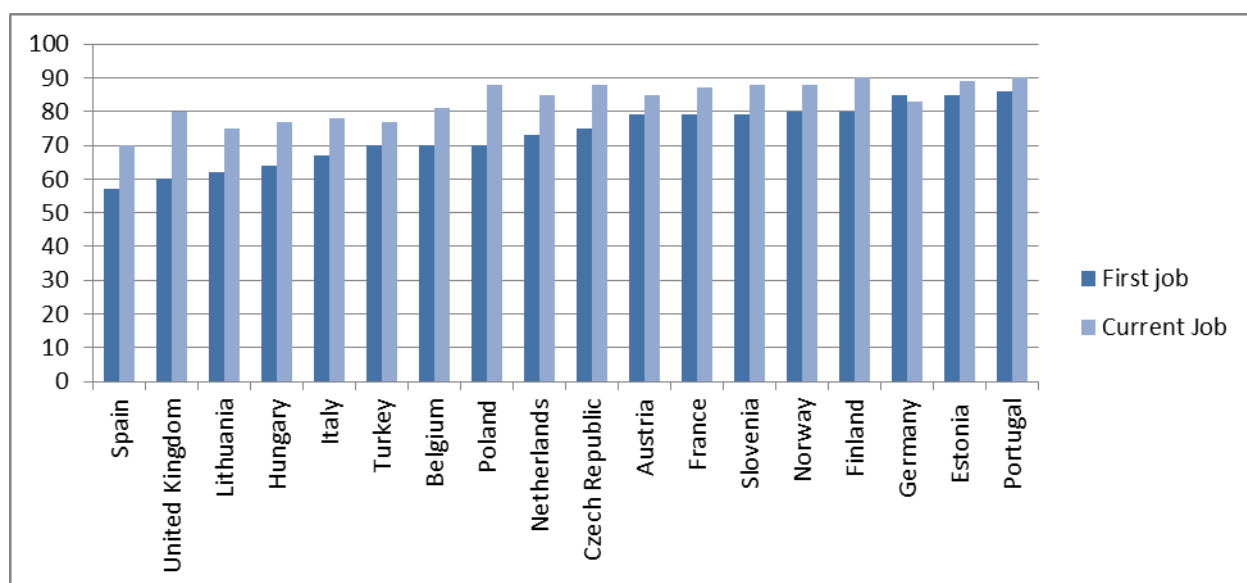


Source: Cedefop (2015) *Skills Panorama*. <http://skills Panorama.cedefop.europa.eu/en/skills-theme/matching-skills-and-jobs>.

3.21 Over-qualification is a particular challenge for new graduates entering the labour market. For example, a report from the United Kingdom Office of National Statistics found that 47% of recent tertiary graduates were working in jobs that do not require tertiary education (e.g. they are working as receptionists, sales assistants, factory workers and home care workers) (Office for National Statistics, 2013).

3.22 Nevertheless, although it may take some time, most graduates do eventually find employment in jobs appropriate to their level of education as they gain more experience in the labour market (Figure 3.10).

Figure 3.10: Percentage of graduates working in a job for which their own or a higher level of attainment is considered most appropriate (first and current job)



Source: Allen, J. & R. van der Velden (eds.) (2009), Report on the Large-Scale Graduate Survey: Competencies and Early Labour Market Careers of Higher Education Graduates., University of Ljubljana, Faculty of Sciences, Project on Higher Education as a Generator of Strategic Competences (HEGESCO).

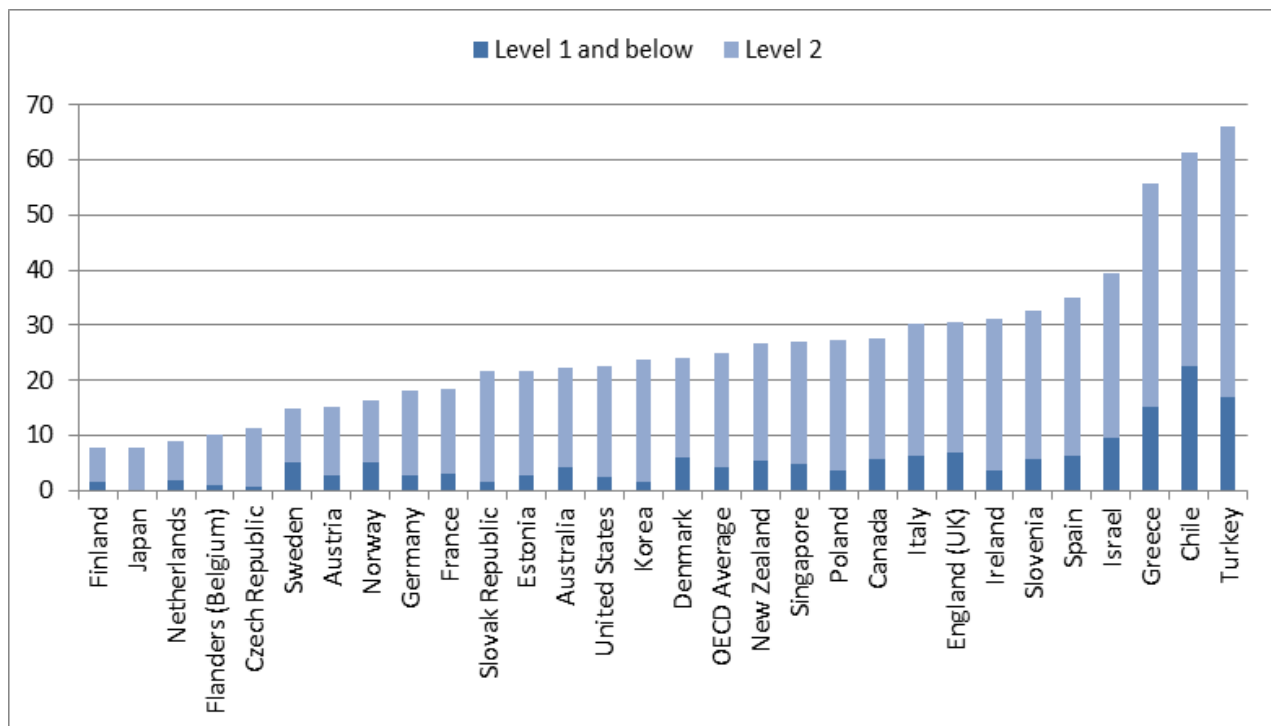
3.23 The degree of field of study mismatch (i.e. when graduates are employed in an occupation that is not directly tied to the field that they studied in higher education) also varies across the graduate population. There is a perception among some observers that the investment in higher education is wasted if graduates are not working within their field of study. A survey of OECD countries and the Russian Federation found that, across countries, an average of 39% of higher education graduates are working in an occupational field other than those that are most typically linked to their field of study (Montt, 2015). But in the vast majority of countries, working graduates who are mismatched by field of study do not experience a wage penalty. This suggests that they are using the skills developed in higher education and the labour market is rewarding them for this.

Variations in skill outcomes

3.24 As suggested by Figure 3.7, variations in the labour market outcomes of graduates (earnings and employment) reflect to a significant degree variations in the skill levels of graduates. While most graduates have strong skills, some do not have high quality skills or the skills that employers are looking for. The Survey of Adult Skills (PIAAC) provides an assessment of literacy, numeracy and problem solving in technology rich environments. The survey finds that a significant share of young tertiary graduates have literacy skills below Level 3 on a scale that reaches to Level 5 (Figure 3.11). This suggests that many graduates would have difficulty in “performing multiple-step operations to integrate, interpret, or synthesise information from complex or lengthy texts” (OECD, 2016b). It also helps explain the poorer labour market outcomes for some graduates. Higher education institutions may not be responsible for the weak skills of entering students, but PIAAC data raise questions about how these students manage to successfully graduate from a tertiary-level study programme if their skills are still so weak.

Figure 3.11: Literacy skills of tertiary graduates

20-34 year olds



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

3.25 The assessment of learning outcomes (discipline specific outcomes as well as more generic or transversal skills such as reasoning, critical thinking, problem solving and written communication ability) can also provide a sense of how well higher education is doing in producing labour market relevant skills. Between January 2010 and December 2012, the OECD conducted the Assessment of Higher Education Learning Outcomes (AHELO) Feasibility Study to test the scientific and practical feasibility of assessing what higher education students know and can do at graduation, across diverse national, cultural, linguistic and institutional contexts. The study demonstrated that a large-scale comparative assessment of higher education learning outcomes is conceptually valid and for the most part technically feasible (OECD, 2013b).

3.26 The European Union is developing multi-dimensional tests to assess the learning outcomes in five subject areas in the CALOHEE (Measuring and Comparing Achievements of Learning Outcomes in Higher Education in Europe) project to determine whether students are developing the competencies they need (EURASHE, 2016).

3.27 However, measurement of the transversal skills gained in higher education is especially challenging (OECD, 2013c). England is currently investigating ways to measure the learning gain in the higher education sector, i.e. “the ‘distance travelled’, or the improvement in knowledge, skills, work-readiness and personal development demonstrated by students at two points in time” (HEFCE, 2016).

3.28 Initiatives such as these will provide important insights into the learning outcomes developed in higher education.

Employer perspectives on graduate skills

3.29 Given the variations observed in graduates' skills levels and their labour market outcomes, it is perhaps not surprising that employers have mixed views about the quality of new graduates. A McKinsey survey found that fewer than half of employers in selected OECD countries, including the United States, Canada, Germany, the United Kingdom, Turkey and Mexico, consider their graduate employees to have been adequately prepared by the education and/or training they received before they were hired (McKinsey, 2015). Employers report that their main concern is not a shortage of graduates, but the transversal skills of graduates such as communication skills and problem-solving.

3.30 The findings of other surveys are less bleak. For instance, in a 2010 Eurobarometer study only 11% of firms indicated that the higher education graduates that they had recruited over the preceding three to five years lacked the skills required to work in their company (Gallup, 2010).

3.31 The differences observed between employers' reports in the two surveys mentioned above may in part be due to how questions put asked to employers (e.g. the time frame is longer in Eurobarometer). However, even if just 10% of employers are dissatisfied with the skills of the average graduate, that still suggests that *many* graduates are lacking the employability skills that employers are looking for. And this doubtless goes some way to explaining the variations observed in labour market data.

Graduate and parental perspectives on the skills developed in higher education

3.32 As chapter 2 observes, graduates themselves are an important source of information about their skills and how they are being used. One survey found that over half of the graduates in the United Kingdom, Estonia and Greece judged themselves to be over-qualified for their job. On the other hand, only about 10% of Dutch, German, Swiss and Slovenian graduates felt the same way (Chartered Institute of Personnel and Development, 2015).

3.33 And while some graduates feel that their skills are not being used to the broadest extent possible, others are worried about their own abilities. A survey of business graduates found that they were most positive about their awareness of social responsibility and accountability, their professionalism, and their ability to work with others. However, they were less confident about their skills in public speaking, conflict resolution, critical thinking, and analysis (Jackson, 2012).

3.34 Students have particular concerns about the extent to which higher education helps them build good transversal skills. A recent European study found that only half of students or recent graduates felt that higher education programmes were effective at developing transversal skills such as communication, problem solving, and working in teams (European Commission 2016). In Australia, a significant minority of students indicated that they had not participated in activities that might enhance their transversal skills and put transversal skill into practice, such as presenting to the class or participating in group work (Radloff & Coates, 2009).

3.35 A survey of European graduates shows that they believe that higher education does a good job of developing disciplinary knowledge, analytical thinking, and the ability to acquire new knowledge. But they believe it does less well in building the ability to communicate in a foreign language, and in developing social and emotional skills such as effective negotiation or the assertion of one's own authority (Allen and van der Velden, 2009).

3.36 Graduates in the United States sometimes express similar concerns. Three quarters of American graduates say that their college education was very useful in helping them grow intellectually; 69% say it was very useful in helping them grow and mature as a person; but only 55% say it was very useful in helping them prepare for a job or career (Pew Research, 2011).

3.37 And in some cases, graduates at the PhD level are also critical of the skills developed in higher education. Despite the fact that 46% of Australian PhD graduates were working in private industry, most indicated that their PhD programmes did not foster skills that are relevant for private sector employer (e.g. teamwork and people management skills) (Jackson & Michelson, 2016). Instead, these programmes focused on the developing skills that are required to pursue a career as an academic (e.g. research skills).

3.38 Finally, parents of graduates also express some concern about the skills developed in higher education. Although most parents view higher education as an essential prerequisite for getting a good job, almost half do not feel that it teaches skills that are applicable in the real world, or that it does enough to enhance career prospects (HSBC, 2015). In a survey in the United States, 57% of adults said that the higher education system fails to provide students and their families with good value for money (Pew Research, 2011). In the United Kingdom, 63% of parents believe that their child will attend university, but nearly a third (29%) say university education is over-rated, and a third (32%) say their child would benefit more from going to work rather than university (YouGov, 2014).

Factors affecting the distribution of labour market outcomes

3.39 As noted above, the variation in graduates' labour market outcomes is due to two major factors that higher education itself can have some influence over:

- the relevance of skills it develops (i.e. the labour market relevant technical and professional skills developed in specific fields of study and the labour market relevant transversal skills that are developed within all fields of study); and
- the quality of the skills that are developed.

3.40 Graduate labour market outcomes are also influenced by a range of factors beyond higher education, including economic factors and the characteristics of graduates themselves (Box 3.1). These factors are not the main focus of the present analysis, but their influence on labour market outcomes needs to be acknowledged.

3.41 The following sections explore some of the main factors that affect graduate outcomes, and which higher education institutions have some control over. These include institutional capacity; the provision of labour market information to students; student admission and academic support; curriculum design and partnerships with social partners; learning and teaching; internationalisation; work-based learning; extra-curricular activities; and career advice and support.

Box 3.1: Factors beyond higher education that affect labour market outcomes of graduates

Economic factors

State of the economy: The labour market outcomes of graduates are affected by the state of the economy. This can become especially apparent during economic downturns, when jobs are harder to find and starting wages are lower. For instance, recent evidence from Canada shows that labour market outcomes for higher education graduates may be lower if they graduate in a recession year (Finnie & Childs, 2014). But these poor labour market outcomes presumably do not reflect a sudden change in the quality of skills produced in higher education.

Labour market regulation: Labour laws and regulations also have an impact on the outcomes of graduates. Labour markets that are more rigid will protect established workers, but can make it harder for new graduates to achieve good initial labour market outcomes. In OECD countries that have strong employment protections, it is not necessarily harder for graduates to find work, but the quality of jobs that they can obtain following graduation may be affected (OECD, 2014). New graduates may spend significant periods of time working on temporary contracts, which means that their careers advance more slowly, and that they are less likely to receive the training needed to further improve their skillsets (OECD, 2015b).

The existing stock of skills: Students may develop strong skills within higher education, but the labour market outcomes of these students will still in part be dictated by the scarcity of the skills that they can provide to employers. This means that outcomes of graduates are affected by the number of people with similar skills. The stock of skills is not only shaped by the number of graduates entering the workforce, but also by the number immigrants entering the labour market, the skills of the existing workforce, and the skills of those who are re-entering the labour market

Graduate characteristics

Ethnicity: Open and covert forms of discrimination also play a role in the labour market and affect labour market outcomes for some graduates. Discrimination based on factors such as ethnicity, age or disability can be a subtle but persistent challenge in OECD countries. For example, research by the Paris School of Economics and Stanford University found that employers in France and the United States were more likely to interview candidates with “domestic-sounding” names rather than “foreign-sounding” ones, even when these candidates had identical resumes (Jacquemet & Yannelis 2012).

Gender: In the vast majority of OECD and OECD partner countries, young women (25 to 34) are more likely than young men to hold a tertiary qualification. However, an earnings gap persists between tertiary-educated men and women. For example, across OECD countries, a 35-44 year-old tertiary-educated woman earns about 74% of what a similarly educated man earns (OECD, 2016a).

Socio-economic status: Socio-economic status can also have an impact on labour market outcomes (Mitnik and Grusky, 2015). For instance, middle and upper-class students often have greater social and economic support, allowing them to more easily acquire skills in higher education. These students also often have more social capital, and access to their parents’ networks can help them successfully navigate the transition to the labour market (Bailey and Dynarski, 2011). Socio-economic status can also be associated with activities that develop labour market relevant skills, such as unpaid internships: students who are less well-off may be unable to afford to participate in such internships.

Capacity of higher education institutions to respond to labour market demand

3.42 Part of the variation in the labour market outcomes of graduates is due to the different fields and levels of study that students enrol in and graduate from. The choice of different fields and levels of study, however, can be determined by their availability in higher education institutions. And this is influenced by the capacity of the institutions to deliver different programmes.

3.43 The capacity of higher education institutions to deliver different programmes depends primarily on their human resources (i.e. academic and support staff); the physical infrastructure available (i.e.

specialised equipment, laboratories etc.); and funding to support the design and delivery of programmes. These factors can influence an institution's ability to introduce new programmes that are relevant to the labour market; to expand existing programmes that lead to good labour market outcomes; and to reduce (or close) programmes that do not lead to good graduate outcomes. And in some countries, higher education institutions may also need government approval of changes in programme offerings.

3.44 Introducing new programmes and can be a lengthy process. It typically requires significant time and effort to effectively design and develop a new programme, and there are usually quality assurance and approval processes (internal and sometimes external) that need to be followed. The allocation of financial, physical and human resources can also take considerable time. While these processes may run concurrently, it can take a number of years to establish a new higher education programme, and another one to four years to produce its first graduates.

3.45 Expanding existing programmes may be less daunting, but also raises challenges. Some programmes, such as engineering, health sciences, pharmacy, and other technical fields, are especially costly to expand as they require dedicated infrastructure on campus and highly specialised academic staff and equipment. Programmes in other fields of study such as the arts, humanities and social sciences are typically less expensive to offer, and require less specialised resources (OECD 2008). But these often are not the programmes in greatest labour market demand.

3.46 Reducing or closing programmes that have poor labour market outcomes can be difficult. Labour market relevance and outcomes is not the sole mission of higher education institutions: programmes exist for a wide variety of reasons and institutions interpret labour market signals with caution. And, as noted above, students can develop labour market relevant skills and go on to get good labour market outcomes from fields of study that are not immediately aligned with labour market needs.

3.47 In addition, higher education institutions may have staff who are employed on long-term or permanent contracts. These staff teach and conduct research in a specific field, and their skills may not be easily transferred to other programme areas. Higher education institutions may also have fixed investments in infrastructure for specific programmes which can discourage efforts to reduce their size or close them.

3.48 Efforts to reduce the size of programmes or close them are also often difficult from a political point of view. Staff members, administrators, students, and alumni may all resist such efforts. External stakeholders may also put pressure on government to maintain programmes that are considered important for the community.

Informed student choice

3.49 Labour market information may arrive too late to be of real use to students. Most student choice information is geared towards students in upper secondary school. However, by this point they may have already committed to an academic path, specialising in certain subjects that will influence their choices in higher education. Or they may have been streamed into certain kinds of school, narrowing their options. Discussions about future careers before entry into upper secondary school could help to inform student choice, especially in systems where students are streamed at an early age into upper secondary school academic or vocational pathways.

3.50 And while it may not always be fruitful to share in-depth labour market information with students at an early age, discussions about future careers before entry into upper secondary school could help to inform student choice, especially in systems where students are streamed at an early age into upper secondary school academic or vocational pathways.

3.51 Simply providing information on the advantages of a certain fields of study in the labour market is unlikely to shape the decision of a student who lacks the preparation or affinity for that field. Upper secondary students often choose programmes in which they have a comparative advantage, i.e. those that match their abilities and interests (Kirkebøen et al, 2015). For example, if they have good academic skills and a strong interest in history but poor mathematics skills, they are more likely to enrol in a history programme than an engineering programme, even if they know that engineering graduates have very good labour market outcomes.

3.52 The ways in which information is delivered can also have an impact on how well it is used. Most OECD countries provide higher education labour market outcomes information online, which is where students (especially higher performing secondary students) are likely to obtain information (Hastings et al, 2016). But governments have sometimes had difficulty attracting students to these websites. For instance, a study in the United Kingdom found that the main sources of information on higher education programmes for over two-thirds of prospective students were the websites and prospectuses of higher education institutions followed by family and friends. However, less than one-third of students consulted government websites that contained information linking academic programmes to labour market outcomes (HEFCE, 2010). Institutions and policymakers face the challenge of making labour market information at once attractive, easily understandable, relevant, and reliable.

Student admissions and academic support

3.53 The procedures by which students are admitted and supported in their studies can also make a difference in the relevance and quality of skills developed and this ultimately affects labour market outcomes. Students who are selected by higher education institutions on the basis of previous strong academic results and completion of relevant pre-requisite subjects (at secondary school or through other tertiary education) are more likely to succeed in higher education (Hiss et al, 2014). Poor preparedness may help to explain why fewer than 50% of students in short-cycle tertiary students and bachelor's degree or equivalent programme in select OECD country fail to complete their program within the theoretical duration of the programme (OECD, 2016a).

3.54 But as noted in Chapter 1, participation in higher education has increased significantly in recent decades: higher education systems have massified, and some appear headed towards near universalisation participation. As a result, many disadvantaged groups have gained access to higher education and the student population is more diverse than ever before. This means that higher education institutions are facing greater diversity in terms of students' academic ability, preparedness, motivation and engagement (OECD, 2012a).

3.55 Many higher education institutions are responding by providing alternative pathways to obtaining a qualification and greater learning support to students as well as actively helping them find programmes that are best suited to them. For instance, Western Sydney University in Australia offers students an alternative pathway to university through a range of University Foundation Studies and Diploma programmes delivered at its associated institution, known as "The College". Students can choose from a range of programmes and successful completion guarantees them entry into undergraduate programmes at the university. Those who successfully complete a standard diploma in 12 months are able to go straight into the second year of a bachelor's programme (Western Sydney University, 2016).

3.56 Austria has introduced a programme to support the provision of an introductory and orientation period as part of certain programmes to help students develop the skills needed to succeed in the programme overall (OECD, 2016c). Students who successfully complete the introductory and orientation period are able to gain a certain number of European Credit Transfer and Accumulation System (ECTS) points towards the programme. This type of approach, where students receive extra support while

doing higher education coursework rather than enrolling in separate remedial classes before they attempt higher education, appears to be the most effective (Zalaznick, 2016).

3.57 In addition to the foundational support described above, other approaches such as academic advice; help in academic writing and oral communication skills; peer mentoring; and tutoring can help students as they progress in their studies. The benefits of these programmes can be seen in increased retention in higher education (Bettinger & Baker, 2011).

3.58 But policymakers are concerned that financial incentives may encourage higher education institutions to admit students who are not fully prepared, especially in programmes that are relatively inexpensive to operate. This has been the case in several higher profile instances where private for-profit institutions in countries such as the United States, Korea, and Mexico have been criticised for admitting students who had little chance of success.

3.59 And this is not just a problem at for-profit institutions. In Australia, for instance, there has been some concern that universities are responding to the new demand-driven funding system by accepting students with very low tertiary education entry levels. The Government of Australia recently asked the Higher Education Standards Panel to canvas options to improve information about the accessibility and comparability of course entry pathways and to ensure students are “ready” for higher education (Government of Australia Department of Education, 2016).

Curriculum design and higher education-employer collaboration

3.60 The curriculum is at the core of higher education learning: in any field of study, a well-designed curriculum is an important step towards ensuring that students develop good skills that position them for labour market success. For instance, curricula that embed entrepreneurial skills in various fields of study, make use of simulation to situate skills in the context of the workplace, or include interdisciplinary approaches can enhance the development of high quality, labour market relevant skills (OECD, 2012b).

3.61 And a curriculum that is designed by pedagogical experts, but which reflects the input and feedback from social partners (employers and trade unions), stands a better chance of leading to strong labour market outcomes (Wilson, 2012). Traditionally, collaboration between social partners and education institutions to design the curriculum has been more common in the vocational education and training sector. However, these forms of collaboration are becoming more prominent in higher education. For instance, the United Kingdom’s *Review of Business-University Collaboration* found that “for many institutions, employer engagement has become firmly cemented within their academic programmes” (Wilson, 2012).

3.62 When undertaken properly, partnerships between higher education institutions and employers are beneficial for all parties. Students develop the skills that employers want. This helps them transition quickly to the labour market and get good jobs, pay and other labour market outcomes. Employers get the skilled labour force that they need. Academic staff in higher education institutions are able to stay current with workforce practices and skills needs, and build relationships with business. Successful partnerships with employers and trade unions, and the labour market outcomes of graduates that these partnerships support, are also effective selling points for the recruitment of new students.

3.63 Higher education-employer engagement may take a number of forms. Employers can be involved in the review of the curriculum to ensure it meets labour market needs. They can also provide labour market intelligence and support programme accreditation. And they can work directly with academic staff in the design and development of the curriculum to ensure the content of programmes is labour market relevant and that students develop the skills they are seeking. Employers may contribute directly to

learning and teaching by providing practitioners to teach in programmes or by making specialised equipment available. They can also play an important role through the provision of work-based learning in their own facilities.

3.64 Some employers work very closely with higher education institutions to provide programmes that are directly linked to their enterprises. This can involve the joint development of the curriculum, as well as work-based learning and guaranteed placements for graduates. Siemens Engineering, for example, partners with higher education institutions in the United Kingdom, Germany, Canada, and the United States to develop dual education programmes in engineering and engineering technology that ensure it has the skilled workforce it needs. It also supports the development of up-to-date labour market skills by providing higher education institutions with engineering equipment. For example, Siemens has provided the Georgia Institute of Technology with \$200 million worth of software and technological equipment for use within its engineering and advanced manufacturing programmes (Georgia Institute of Technology, 2015). Students at the Georgia Institute of Technology are able to develop engineering competencies and transversal skills at the higher education institution with confidence that their programme matches the needs of major employers in the field.

3.65 In some jurisdictions higher education institutions are required to partner with employers to design curricula and teaching processes. For example, in Poland, vocational higher education institutions need to demonstrate substantial participation of employers and industry representatives in the educational process, and their representatives are present on the collegial advisory bodies of these institutions.

3.66 Alignment between the curriculum and employer needs can also be fostered by regional and national collaborative arrangements that bring together senior leaders from both higher education institutions and business. These collaborations allow higher education leaders and employers (who often have different perspectives, approaches, and terminology for dealing with skills development) to engage in direct dialogue that can foster trust and mutual understanding. They also send powerful signals to industry and the broader higher education sector about the benefits of collaboration.

3.67 Such collaborations can also generate resources to conduct primary research and identify best practices which can be disseminated to member institutions. The Business Higher Education Forum (BHEF) in the United States, for instance, brings together higher education institution senior administrators and CEOs of Fortune 500 companies to identify skill needs and find ways to develop those skills within higher education. One of the strengths of this collaboration is that it is a long-term partnership, allowing for deep research that informs longer-term curriculum development. The BHEF is currently working with higher education institutions and business partners to develop new curricula for projected in-demand fields of study such as cybersecurity and data analytics (Barkanic, 2016).

3.68 The importance of engagement is increasingly recognised by higher education institutions. In a recent survey of European universities, 54% reported that they involve employers and professional associations in curriculum development and 24% reported that they are “closely involved”, with involvement mandatory in some cases (Sursock, 2015).

3.69 But despite the benefits of higher education-employer collaboration, partnerships are sometimes hard to establish and maintain. A survey done on behalf of the European Union found that 47% of employers did not think that it was important for them to co-operate with higher education institutions on the design of curricula (Table 3.1). The same survey also found that 79% of firms rarely or never approached higher education institutions in recruiting their graduates (Gallup, 2010). Collaboration between higher education institutions and employers faces similar challenges in North America, where 21% of Canadian firms, 21% of Mexican Firms, and 14% of American firms report never having

communicated with an higher education institution, and the majority report communication that occurs at irregular intervals (less than once a month) (McKinsey, 2015).

3.70 Different organisational cultures and interests can also create barriers to effective collaboration between higher education and social partners. Higher education develops a wide range of skills, but employers may be looking for the development of more specific skills for the workplace (Leitch, 2006). Meanwhile, academic staff are used to autonomy in programme design and development in many countries, and may be reluctant to surrender some of that control to external actors.

3.71 Partnerships between trade unions and higher education institutions can also help to ensure that graduates have skills that are relevant to the labour market. As noted in chapter 2, due to their knowledge of the workplace and of the skills required for certain jobs, trade unions are often well-placed to assist higher education in the development of relevant skills. As is the case with employers, these partnerships often include a role for trade unions in collegial advisory bodies and forums that bring together social partners and higher education institution staff to discuss skills development.

3.72 An example of successful collaboration between trade unions and higher education institutions is the Trade Union Congress' *Unionlearn* initiative in the United Kingdom. *Unionlearn* was formed in 2006 to provide training and skills upgrading for union officials and members. With £160M in government assistance, *Unionlearn* has helped over two million workers develop labour market relevant skills, and has trained 34,000 union officials. The types of skills developed through this initiative are indicative of the skills needs the Congress identifies in the workforce. These include specific professional and technical skills such as employment law, and key transversal skills such as effective communication (Trade Union Congress, 2016).

Table 3.1: Employers' perspectives on higher education institutions and their interaction with them

% of responses	TOTAL	Firm size		Sector				
		50-249 employees	250 or more employees	Industry	Construction, transport, ICT	Trade, accommodation and food services	Public services	Non-public services
How important is co-operating with higher education institutions on the design of curricula and study programmes?								
Very important	16	14	21	16	11	13	18	17
Rather important	32	31	36	34	29	29	32	32
Rather unimportant	21	22	18	21	25	22	20	20
Not important at all	26	28	19	24	30	31	23	26
How frequently do you co-operate with higher education institutions in recruiting their graduates?								
Very frequently	7	6	11	8	5	4	6	10
Rather frequently	12	11	14	11	10	10	10	15
Sometimes	36	36	37	39	36	39	33	34
Never	43	46	35	42	47	46	49	39
Two best ways to co-operate with higher education institutions on recruitment								
Participation in internship programme with higher education institutions	27	27	29	29	27	27	27	25
Direct recruitment from schools	17	17	17	17	18	18	16	17
Participation in debates or seminars organised by higher education institutions	13	12	15	13	11	11	12	14
Personal discussions with study programme directors or teachers	13	13	12	13	13	12	12	14
Co-operation with career centres	13	13	13	13	12	13	11	14
Answering surveys	4	4	3	3	4	5	4	4
Don't know/Not applicable	13	14	11	12	14	13	17	12
Which actions should higher education institutions take in order to improve the employability of their graduates?								
Include sector specific work placements as an integral part of the study programme	36	35	40	34	36	32	40	38
Include practical experience in courses	30	30	28	33	30	32	24	27
Make courses more relevant to the needs of employers	18	19	17	18	19	21	17	18
Provide better post-graduation support (facilitate relations between graduates and companies)	9	9	9	10	7	9	10	8
Other/ Don't know/Not applicable	7	8	7	6	7	7	9	8

Source: The Gallup Organization (2010), Employers' Perception of Graduate Employability, Flash EB Series, # 304, European Commission, Brussels, http://ec.europa.eu/public_opinion/flash/fl_304_en.pdf.

Learning and teaching and the delivery of the curriculum

3.73 The ways in which the curriculum is delivered can also play an important role in generating high quality skills that support good labour market outcomes for higher education graduates. The traditional approach to higher education teaching has long been for an experienced academic to provide a lecture that “imparts knowledge” to students. However, alternative approaches to learning and teaching can help improve the quality of skills and support the development of transversal skills by requiring students to use these skills (e.g. via group activities, oral presentations, and problem-solving scenario) as they develop professional and technical skills (OECD, 2012c)

3.74 Alternate approaches can also help students better assimilate discipline-specific knowledge. For instance, in a recent study, the failure rate for STEM students fell from 34% in classes that were taught in lecture style, to just 22% in classes that incorporated active learning approaches, requiring students to participate in discussions and engage in problem-solving (National Science Foundation, 2014). The benefits of new approaches to learning and teaching are being recognised in higher education: 57% of European universities reported in a recent survey that it was important to introduce new ways of teaching (Sursock, 2015).

3.75 Higher education institutions and systems are also placing new emphasis on enhancing learning and teaching quality. Quality teaching improves how student learn and retain key skills developed in higher education, which in turn facilitates success in the labour market. Academic staff are typically experts in their field, but they may only have received rudimentary instruction in how to effectively support student learning. As a result, many institutions are offering their staff professional development and training to improve the quality of learning and teaching (OECD, 2012c). The University College Dublin’s Teaching and Academic Fellowship, for instance, encourages academic staff to improve learning and teaching across the university and rewards individuals for their contribution. The fellowship scheme provides key academic staff with pedagogical expertise and leadership skills to change the learning, teaching and assessment practices in the institution (University College Dublin, 2016).

3.76 Many institutions also provide qualifications in learning and teaching in higher education for their graduate students and staff. For example, the University of California at Berkeley offers a Certificate in Teaching and Learning in Higher Education through its Graduate Student Instructor Center (University of California, Berkeley, 2016). Oxford University in the United Kingdom offers a Postgraduate Diploma in Learning and Teaching in Higher Education for “experienced academics working in the collegiate University who wish to enrich their understanding of student learning, improve their own teaching practice, and develop ideas for educational enhancement” (University of Oxford, 2016).

3.77 In some cases, institutions may also require new academic staff to undergo this training and/or acquire a qualification in learning and teaching in higher education (International Consortium for Educational Development, 2014). For example, since 2007, it has been mandatory for all assistant professors in Denmark to participate in a teacher training in higher education programme. In the Netherlands, all research universities have been required to develop a University Teaching Quality programme. And in the United Kingdom and Australia, many individual institutions require a postgraduate certificate for full-time lecturers (International Consortium for Educational Development, 2014).

3.78 There are also additional attempts to shift the incentive structures in higher education for academic staff (for their initial hire, their retention and their promotion) somewhat away from the quality of their research and towards the quality of their teaching. These include recognition and rewards for high quality learning and teaching practices. In Germany, for instance, the German Rector’s Conference coordinates the annual *Ars Legendi Prize*, an award of €50 000 for excellence in higher education teaching (European Commission, 2013). And in the United Kingdom, the Higher Education Academy (HEA)

rewards and celebrates outstanding learning and teaching through a number of its programmes (Higher Education Academy, 2016.). From 2009-2014, HEA also funded student-led teaching awards which gave students a say “about what good teaching looks like and reward staff who have gone the extra mile by nominating them in categories such as ‘outstanding teacher’, ‘innovative teacher’ and ‘teaching in an international context’”(Higher Education Academy, 2016).

3.79 But efforts to place a new priority on learning and teaching require resources at the institutional level, including staff time. And they also require buy-in from academic staff who may see little problem with the approaches they have been using, and have little interest in making an effort to change.

Internationalisation

3.80 Undertaking part of a higher education programme in another country can enable students to develop important transversal skills and thus support good labour market outcomes. Studying abroad helps students expand their knowledge of other societies, languages, cultures and business methods, and develop cross-cultural competencies and sensitivities (OECD, 2013d). These skills, in addition to the resiliency demonstrated by exiting one’s comfort zone to pursue education in a foreign setting can send a strong signal to employer about the employability of graduates (OECD, 2013d).

3.81 The European Union’s Erasmus Impact Study found that students studying and living abroad develop key values and transversal skills (such as problem solving skills, tolerance, decision-making and confidence) that support good labour market outcomes (European Commission, 2014). These findings are echoed in another survey, which found that individuals who participated in a higher education exchanges abroad had on average better employment outcomes three years after graduation than their peers who did not (Di Pietro, 2013).

3.82 Some institutions, such as the University of Southern Denmark, recognise the value of international experience to such an extent that they are making it compulsory for all students to have an international dimension to their studies starting in 2017 (OECD, 2016c). This might include study abroad, taking a course of study in English, or enrolling in subjects that have an international dimension.

3.83 But not every student can participate in an international study experience. The main barriers cited by students in a recent study include a lack of interest, home ties (personal and work-related obligations), and insufficient language skills (Beerkens et al., 2015). Personal and work obligations were listed by over 50% of European students in all countries surveyed, except the United Kingdom. Other barriers included financing, concern about delaying the completion of their studies, and administrative hurdles (Beerkens et al., 2015).

3.84 However, institutions can provide students some of the benefits of study abroad by enrolling international students in their programmes. In 2013, more than four million students were enrolled in tertiary education outside their country of citizenship. Countries like Australia, Austria, Luxembourg, New Zealand, Switzerland and the United Kingdom have the largest proportion of international students as a percentage of their total tertiary enrolments (OECD, 2016a).

3.85 The internationalisation of tertiary education has been most pronounced at the advanced degree level. In 2013, 27% of doctoral graduates in OECD countries were international students, as were 18% of graduates from master’s programmes or the equivalent, and 7% of graduates at the bachelor’s level (OECD, 2016a). This exposes domestic students to a wide range of cultures and helps them develop many of the transversal skills, attitudes and values that employers are seeking. However, for students to benefit from the presence of international students at their institution, they need to interact with these students. And there is some evidence to suggest that this does not always occur. A survey of international students in

Canada, for instance, found that 56% of international students said that they had no Canadian friends (Canadian Bureau for International Education, 2015).

Work-based learning

3.86 Participation in quality work-based learning (sometimes known as work-integrated learning) can also improve labour market outcomes. There are various types of work-based learning in higher education. These include field experience, mandatory professional practice, co-operative education placements, internships, applied research, project learning and service learning. Graduate apprenticeships have recently re-emerged as another way of combining work and academic studies to enable people to “earn-as-they-learn”. For example, in the United Kingdom, Skills Development Scotland started offering the first Graduate Level Apprenticeships in 2016. These have an initial focus on ICT/digital, civil engineering and engineering and will be expanded to other sectors (Skills Development Scotland, 2016).

3.87 Sometimes work-based learning experiences are required of students and institutions. For instance, three-month-long internships are obligatory in practical higher education programmes in Poland, in accordance with the 2014 amendment to the *Higher Education Law*. And with support from the European Union, Poland is now working to develop a uniform, nationwide system of six-month internships in non-university higher education institutions that would provide an additional three months beyond the three months already required.

3.88 Work-based learning complements the learning that takes place primarily in the classroom or laboratory, but is typically more applied nature. It enables students to develop work-relevant technical and professional skills using up-to-date equipment and work practices, as well as transversal skills such as teamwork, communication and negotiation (OECD, 2012b). Certain skills developed in work-based learning are especially difficult to develop in the classroom. These include organizational savvy, interpersonal sensitivity, and professionalism (Shoenfelt et al., 2012).

3.89 Work-based learning facilitates transitions to the labour market not only by equipping graduates with a wider set of relevant skills, but also by providing an opportunity for prospective employers to assess the potential of students as future employees. The potential to reduce recruitment costs is an important reason why employers offer work-based learning opportunities. This is especially important for larger employers who do a great deal of hiring.

3.90 Work-based learning experiences can help students achieve better labour market outcomes. In the United States, one out of every five tertiary graduates who participates in an internship is hired by the organisation that they interned with (Cappelli, 2015). In Portugal, evidence suggests that work-based learning students have lower unemployment rates than other tertiary graduates, even with other factors held constant (Silva et al, 2016). And in Canada, research suggests that students who participate in work-based learning gain enhanced transversal skills and are more likely to be employed in their field of study (Peters et al, 2014).

3.91 Most young graduates also realise the importance of workplace experience to facilitate their entry into the job market. Almost two thirds (64%) of United Kingdom higher education graduates think that not having relevant work experience could hamper their prospects of working in their preferred career and more than three quarters (76%) of degree students believe it might be a barrier (YouGov, 2013).

3.92 But some students may hesitate to participate in work-based experiences (such as North American’s co-operative education programmes) that will lengthen their study period. And many students from disadvantaged backgrounds are not aware of the benefits of work-based learning opportunities, and are less likely to be viewed as the candidates that employers want to hire (OECD, 2016a)

3.93 And while work-based learning is increasingly common (and in some programmes mandatory), it is not always widespread. Perhaps the most important limiting factor is low employer participation. Work-based learning can be costly to provide, in particular for smaller firms. Costs include the time and resources spent selecting, training, and supervising students during their work experience (and in some cases, providing a stipend or salary). These costs are offset by productive work done by the student and by reduced cost (and risk) when hiring new graduates. But the cost-benefit calculation will vary for different employers and in different contexts.

Extra-curricular activities

3.94 Extra-curricular activities (e.g. sports teams, clubs, and debating and academic societies) have been traditionally viewed as a secondary aspect of higher education. However, there is increasing appreciation for the role that these activities can play in developing skills such as leadership, communication and teamwork. Employers appear to recognise the value of skills developed in extra-curricular activities. An American survey found that many employers put extra-curricular activities on par with previous work experience when hiring new graduates (Cappelli, 2015). Extra-curricular activities also play an important role in the transition from upper secondary school to higher education. And they can provide a sense of connection to higher education institutions that helps student continue in their studies, even when they encounter problems (Thompson, 2013)

3.95 A key challenge for many students and employers remains how to reliably communicate what extra-curricular activities a student has taken part in, and how to identify the skills that have been acquired through such experiences. As part of the response to this problem, many higher education institutions are working to bring extra-curricular activities into closer alignment with the curriculum. They now refer to them as “co-curricular” activities, and they may include suggested clubs and societies on their programme major maps (a tool that helps orient first-year students to their programme of study). They may also document such activities. For instance, the University of Lancaster in the United Kingdom produces the Lancaster University Award, which provides an official record of extra-curricular activities undertaken by students (Lancaster University, 2016).

Career advice and support

3.96 Sometimes poor labour market outcomes do not stem from poor technical and professional skills or poor transversal skills, but rather from students’ lack of knowledge about how to communicate their skills to employers and how to seek out employment opportunities.

3.97 Many higher education institutions now provide career services or career centres to help students connect with prospective employers. These centres assist students by helping them apply for jobs, write their curriculum vitae or resume, and prepare for job interviews. They also provide students with access to employers by organising job fairs and employer visits to campus, and by distributing employer postings for work-based learning opportunities and post-graduation employment opportunities. Increasingly they also provide counselling and advice related to new skillsets that are important both for getting a job and for succeeding in workplace. For example, career centres in Estonia and Poland are increasingly offering workshops to develop entrepreneurial skills (OECD, 2016c).

3.98 A frequently cited barrier to students’ effective use of career services is their lack of awareness of the full range of services that the centres offer. For example, an American study found that 91% of students were aware that their institution’s career service centre posted jobs online, but that only 69% were aware of job fairs, only 51% knew that the centres offered individual career counselling, only 35% were aware of career workshops (Fouad, 2006). Simple awareness, though, will not necessarily lead more students to engage with career services. The same survey found that the most frequently used service (job postings)

offered by career counselling services were only used by 15% of the student body (Fouad, 2006). Reasons given for not using the centres included uncertainty about the processes involved, not seeing the need, and a shortage of time. In a more recent study, while six in ten recent higher education graduates reported having used career services, just over two in five of these students reported that they were “helpful” or “very helpful”, while nearly 20% said they were “not at all helpful” (Gallup, 2016). Such perceptions may drive down use of career services.

3.99 A Canadian report also finds that the effectiveness of career centres is hindered by a lack of academic staff willing to champion their work and to steer their students to their offices (Usher et al, 2014). And adequate resourcing may be another challenge faced by career centres. A survey of American career centres found that on average their staff complement is only four people, and that the average non-salary budget for programming was only \$35,000 (NACE, 2015).

Structure and characteristics of the higher education system

3.100 There is clearly much that higher education institutions can do to enhance the quality and relevance of higher education. This means that the composition of higher education systems – the extent to which they are made up of higher performing institutions with a focus on quality and relevance – will affect graduate outcomes at the system level.

3.101 Some higher education systems may include institutions which have a clearer focus on labour market responsiveness and labour market relevance and outcomes. For instance, polytechnics or institutes of technology, technical universities or universities of applied sciences put an emphasis on the practical and technical skills that are valued in the labour market, and engage in significant partnerships with employers to ensure that they are focussing on skills that are in demand. The contributions of these kinds of institutions help make the entire higher education sector more responsive to the labour market.

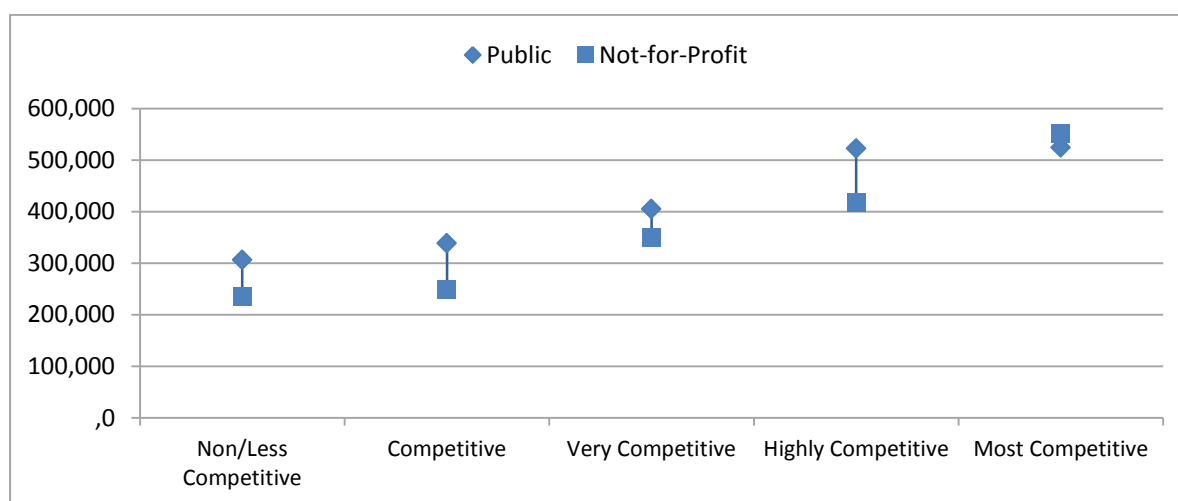
Selectivity of institutions

3.102 A final factor that undoubtedly affects labour market outcomes is the selectivity and prestige of the institution that a student attends. Graduates from the most prestigious and selective institutions, such as the *Grandes Ecoles* in France, Tokyo University in Japan, the “SKY” universities in Korea¹ and the Ivy League in the United States typically have much better earnings than graduates from non-selective institutions (Figure 3.12). In the United Kingdom, the Russell Group institutions produce graduates who earn almost £7,000 (18%) more a year on average than other United Kingdom graduates at age 40 (bestCourse4me, 2016). Similarly, a recent analysis of Korean labour market data found that a university’s “prestige” effect exists after controlling for other factors. For instance, the “name” of Seoul National University generates an estimated wage premium worth more than twice the name of Korea University or Yonsei University (Han, Bae and Sohn, 2012).

¹ Seoul National University, Korea University and Yonsei University

Figure 3.12: Net present value of lifetime additional earnings for bachelor's degree, United States

Compared to a high school diploma, by selectivity of institution



Source: Klor de Alva, J. and M. Schneider (2011), "Who Wins? Who Pays? The Economic Returns and Costs of a Bachelor's Degree", May 2011, Nexus Research and Policy Center and American Institutes for Research, Washington, <http://files.eric.ed.gov/fulltext/ED519494.pdf>.

3.103 These better labour market outcomes for more selective institutions likely reflect a number of factors. First, selectivity serves to signal to employers some combination of a graduate's intellectual capacity and a range of self-efficacy skills (i.e. skills that enabled a student to prepare effectively for an institution's admissions/entry process). Selective institutions may also be able to create more challenging curricula and provide a broader, deeper and faster-paced range of learning opportunities for their students. More selective institutions tend to have greater resources (both financial and staff) available for learning and teaching. And finally, selective institutions can offer their graduates important social capital, not the least through their alumni networks.

3.104 At the same time, the stronger labour market outcomes for selective institutions present a number of concerns. Higher returns for selectivity may disproportionately reflect graduates' socio-economic background and their capacity to "play the game" rather than reflect underlying student ability. This can be self-reinforcing as talented students, especially students from higher socio-economic backgrounds, compete to attend institutions that are viewed as more prestigious.

3.105 There is still another side to selectivity. Many institutions seek to signal their quality by achieving the highest possible position in the various rankings of higher education institutions. But these rankings are often based not on outcomes or even outputs, but rather on idiosyncratic input measures and reputational surveys (Schleicher, 2015), and it is far from clear that they have any relevance for assessing skills development. Nonetheless, rankings affect students' decisions about where to study, and are seen as enhancing institutional reputation.

Box 3.2: Key findings of Chapter 3

Higher education graduates, on average, enjoy good labour market outcomes. But these averages mask significant variations.. These can for instance be observed in graduates earnings and employment.

Some of this variation is due to factors beyond the control of higher education, such as economic cycles, the structure of the labour market, and the characteristics of individual graduates.

But the relevance and the quality of the knowledge and skills produced in higher education also clearly explains some of the variation in graduates' labour market outcomes.

Higher education systems can improve the labour market relevance and outcomes of student through a range of initiatives such as restructured programme offerings, admission processes, academic and career support, improved learning and teaching practices, work-integrated learning, extra-curricular activities and international exchanges.

But higher education leaders and policymakers need to be aware of the challenges involved in implementing these approaches.

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CHAPTER 4. POLICY LEVERS TO ENHANCE LABOUR MARKET RELEVANCE AND OUTCOMES

4.1 The preceding chapters have highlighted higher education's important role in developing the knowledge and skills that labour markets need. Given the substantial public investments that governments make in higher education and the real public benefits that higher education generates, governments also have a role in ensuring higher education systems develop these skills.

4.2 This chapter explores a variety of policy levers that policymakers can use to help ensure that higher education systems produce high quality knowledge and skills that are relevant to labour market needs, and that lead to good graduate outcomes. This includes requiring, promoting or enabling various practices which higher education institutions, students, and social partners might engage in (as discussed in chapter 2). It may also involve discouraging or forbidding less positive behaviours of actors within higher education systems.

4.3 The choice of policy levers will depend on the structure and characteristics of a higher education system, including its governance arrangements. It will also depend on the wider economic and social context. The country reviews will consider these factors in the analysis of the labour market relevance and outcomes of the higher education systems of participating countries.

4.4 The focus of this analysis is on the activity of policymakers, defined as elected or appointed officials associated with national and subnational government ministries, departments and agencies. Many other stakeholders, e.g. employers, trade unions and their associations, also influence higher education systems through the funding that they provide to higher education. The focus of this framework is not on the activity of those stakeholders, but it recognises that they also play a role in the higher education system.

Categories of policy levers

4.5 Policy levers to enhance labour market relevance and outcomes can be grouped into four broad categories: funding, regulation, information, and organisation.

- Governments provide *funding* to higher education institutions and other actors (and they structure that funding in specific ways) in order to encourage or enable them to engage in certain practices or to act in broad, socially beneficial ways. Funding can be provided (or withheld) to achieve a specific labour market relevance and outcomes objective or, more generally, to accomplish objectives in other dimensions of higher education.
- *Regulations* are the rules that govern the everyday life of businesses, organisations and citizens (OECD, 2015a). Policymakers use regulatory policy levers to influence the behaviour of target groups, i.e. higher education institutions, students, employers and others.
- Governments collect and disseminate *information* to influence the behaviour of students and higher education institutions, and to better align that behaviour with policy aims and objectives.

- Governments use their *organisational* resources (i.e. their agencies and the personnel working in them) to help achieve their goals by steering or influencing higher education systems or delivering goods and services.

How policy levers are used

4.6 Policy levers may be used in different ways, and this variation has substantial implications for policy analysis.

- When policymakers use levers to dictate behaviour, they require or forbid certain practices or actions. This may take a regulatory approach, in which policymakers call upon the authority of the state. But it may also be associated with a funding lever which, as one of its conditions, requires specific actions or deliverables from its recipients.
- When policymakers use levers to enable behaviour, they have two broad options: they can encourage certain practices and actions (e.g. via funding incentives or information), or they can remove impediments to these practices.

Scope of policy levers

4.7 Policy levers can have a wide or a narrow focus. When their focus is wide, they are aimed at whole classes of individuals, institutions, other actors, or activities (e.g. all students, all learning and teaching activities, all higher education institutions). But they can also be more narrowly focussed on specific cohorts or categories, e.g. on students from a specific background, or on a single field of study.

4.8 A targeted approach often comes at lower (financial or regulatory) cost than policies with a wide focus. But too many targeted approaches risk policy fragmentation. And in some cases, the success of targeted approaches (where only a single group wins or loses) may depend on the simultaneous use of wider approaches (i.e. where everyone wins or loses).

Choosing and evaluating policy levers

4.9 Policy levers can be evaluated (and choices made among them) using a variety of criteria, including:

- effectiveness: whether they accomplish their policy aim
- efficiency: how well they use available resources to achieve that aim
- equity: whether the benefits of a policy lever are more or less evenly distributed, or whether benefits are directed to certain individuals or institutions (e.g. those who most need them, or who might best respond to them)
- manageability: the ease or difficulty of implementing a lever
- legitimacy: the extent to which broader public perceptions view a policy lever as reasonable and acceptable (Salomon, 2002).

4.10 A range of policy levers that can enhance labour market relevance and outcomes is listed under the four categories below. This is not a definitive list of all the policy levers that could be used for these purposes. The country reviews component of the in-depth analysis will provide opportunities not only to

explore how these policy levers work within a given context, but also to identify other policy levers that may be effective in enhancing the labour market relevance and outcomes of higher education systems.

4.11 As noted above, the choice of policy lever depends on the context that surrounds higher education systems; some policy levers may be more effective in some contexts rather than others. The country reviews will provide an opportunity to explore this further. For a fuller description of each of the levers outlined below, please consult Annex A.

Funding-based policy levers

4.12 Governments can use a range of funding policy levers directed at higher education institutions, students and other actors in higher education (e.g. employers and trade unions) to improve the labour market relevance and outcomes of higher education systems. A range of different mechanisms are available to direct public subsidies to higher education institutions, e.g. block grants, targeted funding (i.e. money for a particular purpose) and line-item budgets. The typical procedures used to allocate these subsidies include funding formulas, competitive approaches, reference to historical trends, and negotiations between government authorities and institutions (OECD, 2008).

4.13 Public funding can also encourage social partners to participate more actively in higher education (i.e. through grants or tax incentives). And students can be encouraged to enrol in labour-market relevant programmes via targeted financial support (i.e. loans and grants) or controls on tuition fee levels.

4.14 This section explores a number of funding policy levers that could be used to promote labour market relevance and good graduate outcomes.

Performance agreements

4.15 Performance agreements are contracts between policymakers and a higher education institution outlining what the higher education institution will accomplish, typically over a course of several years. These agreements usually contain agreed quantitative and qualitative targets around outputs and outcomes. Higher education institutions decide how to allocate their resources to achieve the agreed performance targets. Contracts might name very specific outputs (e.g. an additional number of graduates in a certain field).

4.16 Funding is often included in the performance agreement, along with mechanisms to recover funding if performance targets are not met. Performance agreements with individual institutions are generally part of a broader system-wide strategy for higher education.

4.17 Performance agreements are in increasingly widespread use across countries. For instance, Austria reported in its response to an OECD questionnaire on policies and practices to enhance labour market relevance and outcomes of higher education systems conducted in 2016 (the questionnaire) that it has performance agreements in place with higher education institutions for the period 2016-18. One of the objectives of these agreements is improvement of the use of resources in research and teaching.

4.18 Estonia reported in the questionnaire that its performance agreements with higher education institutions may contain specific targets to produce certain numbers of graduates (e.g. nursing graduates). And in Latvia, annual agreements between the Ministry of Education and higher education institutions include elements such as the number of state-funded study places and the number of graduates, as well as other requirements such as academic integrity.

Performance-based funding

4.19 Policymakers can also set performance targets for higher education institutions to meet, and award a portion of funding (e.g. as part of a funding formula, or independently of a formula) if those targets are met. Performance indicators that are pertinent to labour markets might include the number of graduates in specific fields. But they may also include graduates' labour market outcomes such as employment and earnings, as well as indicators that are related to students' skills outcomes.

4.20 Higher education institutions may receive additional funding if they meet their performance targets – or they may be denied funding if they fail to meet them. Typically, higher education institutions need to reach a certain threshold value to get the portion of the performance-based funding that is related to a given indicator.

4.21 A large number of countries are now using performance-based funding. For instance, in response to the questionnaire, Estonia indicated that it is introducing a new funding model in 2017 where up to 20% of funding to higher education will be allocated through performance-based funding. The amount of funding will be based on six performance indicators including the labour market outcomes of graduates. And the Slovak Republic reports that it takes the “graduate employment coefficient” into account when calculating the state subsidy for public higher education institutions. This is a calculation which reflects the unemployment rate among graduates of a particular higher education institution in a particular field of study.

4.22 There are also a number of approaches which reduce funding based on performance. For instance, in Korea higher education institutions are rated on a number of criteria including the employment rate of their graduates. The bottom tranche of institutions are then designated as ineligible for public grants. In the years 2013-2014, the government applied this designation to 78 private universities (OCED, 2014).

Formula-based funding to institutions

4.23 Funding formulas can be used to influence the mix of graduates in different fields and levels of study. Policymakers can do this by modifying the funding formula and adjusting the per-student funding levels that correspond to targeted fields/levels of study (i.e. providing additional funding for some fields/levels of study, and possibly less for others). This adjustment modifies the financial incentive structure that higher education institutions face by:

- giving them a reason to provide more places in targeted fields/levels of study, and/or
- creating an incentive to reduce places in fields that are of lower priority.

4.24 This approach also provides an incentive for higher education institutions to ensure that students succeed, as the increased funding will typically be linked to enrolments that persist over time.

4.25 A large number of countries weight their funding formulas to recognise the additional costs of certain fields of study. Depending on how institutions understand their own costs of delivery, these formulas may provide indirect incentives to offer places in specific fields and specific levels of study.

Student vouchers

4.26 Policymakers may choose to fund higher education places via students themselves. This takes the form of a notional “voucher” which students use to pay some or all the costs of the higher education programme of their choice.

4.27 Income-contingent loans that cover tuition fees (and which students repay on a deferred basis after graduation) can also operate as a particular form of voucher, since part or all of public funding to the higher education institution is only made available if students enrol in a given programme at that institution.

4.28 Funding mechanisms where the funding follows the student could provide an incentive to higher education institutions to offer programmes that lead to better labour market outcomes as a way of attracting more students.

Targeted funding for specific fields or levels of study

4.29 Policymakers may provide funding to support the delivery of student places in a specific field or level of study. This approach differs from a funding formula scheme, but the outputs expected from institutions may be linked to targeted levels of enrolment or service delivery. Funding may be available on an ongoing basis, or provided for only a limited period of time.

4.30 For instance, the Czech Republic reported in the questionnaire that it provides targeted funding to a private university in the Prague region to co-finance a bachelor-level nursing programme. The Czech Republic also provides targeted support for programmes in certain foreign languages that are crucial for trade, foreign policy, and national security.

4.31 In addition, by 2017-2018, the province British Columbia (Canada) expects that one quarter of its operating grants to institutions will be targeted towards support for programmes aligned with high-demand occupations, or for programmes for Indigenous people or people with disabilities.

4.32 Sometimes, targeted funding may focus on support for the development of specific kinds of transversal skills rather than for a field of study. For instance, Belgium Flanders reported that it provides support for the development of the transferrable skills of PhD students.

Targeted tuition fee levels

4.33 Policymakers and higher education institutions can use tuition fees to attract students to programmes that are likely to lead to better labour market outcomes. Tuition fee levels may be reduced for specific programmes or levels of study that are considered to meet labour market needs, and this lower cost provides a direct financial incentive to students to enrol in these fields. It also signals to prospective students, their teachers and career guidance staff that these fields are important for the labour market. This might in turn potentially stimulate aspirations among secondary school youth to prepare for these fields.

Targeted loan and grant arrangements

4.34 Policymakers may also attract students to specific programmes by offering grants or special loan conditions, thereby reducing their cost to students. These levers may also integrate further specific conditions, such as a requirement to work in a particular occupation for a minimum period after graduation. Lower programme costs provide financial incentives to students, and give an additional signal that certain fields are valued in the labour market

4.35 Estonia reported in the questionnaire that it provides a “specialisation stipend” to motivate students to study full-time in areas of priority for the country (e.g. in a large number of STEM fields). Australia provides special student loan reductions for eligible graduates of specific programmes (mathematics, statistics or science; education, nursing or midwifery; and early childhood education) who work in related profession (Government of Australia, 2016).

4.36 Canada reported in the questionnaire that the federal government supports primary health care in rural and remote communities through student loan forgiveness for family doctors, residents in family medicine, nurse practitioners, and nurses who work in under-served rural or remote communities. The province of Saskatchewan has a similar program called “The Saskatchewan Student Loan Forgiveness for Nurses and Nurse Practitioners Program”, and the government of Alberta provides financial incentives to offset tuition costs for health care professionals under its “Health Workforce Action Plan”.

Targeted infrastructure funding

4.37 Policymakers may provide grants to support the construction or renovation of facilities, or the purchase of durable goods, that meet the needs of one or more targeted fields/levels of study, or of other non-academic programmes that support graduate outcomes. Higher education institutions use this funding to build facilities (or purchase equipment) that support the expansion of the targeted programmes.

4.38 Latvia, for instance, reported in the questionnaire that it has used European Union structural funds to support the expansion of STEM studies. Part of this expansion includes the building of new instructional facilities.

Targeted funding for learning and teaching

4.39 Policymakers may provide funding to support effective approaches to learning and teaching that generate high quality, labour market relevant skills. Funding might support investigation into and dissemination of effective practices. It may also support the costs of initial implementation of these approaches, e.g. on a trial basis (since these approaches can come with start-up costs that are linked to requirements for staff training, investments in equipment, etc.).

4.40 In Ireland, for instance, the government funds the National Forum for the Enhancement of Teaching and Learning. The National Forum provides a range of services, including the dissemination of good practices, and scholarships to develop a better understanding of effective learning and teaching practices (National Forum for the Enhancement of Teaching and Learning in Higher Education, n.d). In the United States, projects supported by the Fund for the Improvement of Post-secondary Education are aimed at improving educational outcomes, making college more affordable for students and families, and developing an evidence base of effective practices (United States Department of Education, 2016).

Targeted funding for higher education-social partner engagement

4.41 Policymakers may also provide funding to support engagement between higher education institutions and employers and trade unions. This could be provided directly to higher education institutions, or flow to employers or trade unions as a grant that gives them an incentive to collaborate with higher education and social partners in curriculum design and other activities. Funding could also be provided to support collaboration at a system level through roundtables and other fora.

Funding to encourage employer participation in work-based learning

4.42 Policymakers may also provide funding to employers to help defray some of the time and financial costs they face in the provision of work-based learning. Funding could take the form of a grant or

a tax credit. This may be particularly important for smaller firms, which have less capacity to supervise students. Such firms may also be more exposed to the risks of bringing an inexperienced student into the workplace.

4.43 In Canada, the federal government's Career Focus programme provides funding for employers and organisations to design and deliver a range of activities that enable youth to make more informed career decisions, develop their skills and benefit from work experiences. In the province of Manitoba (Canada), employers who hire a student as part of a registered co-operative education program can claim a tax credit of 15% of wages and salaries, up to a maximum of \$5,000 per student. In similar fashion, through the Co-operative Education Tax Credit, employers in the province of Ontario (Canada) can claim a credit for hiring students who are enrolled in a co-operative education programme. The maximum credit for each qualifying work placement is set at \$3,000. Credits are higher for small businesses.

4.44 For its part, the Slovak Republic reported in the questionnaire that a measure to enable employers to claim tax benefits in exchange for providing work-based learning experiences is currently being discussed.

Factors to consider when using funding policy levers

4.45 Policymakers need to consider a number of factors when using funding-based policy levers.

Uncertainty about future labour markets

4.46 Some funding levers are targeted and can only be used for specific actions, e.g. to deliver more places in specific fields of study or to build agreed facilities related to a certain field of study. Similarly, grants to students that encourage them to enrol in specific fields are only awarded if students actually enrol in those fields.

- These funding levers provide certainty about what higher education institutions or students will do with the funding. They can also provide more accountability for public expenditures.
- This approach presupposes that policymakers are able to make their decisions with some certainty. But it is difficult to determine the number of student places required in a given field of study based solely on labour market data. And it is particularly difficult to predict future labour market needs. For instance, some sought to increase the number of graduates in computer science in the 1990s in response to the technology boom. In Ontario, Canada, additional funding was provided to higher education institutions to support an additional 17,000 places in computer science and engineering programmes in 1998, just before the tech bubble burst in the early 2000s (Sossin, 2005).

Capacity and flexibility

4.47 The success of funding-based approaches will often depend on whether or not the policy lever's target (e.g. higher education institutions or students) already have the capacity and flexibility needed to respond to it and, if not, whether they can quickly develop that capacity.

- Targeted infrastructure funding will not be effective if a higher education institution lacks the capacity (funding, staff members and expertise) to deliver extra places in a given field of study.

- Incentives for students to enter a certain field of study may not be effective if there are not enough potential students with the academic preparation required to enter the related programmes.
- Small employers may face practical constraints (e.g. a lack of staff who could supervise an intern) that make them unlikely to respond to a financial incentive for work-based learning.

Unintended consequences

4.48 Funding levers risk providing incentives that have unintended consequences.

- Performance-based funding that rewards institutions for the good labour market outcomes of its graduates might also provide a perverse incentive to discourage poor performing students from continuing with their studies, so that they are not included in the final graduate outcomes data.
- Offering financial support to students who enrol in specific programmes or fields of study may help attract more students to labour market relevant programmes. But it could also attract students who do not have a natural affinity for the field of study. This can make them more likely to drop out of the programme, or to fail to develop sufficiently high quality skills (OECD, 2008).

Size of the incentive required to change behaviour

4.49 It can be difficult to model in advance how much of an incentive is needed to affect behaviour, since students, higher education institutions and social partners are diverse groups made up of individuals who may each respond differently to a given level of incentive. Incentives, however, tend to be targeted at the “average actor”. But since the response of individuals varies, there is a risk that a funding policy lever could provide too much, or too little, incentive to some actors, and so be either inefficient or ineffective.

4.50 Sometimes no amount of funding will affect the behaviour of actors in higher education systems. Policymakers need to recognise that the decisions that higher education institutions, employers and students make are often complex, taking into account multiple factors.

- Students choose programmes and institutions for a variety of reasons. Many students report that “getting a good job” is one of the main reasons they enrol in higher education, but this is not the only factor that determines their choice. They may be interested in a programme because of personal interests unrelated to the labour market, or because their friends enrolled in that institution. Students may also have concerns about the working conditions in certain occupations. Such factors could reduce their interest in labour market relevant programmes, even if there are strong incentives in place to encourage enrolments.
- Academic staff operate with a high degree of autonomy in higher education. This means that targeted funding to support the implementation of innovative learning and teaching approaches may not be embraced – at least not at sufficient scale – to make a significant difference in graduates’ skills outcomes.
- Employers will make decisions about whether to actively engage with higher education institutions, or to provide work-based learning experiences, based on various factors, such as how an intern’s presence in the organisation might affect the productivity of other workers. Financial incentives alone may not be sufficient to motivate employers to engage with higher education institutions.

Measurement of performance

4.51 A wide array of factors can influence graduate outcomes. Even though the contribution that a higher education institution or programme makes to these outcomes may be substantial, it can be difficult to separate that contribution from the effects of other influences (e.g. student characteristics, the effects of economic cycles, etc.).

- Performance-based approaches, in particular, need to take account of these factors. An institution's performance on an indicator of graduate labour market outcomes will reflect much more than simply what the institution has accomplished through the learning and teaching process. Performance indicators thus risking rewarding or penalising institutions for things for which they are not responsible, or over which they have little control.

Regulatory policy levers

4.52 Policymakers regulate higher education through a range of mechanisms including laws and regulations, quality assurance processes and standards. Through these mechanisms, they can set requirements that have legal force (OECD, 2011).

4.53 Policymakers can use regulatory policy levers to influence the labour market relevance and outcomes of higher education systems. For example, they can establish threshold levels of quality and performance on programmes and institutions; exercise controls on admissions and enrolments; and require higher education institutions to undertake certain actions.

4.54 This section explores a number of regulatory policy levers that could be used to promote labour market relevance and good graduate outcomes.

Institutional accreditation

4.55 Institutional accreditation (also known as registration, licensure or authorisation) controls an institution's entry to, and continued operations within, a higher education system. Institutions must meet certain criteria or threshold standards to operate as a higher education institution and to qualify for a certain status. In many countries, institutional accreditation is also a prerequisite for the receipt of public funds.

4.56 Accreditation is mandatory in some countries and voluntary in others. Even where it is voluntary, failure to be accredited may nonetheless affect an institution's access to public funding. In countries that have no formal institutional accreditation process, higher education institutions will typically be subject to other forms of government regulation (e.g. through establishment laws and other regulations).

4.57 Policymakers (acting directly or through intermediary agencies) can use accreditation procedures to enhance the labour market relevance and outcomes of the higher education system by imposing labour market relevant criteria or minimum standards on institutions (e.g. to guarantee the quality of skills produced). Accreditation criteria may, for instance, be focussed on ensuring that institutions have processes in place to ensure good quality skills development. But they might also focus on outputs such as minimum levels of professional or transversal skills, or on labour market outcomes such as employment and earnings.

4.58 Most countries have one or more institutional accreditation agencies in operation. For instance, Norway reported in the questionnaire that the Norwegian Agency for Quality Assurance in Education (NOKUT) is an independent government body that was established by law with the aim of monitoring and developing the quality of higher education in Norway through evaluation, accreditation and recognition of

quality assurance systems, institutions and study programmes. Norway's external quality assurance system covers all higher education and operates at the national level.

Programme accreditation

4.59 In programme accreditation, academic programmes are assessed against threshold standards that cover a range of functions and processes such as learning and teaching, research and research training, institutional quality assurance, governance and accountability, and information. Policymakers can also make use of the procedures that accredit individual higher education programmes in order to enhance labour market relevance and the outcomes of graduates. They might do this by requiring specific processes, or by imposing labour market relevant criteria or standards.

4.60 For instance, the Slovak Republic reported in the questionnaire that professionally-oriented degree programmes must demonstrate their link to the labour market before they receive formal accreditation. And Poland indicated that new regulations in 2016 require the Polish Accreditation Committee to account of employer involvement in curricular design and teaching when assessing programmes.

Minimum entry requirements

4.61 Policymakers may stipulate minimum requirements that higher education institutions must observe when admitting students. These might include threshold scores on national entry exams or upper-secondary school qualifications. This sort of regulation may help ensure that higher education institutions admit students who are capable of succeeding in their study programme, and therefore have a better chance of achieving good labour market outcomes.

4.62 Hungary, for instance, has been gradually raising the minimum admission requirements to universities between 2013 and 2016 as part of its Decree on the Admission Procedure in Higher Education (2012) (OECD, 2015b).

Required academic support for students

4.63 Policymakers may also require higher education institutions to provide academic support to students who fail to meet certain entry criteria. This helps ensure that students admitted to higher education institutions can fully develop the skills they need for labour market success.

4.64 For instance, state higher education systems in the United States sometimes require students scoring below a threshold to undertake remedial work. Higher education institutions who admit these students are required to provide that support. For example, the Tennessee Board of Regents requires students to be placed in "the appropriate co-requisite learning support course(s) or interventions for reading, writing, and/or mathematics, as required by the academic program" if they fail to demonstrate readiness on higher education admissions assessments (in this case, the Scholastic Aptitude Test or the American College Test) (Tennessee Board of Regents, n.d).

Controls on enrolment levels

4.65 Policymakers may limit the number of students that higher education institutions are able to enrol in a given field or level of study. They may also simply place a cap the number of places they will fund, which puts a softer cap on enrolments since higher education institutions may still be eligible to admit full fee-paying students.

4.66 When this approach is applied across an entire higher education system (i.e. so that students do not simply move from one higher education institution to another), it sets a ceiling on the number of new graduates from a given field/level who enter the labour market.

4.67 Denmark reported in the questionnaire that it has caps on student intake in study programmes where the graduates have historically experienced “systematically and significantly higher unemployment rates” than higher education graduates in general. And Estonia reported that ceilings and floors on enrolments may be set in performance agreements.

4.68 Poland reported in the questionnaire that any increase to enrolment that are greater than two percent of previous year enrolment levels must be approved at ministerial level. There are some mitigating factors involved in the approval decision, including the labour market demand for graduates in particular fields of study.

Access to student financial assistance

4.69 Policymakers may also stipulate minimum labour market outcomes that higher education institutions or programmes must meet in order to qualify for participation in a government-sponsored student financial aid scheme. In such cases, students cannot receive financial aid unless they are enrolled in higher education institutions/programmes that meet those standards. This makes programmes that do not meet the standards less attractive to potential students, and can lead to a decline in enrolments that may even force the higher education institution or programme to close.

4.70 The United States, for instance, has introduced a gainful employment regulation that affects a subsector of higher education. The regulation is aimed at ensuring “career colleges” improve their outcomes for graduates or risk losing access to federal student aid. To qualify for federal student aid, most for-profit programmes (as well as certificate programmes at private non-profit and public institutions) must demonstrate that they prepare students for “gainful employment in a recognised occupation.” The regulation distinguishes between programmes that provide affordable training that leads to well-paying jobs, and those whose graduates have poor earnings prospects and high amounts of debt. The lever works by denying financial aid to students in poor-performing programmes, thereby potentially depriving institutions of tuition fees. Without the revenue from fees, the programmes may face closure (United States Department of Education, 2015). The regulation also requires institutions to provide information about their programmes, including graduate earnings data and debt levels so that student can compare college programmes and make informed decisions.

4.71 Similarly, Korea restricts the loans that are available to students at some higher education institutions that fail to meet evaluation requirements (OECD, 2012).

Required engagement with social partners

4.72 Governments may require higher education institutions to regularly consult with social partners to gain up-to-date insights into skills needs and to foster closer collaboration. Employers and trade unions can offer valuable insights on the skills graduates need; effective approaches to curriculum design; the performance of graduates in the labour market; and ways to strengthen work-based learning.

4.73 Poland, Latvia, the Czech Republic and Denmark all reported in the questionnaire that higher education institutions are required to consult with employers.

Required graduate competency statements

4.74 Policymakers may also require institutions to develop graduate competency statements. Such statements can clearly communicate to potential employers what a graduate has learned and is able to do, and may include reference to competencies developed within the study programme as well as to extra-curricular activities and work experience. This approach can ease labour market transitions and so promote better labour market outcomes.

4.75 For instance, Poland reported in the questionnaire that ministerial regulations require diploma supplements to contain information on the programme of study, the profile of studies, the qualifications obtained by the graduate, and any apprenticeship associated with the programme.

4.76 Graduate competency statements do not necessarily have to be implemented via a regulatory lever: other approaches are possible as well. For instance, instead of requiring that institutions develop competency statements, policymakers might provide them with financial incentives to do so. They might use an information lever to encourage institutions to develop statements. Or they might also use an organisational lever to convene key stakeholders and give impetus to the development of competency statements.

Factors to consider when using regulatory policy levers

4.77 Policymakers need to consider a number of factors when using regulatory policy levers.

Trade-offs between uniformity and diversity

4.78 Regulatory approaches may use threshold values that prescribe a minimum level of performance. These can include criteria that institutions or programmes must meet in order to receive initial accreditation, or to renew their accreditation. They might also refer to minimum outcomes that graduates must achieve if students at an institution are to be able to access publicly funded student financial assistance.

- Threshold values ensure that quality or outcomes do not fall to unacceptable levels. But they fail to provide incentives for the kinds of improvement that go beyond simply meeting prescribed criteria. An effective quality assurance system should focus on both improvement and accountability (OECD, 2008).

4.79 Regulation faces a trade-off between the goal of ensuring uniform behaviour (i.e. all actors reach a minimum standard) and that of promoting diverse responses to the challenges of skills relevance and quality.

- Regulatory approaches that are more constraining in nature (such as prohibitions and mandates) can reduce the risk of very low performance. But they carry the risk of a “one-size-fits-all” approach that measures behaviour against a lowest common denominator.
- Less prescriptive forms of regulation (e.g. reliance on higher education institutions to self-accredit their own programmes) leave a wider range of responses open, and may thus enable innovation. But these approaches also open up potential for low quality performance, with a greater number of outcomes failing to meet an acceptable standard.

Uncertainty about future labour markets

4.80 Certain regulatory levers raise a challenge similar to those posed by funding targeted to specific fields of study: policymakers have limited knowledge of the future.

- Caps can be appropriate in some cases, e.g. high cost programmes that produce graduates for well-paid but small and regulated occupations. But a regulatory approach to limiting enrolments needs to be pursued with caution.
- For instance, caps presuppose that policymakers can reliably identify the point at which a specific number of graduates becomes “too many” graduates. But the problem is that policymakers cannot easily predict how graduates will integrate into the labour market over a period of many years. Decisions are therefore likely to be based on backwards-looking data (i.e. the outcomes of recent graduates), which may not reliably capture future trends.

Cost, capacity and complexity

4.81 In general, regulatory levers are low cost for governments. They may require funding for monitoring and enforcement, but these costs will tend to be less than those of many funding policy levers. On the other hand, regulations can make substantial resource demands on those who are subject to them.

- Regulations can impose substantial compliance costs on higher education institutions and others. For example, a requirement that institutions provide certain services to students, or that they undertake certain administrative processes, presupposes that institutions have the capacity and the resources to comply. Regulation can thus lead to “unfunded mandates”. And when this happens, there are two risks. One is that an institution will comply, but comply poorly. The other is that institutions will divert scarce resources from other more effective activities.

4.82 Regulations that require interactions with third parties can lead to additional challenges.

- A requirement that higher education institutions engage with social partners on curriculum development presupposes that there are social partners who are available to contribute in this way. However, this regulation could set institutions up for failure if social partners are not available.
- Similar issues can arise if regulations require higher education programmes to offer work-based learning experiences to students in specific fields: the regulation cannot itself shape the supply of such work-based learning placements in the public or private sectors. Policymakers may need to undertake other initiatives to ensure that employers provide these placements. Otherwise, they risk seeing students make do with poor quality work experiences.

Limits on measurement

4.83 Regulatory policy levers often rely on imperfect measurement tools.

- Regulations on the minimum requirements for admission to higher education may include a minimum score derived from a standardised test. But such tests have limitations: they are assessments of the general population. By their very nature, they are imperfect predictors of the future academic success of any individual student.

- Students who could have benefitted from higher education, but did not achieve the required cut-off score, might miss an important opportunity if alternative entry pathways are not available. This can also be an equity issue, since socio-economic status is linked to schooling outcomes.

Reach

4.84 Regulation, even if it is broadly focussed, can have trouble covering the full range of higher education actors.

- Regulations on access to student financial aid attempt to influence the quality and relevance of skills developed in higher education by reducing student demand for programmes that have poor labour market outcomes. But the lever only works if students are eligible for financial assistance. For instance, some of the students in those programmes may be adult students with significant assets, and therefore ineligible for financial aid.

Information policy levers

4.85 Governments can use various information policy levers to enhance the labour market relevance and outcomes of higher education systems. Information about labour market opportunities and outcomes can encourage students to select programmes that will lead to better labour market outcomes. It can also help higher education institutions be more responsive to labour market demands. And employers may also find information about students who are in the higher education pipeline useful for their planning.

4.86 This section explores a number of information policy levers that could be used to promote labour market relevance and good graduate outcomes.

Labour market information for students

4.87 Policymakers (or third-parties using publicly-funded information sources) can provide students with information about the labour market outcomes they might expect from different programmes. Information might for instance include data on the earnings of graduates, their employment rates, and their job satisfaction. Policymakers can also provide students with more general information, e.g. projections of future skills needs, and recommendations about specific fields of study that might be of particular interest.

4.88 Students can use this information – combined with knowledge of their own aptitudes and preferences – to choose programmes at individual higher education institutions. This may encourage higher education institutions to improve the labour market relevance and outcomes of their programmes.

4.89 Many countries are surveying their graduates to get information on the labour market relevance of their skills, and on the strength of their labour market outcomes. In some countries, e.g. Australia, New Zealand, the United States, Germany, the United Kingdom and Canada, a national survey of graduates takes place on a regular basis. In the case of Canada, surveys are run at the provincial level as well.

4.90 Estonia, the Slovak Republic and the Czech Republic all reported in the questionnaire that the labour market outcomes of graduates are captured through regular labour force surveys.

4.91 In their questionnaire response, some countries mentioned quite sophisticated approaches. For instance, Poland's new national system of tracking graduates' outcomes combines data in the ministerial student database with data collected by the social insurance authority. It follows graduates one, three and five years after the completion of their studies.

4.92 Mexico and the Slovak Republic reported that they have developed assessments to evaluate the learning outcomes of graduates, which can be a strong predictor of labour market outcomes. And Canada reported that the Higher Education Quality Council of Ontario is currently conducting a pilot project to assess the core skills of higher education students in a number of Ontario higher education institutions. This project includes the use of OECD's Education and Skills Assessment Online to measure the skills of a sample of students at the beginning of their programmes (in fields ranging from the sciences and business to the humanities and applied arts), and a sample of students nearing the programme's completion.

4.93 Countries are also increasingly using sophisticated approaches to communicate information to students. For instance, Denmark reported on Uddannelseszoom.dk, a digital tool in which students can compare three educational programmes at one time, using parameters such as salary after graduation or unemployment rates.

4.94 Several countries also reported information campaigns focused on specific fields of study. For instance, Belgium Flanders mentioned campaigns aimed at raising interest in STEM disciplines, and Norway pointed to campaigns to raise aspirations for fields such as teacher education, mathematics and sciences. The Czech Republic is using European Union structural funds to enhance the popularity of study programmes in the fields of technology and the natural sciences. And the province of Québec (Canada) has a campaign aimed at raising enrolment in the 50 vocational or technical training programmes that are projected to be in greatest labour market demand.

Labour market information for higher education institutions

4.95 Policymakers can also provide labour market information to higher education institutions, including information on graduate labour market relevance and outcomes, as well as skills projections. This information may come from surveys, censuses, administrative data, and other sources. Higher education institutions can use this information to decide which programmes to offer, and to develop and revise the curriculum.

4.96 Many countries reported in the questionnaire that higher education institutions have access to a range of government-generated labour market analyses and projections.

Student enrolment information for employers

4.97 Policymakers can promote good graduate outcomes by providing employers with real-time information about the numbers and progress of students enrolled in specific fields of higher education. This allows employers to plan for their staffing needs. It may also promote feedback from employers to institutions about unmet needs.

4.98 In the Slovak Republic, for instance, employers can access publicly available data on current students broken down by higher education institution, faculty, and degree programme.

Factors to consider when using information policy levers

4.99 Policymakers need to consider a number of factors when using information policy levers.

Limitations of labour market information

4.100 Labour market information is an important policy tool but, as noted above, policymakers need to recognise its limitations.

Motivation of students and higher education institutions

4.101 Even when the high quality data and information are available, information levers still face significant hurdles that are linked to the nature of their target audience.

- General information on labour market needs and outcomes is used to help students make choices that will lead to high quality skills and good outcomes. But students do not make choices based solely on how well a particular programme or a particular institution might prepare them for the labour market. In reality, choices are made based on a wide variety of factors.
- Leaders and academic staff in higher education institutions also base curricular decisions on a range of factors, not just on labour market information.

Capacity to understand and respond to information

4.102 Even in cases where students are predisposed to make use of information, it is still uncertain whether they will be able to do so effectively (Cedefop, 2016).

- Labour market indicators can be hard even for experts to interpret. But students face the additional challenge of making sense of how very general information (e.g. on the average outcomes of graduates) relates to their own individual situation.
- Equitable use of the information lever presupposes that everyone has the same ability to access and make use of information. However, this is a strong assumption. For instance, students of parents who have low levels of literacy or numeracy might potentially be at a disadvantage, both in terms of accessing information during their adolescence, and of interpreting it.

Organisational policy levers

4.103 Governments also have a range of organisational policy levers they can use to enhance the labour market relevance and outcomes of higher education systems. These levers involve the resources of governments themselves through their ministries, agencies (e.g. quality assurance agencies), quasi-autonomous non-government organisations (quangos), public enterprises and partnerships (Howlett, 2011).

4.104 Some organisational levers are procedural in nature: they shape how policymakers steer the policy process. Others are substantive in nature. In this latter case, governments act as the direct provider of goods and services.

4.105 This section explores several organisational policy levers that could be used to promote labour market relevance and good graduate outcomes:

Strategic planning

4.106 The success of higher education depends on the coordination of a range of policies. As a result, managing policy levers and their interactions in higher education requires planning and oversight. The governance arrangements of national higher education systems naturally draw on national traditions and models. But in any country, an approach that enables governments to effectively plan and steer higher education will facilitate cohesive and co-ordinated policy design and implementation.

4.107 The 2008 OECD review of tertiary education (*Tertiary Education for the Knowledge Society*) identified the three major elements for successful planning in higher education: the capacity to articulate a

vision for the system; appropriate policy levers to implement this vision; and a way of monitoring performance (OECD, 2008).

4.108 One of the main advantages of a strategic policy approach that is focussed on well-defined, well-articulated and broadly shared policy goals, is that it can effectively take account of the potential interactions of various policy levers and their joint interaction with the broader policy environment. An overall strategy for the system will help policymakers decide which policy levers are appropriate in specific situations, and ensure that these levers are well-coordinated, and form part of an overall coherent approach.

Policy networks

4.109 Policymakers can influence and persuade actors in higher education systems by building policy networks. Policy networks can provide feedback on policies and procedures, support the policy process, and ensure the successful implementation of other levers. Policymakers may, for instance, call on these networks via face-to-face stakeholder consultations, or seek written feedback on discussion papers. They may also choose to establish reviews, inquiries or taskforces to examine particular issues (Howlett, 2011).

4.110 In Latvia, for instance, trade unions, employer associations, and the students union are all regularly consulted in policymaking and they have contributed to the elaboration of a new model of higher education funding. Poland reported in the questionnaire that university representatives are involved in the current reform of higher education process. And in Belgium Flanders, consultations generally take place with higher education institutions before higher education legislation is passed.

Career centres for students

4.111 Policymakers may also directly provide career services to students at government-operated career centres located on campus. These are distinct from traditional employment services in that they are focussed on the needs of students, soon-to-be graduates, and recent graduates. Direct provision of career services by government recognises that institutions themselves may not provide adequate services, either for reasons of cost or capacity. Government provision also takes advantage of public information resources and of system-wide economies of scale. But governments may choose to subcontract these services.

4.112 In the questionnaire, Canada identified Alberta's Aboriginal Construction Careers Centre as an example of government collaboration with higher education institutions, social partners and the community. This initiative seeks to increase the number of work-ready Indigenous job seekers, and to address workforce and skills training needs. The two-year pilot project operates centres on the campus of NorQuest College (with services to northern Alberta) and Bow Valley College (which provides support in southern Alberta).

Work-experiences for students

4.113 Governments also employ large workforces. In this role, they can partner with higher education to provide students with a variety of work-based learning experiences.

4.114 For instance, the Government of Finland provides traineeships to higher education students. These internships develop both professional/technical and transversal skills, and supplement the range of work-based learning opportunities available in other parts of the public and private sectors (Government of Finland, 2016).

Factors to consider when using organisational policy levers

4.115 Policymakers need to consider a number of factors when using organisational policy levers.

Stakeholder engagement

4.116 Organisational policy levers in higher education are an important component of policy work. The active involvement of stakeholders in the design and development of policy is likely to get more buy-in from the higher education system and its various actors. But organisational levers, like regulatory levers, are easier to use when governments enjoy a good degree of legitimacy. They also depend on a good degree of trust amongst social actors.

Cost and capacity

4.117 The direct provision of certain services can address instances of clear market failure, where a service is being under-provided despite its public benefits. Direct provision also provides benefits that only governments can offer. For instance, internships in the public sector help students develop a particular range of skills (e.g. policy analysis, policy implementation) that it would be hard to replicate elsewhere.

4.118 But direct provision requires substantial organisational capacity and significant resources. This is one reason that direct provision of higher educational services by governments is so uncommon in OECD countries. It is often an open question whether it is more efficient for governments contract for certain services, or to provide them directly (e.g. in the latter case, making use of the economies of scale and scope that governments can benefit from).

Box 4.1: Key Findings of Chapter 4

Policymakers can use policy levers to influence the behaviour of various actors in higher education systems in ways that support labour market relevant skills and good graduate outcomes.

The main categories of lever include funding, regulation, information, and organisation. These four categories help describe and compare the wide variety of policy approaches that policymakers can take. But levers are best understood when they are studied in concrete contexts.

Individual levers come with their own sets of considerations. These may for instance include whether the actor they target has the capacity to respond, and whether the measurements they depend upon are robust and reliable.

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CHAPTER 5. INTERACTIONS BETWEEN POLICIES TO ENHANCE LABOUR MARKET RELEVANCE AND OUTCOMES OF HIGHER EDUCATION SYSTEMS

5.1 Chapter 4 outlined a variety of policy levers that policymakers can use to enhance the labour market relevance and outcomes of higher education. But levers do not operate in isolation. Governments typically make use of a range of levers to support or steer various aspects of higher education, and these can all have an impact on each other. At the same time, governments also use policy levers to support or steer other parts of the economy and broader society, and these too can affect the performance of higher education systems. And finally, the levers used by different levels of government – or by national governments and supranational organisations – may also interact with each other.

5.2 As noted in Chapter 4, the choice of policy levers depends on a range of contextual issues in countries or jurisdictions. These include the structure and characteristics of the higher education system; how the system is governed or steered; and its broader social and economic context. This also applies when considering multiple policy levers used together. Various combinations of policy levers may be more effective in some contexts rather than others. The country reviews will provide an opportunity to observe concrete interactions between policy levers in participating countries, and to analyse their effects.

Combined effects of policy levers

5.3 Effective strategies to enhance higher education labour market relevance and outcomes will seek to take advantage of interactions between different policy levers, and to minimise their conflicts. Policymakers therefore need to have a good understanding of the possible consequences of combining different policy levers, both when reviewing existing policies and when analysing the potential for new policy initiatives.

5.4 Sometimes a combination of policy levers can create positive synergies, producing an impact that is greater than the sum of their individual effects. At other times, levers may be complementary: each lever has its intended effect.

5.5 But in some cases there could be some conflict between the levers, meaning they are only partly complementary. In these cases, the combination of policy levers produces leads to some positive effects, but these are not as great as they would have been had the levers been used separately. This loss of impact may result, for instance, from redundancy or overlap between various levers.

5.6 Finally, under a worst-case scenario, conflicts between two levers weaken them to such an extent that their *combined* benefit may even be less than the benefit that either lever would have produced had it been left to stand alone (del Rio and Howlett 2013) (Table 6.1).

5.7 This kind of analysis not only enables policymakers to understand how policies might interact positively or negatively when combined. It also provides a way to identify how additional policies might fill in gaps in existing mixes when, for instance, the success of one lever depends on the support of another (OECD, 2007).

Table 5.1: The effects of combining policy levers

Effect of combined policy levers	
Synergy	The impact of the policy levers is greater when combined
Full complementarity	The policy levers have a positive effect when combined
A weak conflict (partial complementarity)	The policy levers have a positive effect when combined, but it is lower than if they were used separately (e.g. there is some redundancy or overlap which means that both approaches are not necessarily required)
A strong conflict	The addition of a policy lever substantially reduces the effect of the other lever

5.8 The existing literature includes a large number of studies of policy levers that are used to shape and steer higher education (Huisman et al., 2015). But a specific focus on the effects of policy on the labour market relevance and outcomes of higher education is much less common. Furthermore, there does not appear to be a significant body of research that systematically looks at how individual levers interact in complex policy mixes either in higher education in general, or more specifically in the area of labour market relevance and outcomes.

5.9 The in-depth analysis will provide a unique opportunity to observe concrete interactions between higher education policy levers (as well as other policy levers that affect higher education), to analyse the results of these interactions, and to draw lessons for policies that seek to enhance labour market relevance and outcomes.

5.10 The analysis will look at policy levers that fall into the four categories explored in chapter 4 of this report: funding, regulation, information and organisation. As part of this approach, the analysis will also consider additional characteristics of levers, and what these mean for the effectiveness of policy mixes. For instance, policymakers need to take account of:

- The relationship between levers that directly encourage certain behaviours (e.g. grants) and ones that do so indirectly and after the fact (e.g. tax subsidies). The relative effectiveness of these two approaches, and the right balance between them, is an ongoing debate in areas such as innovation policy.
- The relationship between levers that are general in nature (i.e. that apply to all members of a class), and those that rely on competition or targeting (and that therefore limit their benefits to a smaller class of individuals or organisations).
 - Competitive and targeted levers will tend to be more focussed and more limited in scope, which can enhance their efficiency.
 - Levers that are more general in nature may waste resources by providing incentives for behaviour of individuals (or organisations) who are already engaging in the desired behaviour.

- The relationship between levers that target the actors who provide certain goods or services (e.g. the research function of higher education institutions) and those who use those goods or services (e.g. firms that are seeking to innovate).
 - Levers that target producers and providers will tend to have more concrete immediate effects (e.g. increase the number of research papers produced).
 - Those that target end-users and leverage their potential to influence producers may be more indirect.

5.11 As with individual policy levers, combined policy levers and their interactions need to be assessed against their effectiveness; efficiency; equity; manageability; and legitimacy (Salomon, 2002).

Interactions of policy levers

5.12 Chapter 3 identified the two major factors that contribute to the distribution of labour market outcomes for higher education graduates:

- the relevance of the skills (i.e. technical or professional skills and transversal skills) developed in higher education
- the quality of the skills developed in higher education.

5.13 This section explores how different policy levers can be used together to address policy problems that affect the relevance and quality of the skills that higher education develops.

Interactions with and between funding policy levers

5.14 Various funding approaches will often be complementary with each other. For instance, incentives to encourage students to enrol in certain fields of study can usefully be accompanied by investments that help higher education institutions build their capacity in these fields.

5.15 On the other hand, some combinations of levers may target the same behaviour and therefore be redundant. For instance, formula-based incentives to produce graduates in certain fields may simply replicate performance-based funding rewards for graduates in that same field, without leading to any significant change in the behaviour of higher education institutions. Increasing the incentives offered by one of the two policy levers in this scenario may be more efficient than maintaining both of them.

5.16 Similar observations may apply to targeted tuition fee levels when these are combined with targeted grants or loans to students. Both approaches seek to influence students' choices of field of study. But their interaction, if they are used jointly, may not lead to significant changes in behaviour beyond what one or the other would have achieved acting alone.

Interactions with and between regulatory policy levers

5.17 Quite a number of regulatory approaches will complement each other. For instance, institutional and/or programme accreditation and regulated access to student financial assistance can be effectively combined, with the latter being based on the former.

5.18 However, these two levers do not necessarily have to operate in tandem. A higher education institution's access to student financial assistance could be meaningfully based on a variety of other measures, e.g. student loan defaults or the earnings of its graduates.

5.19 On the other hand, some stronger regulations may not work well with light touch ones. If an accreditation scheme places significant weight on the outcomes of graduates, and thus on shaping enrolments via market-like forces, then an attempt to further structure enrolments via strict enrolment caps may be counterproductive. Outcomes-based approaches rely on the freedom of higher education institutions to make local decisions that will lead to good outcomes. Hard caps take away that freedom of decision.

5.20 When combined with other categories of levers, regulation can also lead to inefficient outcomes. Performance funding tied to successful graduations, for instance, is typically meant to ensure that higher education institutions admit students who can be expected to complete their studies with the help of any necessary academic or other support. Regulation might seek to accomplish similar ends in a different way (stipulating admissions requirements or requiring higher education institutions to provide remedial services). If both approaches are used, the effects of regulation (which carry more immediate weight) may overshadow the effects of performance-based funding and therefore make that funding an inefficient use of public resources.

Interactions with and between information policy levers

5.21 Labour market information – if it is reliable and effectively disseminated – can complement or enhance nearly all other levers that focus on labour market relevance and outcomes. Information is an essential complement for some levers: for instance, demand-driven funding (e.g. vouchers) will not work effectively unless students have sound information (including good information about labour market needs and graduate outcomes) upon which to base their decisions.

5.22 Information provided to students can also enhance the effectiveness of measures that target the expansion of capacity in certain fields of study: it can help ensure that there are motivated students available to take advantage of new places. In similar ways, information can also complement grants that seek to stimulate students' interest in certain fields. It does this both by amplifying the signalling effect that the grant has for the student population as a whole, and by helping ensure that those who take up the grant are truly committed to their course of study (i.e. that they are making a decision that they understand).

5.23 Information to employers can also complement direct policy levers such as funding incentives to participate in work-based learning. Concern about costs may not be the only reason why employers do not engage in work-based learning. Surveys suggest, for instance, that some employers do not understand what work-based learning is, how it operates, and how it might benefit them. A grant to employers can itself have a positive information effect, highlighting that work-based learning is important. And additional information levers may be able to amplify this effect.

Interactions with and between organisational policy levers

5.24 Organisational policy levers such as strategic planning and policy networks can enhance or complement virtually any other policy lever. Strategic planning helps ensure cohesive and co-ordinated policy design and implementation. This is particularly important when working across different levels of government. Policy networks can provide a useful mechanism for engaging with stakeholders to get feedback and advice on policy design and development. And support from policy networks can play an important role in the implementation phase of policy.

5.25 Government provision of internships and traineeships can effectively complement other policy levers aimed at stimulating work-based learning. There are two reasons for this. The government workplace develops a unique range of skills that students may not be able to acquire elsewhere. And public

provision may be a more efficient alternative to other policy levers, e.g. where employer willingness to provide work-based learning is low and requires substantial incentives.

Interactions between direct and indirect policy levers

5.26 The mix of policy levers that act directly and indirectly may not be a major concern for policies aimed at labour market relevance and outcomes, as most levers in this area tend to be direct. Tax levers, for instance, are a relatively uncommon way to improve labour market relevance and outcomes, although they may be provided to graduates of certain fields after the fact (usually combined with another condition, e.g. place of residence), or given to employers who engage in training. One characteristic of tax levers is their automatic nature: they operate in the background as part of the tax code, often with low public awareness of their presence. But this indirectness could reduce the signalling (information) effect that is often an important part of levers focussed on labour market relevance and outcomes.

Interactions between targeted and general policy levers

5.27 Many of the approaches to labour market relevance and outcomes outlined in Chapters 4 are targeted: they support certain fields, certain students, or certain employers. They are largely focussed in nature, rather than general (although regulation differs in this respect). But including more general or universal approaches in a suite of policy levers can ensure the acceptability (the legitimacy) of targeted levers. For instance, grants for specific fields of study might be accompanied by a universal, income-contingent loan system that allows students to enrol in their programme of choice without up-front fees.

Interactions between policy levers focussed on different actors

5.28 The issue of levers focused on providers versus users is one of the most important facing higher education policymakers. Steering approaches that focus on students, employers or other social partners may be more durable than those that focus on higher education institutions. Rather than creating what may be an artificial incentive for higher education institutions, they stimulate a behaviour that then becomes an integral part of the higher education system. But, as noted above, approaches that focus on users and on providers can often have important complementarities, e.g. when funding is provided for new facilities to meet rising student interest in certain fields that grants or information have stimulated.

Sequencing of policy levers

5.29 The sequencing of levers can play a role in whether they support each other or not. Sometimes two levers will interact most effectively if one is used after the other, for example if certain conditions are met or fail to be met (Gunningham and Sinclair, 1999). Performance agreements can give higher education institutions initial latitude to find the most efficient and effective ways to meet broadly outlined goals. While regulation may often work counter to a performance-based approach, it can be kept in reserve to be deployed if necessary. In this way, regulation combined with a performance-based approach can encourage voluntary changes but address challenges if performance agreements fail to work.

Examples of policy lever interactions

5.30 This section looks at how the specific policy levers identified in Chapter 4 might work in combination to address three specific policy problems. To keep its analysis simple and understandable, this section will provide a small number of examples which are primarily focussed on how pairs of levers might interact. These analyses are intended to be illustrative, not comprehensive.

Example: Policy levers aimed at meeting expected future labour market demand for specific skills (nursing)

5.31 Countries need enough nursing graduates to meet the current and future healthcare needs of their population. In some countries, there are concerns about the supply of such graduates. In these situations, policymakers may seek ways to ensure that higher education produces more qualified nurses.

5.32 Nursing graduates need to develop a combination of technical/professional skills and transversal skills to be successful in the labour market. For instance, they need specific technical and professional skills related to medical procedures. But they also need a wide range of transversal skills such as communication, problem-solving and teamwork to perform successfully and deliver high quality care. Policymakers can choose from a range of different types of policy levers to help ensure nursing graduates develop all of these skills.

Table 5.2: Combined policy levers that may work together in synergy

Combination A

- Targeted loans and grants to students to encourage them to enrol in nursing programmes
- Targeted funding to institutions to increase the number of student places in nursing programmes

Policymakers can target loans and grants to students to stimulate demand for nursing programmes. However, this may need to be combined with targeted funding to higher education institutions to ensure they can deliver the places.

Combination B

- Targeted loans and grants to students to encourage them to enrol in nursing programmes
- Information to students to encourage them to enrol in nursing programmes

Funding and information levers operate on students in different ways. Labour market information can let potential students know that they may expect good labour market outcomes from nursing (e.g. good earnings, stable employment) and so enhance their interest. Targeted loans or grants can increase interest by focussing on the immediate financial decisions students need to make and reducing the costs of a nursing programme. When combined, the two approaches shift (each in its own way) the cost-benefit analysis that potential students make as they explore study options.

Combining two quite different approaches can help overcome barriers that the one or the other approach might face if used just by itself. Students who are not particularly price-sensitive may still be influenced by longer-term labour market information. And students who heavily discount future earnings may nonetheless be influenced by reduced costs upfront, particularly if they are choosing between two programmes with nominally similar fees.

Combination C

- Targeted funding to institutions to increase the number of student places in nursing programmes
- Policy networks
- Accreditation of nursing programmes

An expansion of student places in nursing may raise concerns about the quality of the programmes. Programme accreditation can help ensure that graduates develop high quality skills. Policymakers could also select programme accreditation criteria based on stakeholder feedback (policy networks). For instance, if stakeholders have identified a lack of up-to-date knowledge of the profession in higher education programmes, the criteria could include a requirement that all internal course design and approval committees for nursing programmes include representatives from the nursing profession (e.g. registered nurses). The advice that the profession provides, as mandated by this regulatory approach, can help ensure that new nursing places generate good labour market outcomes.

Combination D

- Formula-based funding to increase the number of student places in nursing programmes
- Performance-based funding to encourage good labour market outcomes for graduates

Funding that just focuses on inputs (e.g. the number of nursing students enrolled) has limitations (OECD, 2008). Such funding might encourage institutions to favour quantity over quality, as they have an incentive to deliver courses in ways that minimise expenditure (e.g. by cutting back on supports to learners). This effect could possibly be counteracted by performance-based funding that encourages institutions to make sure that nursing students succeed, and that they acquire a broad range of skills that are rewarded in the labour market.

Table 5.3: Combined policy levers that may conflict with each other

Combination A

- Block grants allocated on the basis of historical trends
- Targeted loans and grants to students to encourage them to enrol in nursing programmes

In some funding systems, funding is distributed by reference to the levels of funding institutions received in previous years. This approach has some advantages (e.g. it can guarantee stability, especially for smaller institutions in areas of declining demographics) but it can stand in the way of efforts to increase the number of nursing places that rely on stimulating student interest. In such cases, institutions will not have an incentive to increase the number of places in nursing programmes despite the increased demand from students.

Example: Policy levers aimed at improving learning and teaching

5.33 Whatever their field of study, students need to be able to develop high quality skills (technical/professional and transversal) that will make them proficient in their chosen occupation, allow them to adapt to economic change, and support rewarding career progression. The development of these skills depends in part on high quality learning and teaching practices in higher education institutions.

5.34 Learning and teaching is an area that falls largely under the control of institutions themselves. Furthermore, the extent to which academic staff themselves manage the learning and teaching process means that institutional leaders may have only partial control over how widely various learning and teaching practices are adopted. However, there are a number of levers available to policymakers to encourage higher education institutions to put in place new approaches to learning and teaching (including to student assessment) that generate high quality skills.

Table 5.4: Combined policy levers that may work together in synergy

Combination A

- Institutional and programme accreditation
- Targeted funding for learning and teaching

Accreditation requirements can help ensure students reach a threshold level of skills by requiring institutions to demonstrate that they have met minimum requirements. However, accreditation does not typically provide incentives for an institution to go beyond this threshold level.

Mechanisms that drive improvement and promote excellence can therefore work in synergy with accreditation. Accreditation requirements ensure a floor below which quality will not fall. To help ensure that skills outcomes move beyond simple minimum thresholds, accreditation can be complemented by funding to support improvements in learning and teaching.

Combination B

- Targeted funding for learning and teaching (research and development of best practice)
- Targeted funding for learning and teaching (implementation of effective learning and teaching practices)

Support for learning and teaching can involve two approaches that work in synergy. Funding can be provided to academic staff to support research into effective learning and teaching strategies in higher education. This can include the development and dissemination of best practice. However, institutions may require additional support to implement effective practices. This could include funding to support professional development of new and/or existing academic staff, ICT resources or staff time to implement and evaluate pilot approaches.

Combination C

- Performance-based funding
- Targeted funding for learning and teaching

Performance-based approaches give institutions and programmes the latitude to find good ways to meet agreed targets (e.g. around skills quality), rather than specifying precisely what must be done to reach those targets. Public funding to support improvements in learning and teaching has an important role to play here: it can develop the evidence and support the practices that institutions require as they seek the best ways to achieve goals set by policymakers.

Table 5.5: Combined policy levers that may be in conflict with each other

Combination A

- Performance-based funding
- Regulatory constraints on learning and teaching practices

In principle, regulatory approaches and performance-based ones counteract each other's effect (Gunningham and Sinclair 1999, OECD 2007).

A performance-based approach allows an institution to find the most effective way to achieve the desired objectives. This can encourage institutions to experiment and find promising approaches to learning and teaching that generate the kinds of high quality skills that labour markets – and performance funding itself – will reward.

Regulation, on the other hand, can seek to prescribe the ways things need to be done (e.g. regulations around academic staff qualifications, staff-student ratios, contact hours or class sizes). Too much regulatory constraint can discourage institutions from experimenting and innovating.

Example: Policy levers aimed at improving links between higher education institutions and employers

5.35 As shown in Chapter 3, engagement between higher education institutions and social partners (employers and trade unions) can help students develop the labour market relevant skills that employers are seeking. Policymakers can choose from a range of different types of policy levers to encourage this kind of engagement.

Table 5.6: Combined policy levers that may work together in synergy

Combination A

- Regulatory requirements that higher education institutions engage with social partners and/or provide work-based learning experience
- Funding to support higher education-social partner engagement

Regulations in a number of countries require that, as part of their curricular design and review process, higher education institutions engage with social partners. But this can place resource burdens on employers and trade unions which discourage engagement. Similarly, business reasons may lead some employers to be unwilling to provide work-based learning experiences, even though regulations require higher education institutions to ensure that students have these experiences.

Grants or tax measures may be used to defray some of the costs and other barriers that social partners face, and to promote their active engagement with higher education and students. There is a risk that, without enough employers willing to engage, institutions will find themselves in a regulatory dead-end.

Combination B

- Funding to encourage employer participation in work-based learning
- Policy networks

Employers may not participate in work-based learning because of the resource implications, i.e. the costs associated with supervising students and engaging with higher education institutions. But employers may also be unaware of the benefits of work-based learning in ensuring graduates have more labour market relevant skills, or of the benefits they themselves might gain from providing a work-based experience.

Policy makers could combine funding to encourage participation with stakeholder engagement to raise awareness of the benefits.

Table 5.7: Combined policy levers with a weak conflict (partial complementarity)

Combination A

- Grants to encourage employer participation in work-based learning
- Tax measures to encourage employer participation in work-based learning

Employer participation in work-based learning might be encouraged by more than one funding lever (e.g. grants and tax measures). But if these two levers are acting on the same barrier, they become redundant. But an exception to this general rule might arise in cases where policy pilot programmes (or other forms of research) demonstrate that certain classes of employer respond better to one kind of lever, and others to a different lever.

Table 5.8: Combined policy levers that may conflict with each other**Combination A**

- Funding to support higher education-social partner engagement
- Regulatory constraints on learning and teaching processes at higher education institutions

Various policy levers could be used to encourage employers or trade union members to engage with higher education institutions. This could include measures that encourage highly qualified and experience staff and trade union members to deliver some of the teaching in higher education programmes.

However, regulations on learning and teaching practices aimed at ensuring a minimum level of educational quality (e.g. restrictions on the qualifications or employment status of teaching staff) could stand in the way of innovative learning and teaching practices in higher education.

Interactions with policy levers aimed at other higher education outcomes

5.36 As seen in the preceding section, the interaction between various policies focused on labour market relevance is a key consideration for policymakers. But policies shaping other aspects of higher education (or shaping higher education systems in more general terms) can also have significant interactions with labour market relevance tools.

5.37 It is rare for public funding to be directed solely at the learning and teaching mission of higher education. Governments also fund research and engagement activities (as well as a variety of activities that jointly support each of higher education's three missions).

5.38 There clearly is potential for some of public funding streams to mutually reinforce each other. Research funding, for instance, can support the discovery of knowledge that then becomes embedded in students through learning and teaching, and ends up supporting innovation and economic growth.

5.39 On the other hand, there can also be conflicts between funding streams. For example, when research funding is an important source of revenue or status for faculty members, it may create incentives to reduce the attention they pay to learning and teaching (e.g. how they allocate their time, and where they concentrate professional development efforts). This can in turn affect the labour market relevance of graduates' knowledge and skills and their labour market outcomes.

5.40 And regulations aimed at one activity of higher education (e.g. reporting requirements linked to research funding) can have knock-on effects on other activities such as learning and teaching. They do this by diverting resources or time away from these other activities, and so may reduce a higher education institution's ability to ensure that students gain labour market relevant knowledge and skills.

Interactions with policy levers beyond higher education

5.41 Policy levers and approaches in areas outside higher education can also have an impact on higher education's labour market relevance and outcomes. For instance, funding targeted at certain sectors of the economy (e.g. an expansion of the healthcare system) can lead to changes in the labour market and in the demand for knowledge and skills (e.g. an increased need for medical professionals). This has implications for the mix of programmes offered by higher education institutions. The increased demand for qualified professionals could require targeted funding to higher education institutions to support increased enrolments in medicine and related health qualifications. Unless the required increases in teaching capacity are carefully implemented (including with adequate funding) they could have unwanted effects on other programmes.

5.42 Countries' tax codes can influence student and employer decisions. Economic returns are an important driver of decisions to invest in skills, and the ways in which taxes are structured and tax rates are set has an effect on these returns. Tax codes can indirectly shape behaviour by providing an incentive for individuals to undertake certain kinds of studies, or for employers to invest in certain kinds of training for their employees (Torres, 2012).

5.43 Regulations aimed at a specific sector of the economy can indirectly affect the ability of higher education to work with that sector to provide labour market relevant training to students. For instance, regulation affecting health care facilities may make it more difficult for higher education institutions to find work placements for their students. Whether the benefits of such regulation outweigh its costs is something that will vary from case to case.

5.44 The way policymakers use information levers in areas outside higher education can also have indirect effects on labour market relevance. For instance, public information campaigns to promote one kind of behaviour (e.g. volunteering) or promote one kind of skill (e.g. financial literacy) may potentially shape youth preferences when it comes time to make education choices. This can then have a knock-on effect on policies that target labour market relevant skills (e.g. by enabling better, more informed decision making on the part of students).

5.45 Policymakers' decisions about the design or administration of tools such as labour market surveys or censuses are not necessarily made with the needs of higher education or students in mind. But these decisions may have an effect on the labour market relevance and outcomes of higher education systems. For instance, if policymakers decide to limit labour market surveys for cost or privacy reasons, students and higher education institutions may not have the information they need to make good decisions.

5.46 Certain forms of direct government provision in other education sectors, or in the economy more generally, can also have indirect effects on higher education's labour market relevance and outcomes. The direct government provision of primary and secondary education is perhaps the best example of this. The quality of the knowledge and skills delivered by schools can significantly affect the students who enter higher education as an input and ultimately affect the knowledge and skills they develop during higher education, as well as their labour market outcomes.

5.47 Other forms of direct or quasi-direct provision of services by governments (e.g. healthcare or social assistance) might also have effects on child development. As in the case of education, this may in turn affect the preparation and ability of students entering higher education, and ultimately shape how able they are to gain labour market relevant skills and enjoy good labour market outcomes.

5.48 The interactions between all these policy levers call for strategic planning across government departments and agencies.

Interactions between the policy levers of different levels of government

5.49 In many countries, both national and subnational governments have an important role to play in higher education; in federated countries in particular, these roles can be relatively independent of each other. There may also be supranational levels of government which have a role in higher education – for instance, the European Union (EU) and the European Higher Education Area (EHEA) and Bologna Process.

5.50 In federations, typically one level of government will have either primary or exclusive jurisdiction over higher education. However, this does not prevent other levels of government from taking actions which directly or indirectly affect higher education. In the United States, for example, education is

primarily a state and local responsibility. Nevertheless, the federal government is active in certain areas of education. In higher education, it acts in particular through financial aid to students (grants and loans), research grants, regulations, tax measures, and information.

5.51 It is also possible that one level of government will affect higher education through its actions in other policy areas. For instance, taxation arrangements put in place by the national level of government may create incentives for students in sub-national systems. But the sub-national government may have little say in how those incentives are structured.

5.52 The EU adds another level of government to its 28 member states through supranational and intergovernmental decision-making. While higher education is essentially a matter for individual member states, the EU plays a role by supporting and coordinating actions. The main objectives of EU action in higher education include “supporting mobility of students and staff; fostering mutual recognition of diplomas and periods of study; promoting cooperation between higher education institutions and developing distance (university) education” (European Parliament, 2016). The actions taken by the EU can therefore have an effect on national and sub-national higher education systems and on how policy levers operate in the systems of individual nations.

5.53 And as with the actions of national (or sub-national) levels of government, policy levers aimed at addressing issues beyond higher education can also affect higher education systems. For instance, the EU Directive on Professional Recognition of Qualifications (which affects both EU countries and other members of the European Economic Area) is not directly related to higher education but has significant effects on national higher education systems and on the issue of labour market relevance and outcomes. This directive enables the free movement of professionals in a number of regulated professions through a range of measures including the automatic recognition of some qualifications (European Commission, 2016).

5.54 In addition, 48 countries in Europe are part of the European Higher Education Area (EHEA) which was established through the Bologna Process. The Bologna Process has driven major reforms of the higher education systems in the EHEA since the Bologna Declaration in 1999. The key aims of the Bologna Process are to increase student and staff mobility and facilitate employability (European Higher Education Area, 2016). While the decisions made at ministerial conferences must be implemented at the national level, they have an effect on a wide range of policy areas in higher education. These include the diploma supplement, employability, internationalisation, lifelong learning, mobility, qualifications frameworks, quality assurance, recognition and student centred learning.

5.55 Policymakers in federations and politico-economic unions need to be aware of the actions of other levels of government and how these may affect their own policies. One level of government, for instance, might provide funding for infrastructure to support expansion of certain fields of study, while the other chooses to fund operating expenses in ways that does not support the costs of the increased infrastructure. The complexity of dealing with various levels of government highlights the importance of policy networks to coordinate interactions across jurisdictions. Without coordinated policymaking, the levers used by two levels of government risk reducing or cancelling each other’s effects.

Box 5.1: Key findings of Chapter 5

Policy levers work in interaction with each other – and new levers come onto a scene where numerous pre-existing levers may already be in place. Policymakers need to pay close attention to these interactions.

When combined, policy levers can improve each other's outcomes or complement each other. But combinations of levers can also lead to redundancies or conflicts. These relationships are best explored via concrete policy experiences.

There are many possible interactions between the various sorts of lever that focus on labour market relevance and outcomes. And these levers also interact with other kinds of policy lever: those that focus on other areas of higher education, those that focus on areas outside higher education, and those that are used by other levels of government.

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CHAPTER 6. QUESTIONNAIRE ON THE LABOUR MARKET RELEVANCE AND OUTCOMES OF HIGHER EDUCATION SYSTEMS

Background

6.1 As part of the work on the analytical framework for the *In-depth analysis of the labour market relevance and outcomes of higher education systems*, OECD countries were asked to complete a questionnaire that captured the following information:

- The sorts of data that are being collected in countries on graduates' skills and on their labour market outcomes
- Promising approaches used in higher education systems to develop labour market relevant skills and support good graduate outcomes
- Different types of policy levers (falling under the categories of funding, information, and authority/regulation) that governments use to support greater labour market relevance within the higher education sector, and enable better graduate outcomes.

6.2 Beyond its support for the analytical framework, the questionnaire will provide background information about countries that are participating in individual country reviews as part of the in-depth analysis, and allow the Secretariat to situate this information in a comparative context.

6.3 The questionnaire was sent to member countries in the second quarter of 2016, with a request that it be returned to the Secretariat in the third quarter of the year. The Secretariat recognises the significant efforts required to complete a questionnaire of this type. In cases where their resources were limited, countries were asked to prioritise the completion of the sections of the questionnaire related to policy levers.

6.4 At the time of the publication of the analytical framework, 14 jurisdictions had returned a completed or partially completed questionnaire to the Secretariat, and one country had submitted a published report that covers many of the issues raised in the questionnaire.

6.5 The remainder of this document summarises the key information provided in each of the questionnaire tabs. The summary of each tab includes:

- Titles identifying the specific higher education practices or policy levers under consideration
- A brief description of the practices or policy levers, highlighting any trends in the responses where relevant
- A table that lists the countries that provided information about the specific higher education practice or policy lever, and gives a brief synopsis of the information provided

6.6 It should also be noted that the tables in this document only reflect information received from countries. If a country is not listed in a table, this does not necessarily mean that the corresponding practice or policy lever is not in use in that country.

6.7 The tables below do not provide an exhaustive report of all the information received from countries. The tables only summarise portions of the questionnaire for which countries provided a significant amount of information.

Measuring graduate skills

6.8 Countries were invited focus on completing the sections of the questionnaire dealing with the policy levers that governments use to ensure labour market relevance and promote good graduate outcomes. Most countries channelled their efforts into completing sections of the questionnaire that relate to higher education practices and policy levers. However, countries did provide some insights into how the skills of graduates are measured.

6.9 In addition to exams and tests administered by higher education institutions, some countries have their own graduate surveys (both one-time and on-going). Some countries noted their participation in transnational assessments such as the OECD's *Survey of Adults Skills* (PIAAC) and the *Flexible Professional in the Knowledge Society* (Reflex) survey.

Tools that measure the skills of graduates

Jurisdiction	Description
Austria	Graduates skills are measured by the Austrian Graduate Survey (ARUFA).
Canada	<p>Most postsecondary education (PSE) institutions in Canada measure the knowledge and skills of graduates near the end of, their programme of study. This measurement typically occurs at the course or programme level, and is linked to outcomes defined by the institution. But in some cases, instruments such as the Collegiate Learning Assessment (CLA), the CLA+ and processes such as Tuning have also been used by institutions.</p> <p>In Ontario, the Higher Education Quality Council (HEQCO) is currently conducting a pilot project to assess core skills of higher education students in a number of Ontario higher education institutions. This project includes the use of OECD's Education and Skills Assessment Online to measure the skills of a sample of students at the beginning of their programmes (in fields ranging from the sciences and business to the humanities and applied arts), and a sample of students nearing the programme's completion</p> <p>In addition, large-scale surveys of graduates are used by governments and other stakeholders to examine the skills and outcomes of PSE:</p> <ul style="list-style-type: none"> • Canada's national statistical agency, Statistics Canada, maintains a periodic, regular survey of graduates – the National Graduate Survey (NGS) – that examines a range of outcomes. • The Canadian Undergraduate Survey Consortium (a consortium of universities across the country) administers a survey to graduating students just prior to their exit from the institutions every three years. • Some provinces also have their own initiatives: Alberta, for instance, administers a Graduate Outcomes Survey.
Czech Republic	The Flexible Professional in the Knowledge Society (Reflex) survey, a transnational self-assessment of skills of graduates, provides information on past graduates.

Jurisdiction	Description
Denmark	<p>For bachelor's programmes at universities, skills are assessed by individual tests. These tests can be oral, written or practical. A student can make three attempts to pass the test. A professional bachelor's programme has external as well as internal tests. The programme has to administer at minimum contain the following three tests:</p> <ul style="list-style-type: none"> • An internal or external test which is taken before the end of the second semester, and which documents that the student has achieved the learning goals stipulated for the first study year. • An internal or external test which has to be taken after completion of the programme's practical training, and which documents that the student has achieved the learning goals stipulated for the practical training. • An external test linked to the final bachelor's project which, together with the test after the practical training and the programme's other tests, document that the learning goals have been achieved.
Estonia	Skills are measured through tests and final exams.
Korea	The transversal skills of PhD holders are measured in the Korean Survey of the Career and Mobility of Doctorate holders, which was developed and administered by the Science and Technology Policy Institute.
Latvia	Accredited higher education institutions evaluate technical, professional and discipline-specific knowledge and skills via final examinations, theses and/or practical skills training.
Luxemburg	Students are evaluated continuously through the European Credit Transfer and Accumulation System (ECTS) and accumulate credits until they reach the graduation threshold. The skills of graduates in professional programmes may also be evaluated by exams administered by professional bodies.
Mexico	The Centro Nacional para la Evaluacion de la Educacion Superior (CENEVAL) is a civil association which administers an exam named EGEL (Exámenes generales de egreso de la licenciatura) which aims to measure knowledge and skills acquired by students after they have concluded their academic programme. It is a voluntary exam.
Poland	The quality of graduate skills is measured by higher education institutions for each study programme through tests and exams. The Polish Accreditation Committee is an independent body that carries out quality assurance processes, and verifies that learning outcomes have been achieved during study programmes.
Slovak Republic	<p>Identification of graduates' skills was part of survey of a one-time survey of graduates undertaken by Slovak Centre for Scientific and Technical Information in 2014.</p> <p>Graduates evaluated the competencies and skills they acquired during their studies in several areas (26 sub-questions about their professional skills, social skills, cognitive and information processing skills). Results are available on a web portal.</p>

Measuring graduate outcomes

Tools that measure the labour market outcomes of graduates

6.10 Most of the responding countries indicated that their national labour force surveys provide evidence of the outcomes of higher education graduates.

Jurisdiction	Description
Belgium Flanders	The European Union Labour Force Survey is administered in Belgium each year. This survey has information about individuals' labour market status, their highest degree and the year in which they obtained the degree. Therefore, it is possible to derive the earnings of graduates for each ISCED level.
Canada	Information about the outcomes of post-secondary graduates in Canada can be obtained through: <ul style="list-style-type: none"> the national census; the National Graduate Survey, a periodic survey of higher education graduates; and the Canadian Undergraduate Survey Consortium (a consortium of universities across the country), which administers a survey to graduating students every three years. <p>There are also growing efforts to make use of administrative data to examine labour market outcomes through linkages of student records to tax filer data sets. In addition, in 2011-12 a Longitudinal and International Study of Adults was launched that collects information every two years from people across Canada about their jobs, education, health and family. The study is also interested in how changes in these areas have affected people's lives. This survey aims to help improve education, employment, training and social services in Canada</p>
Czech Republic	The National Labour Force Survey collects data on the labour market outcomes of graduates. This data can be filtered by type of faculty, institution, etc. Information on a specific past graduate cohort is available through the Reflex survey.
Denmark	Data on all higher education students are collected by Statistics Denmark from higher education institutions. The data make it possible to monitor the labour market outcomes of graduates (employment rate, etc.).
Estonia	The Estonian Labour Force Survey and the Estonian Work Life Survey provide some information on the labour market outcomes of graduates. The proposed Satisfaction Survey of Employers, currently under development, may provide new employer information on the outcomes of graduates.
Latvia	Each higher education institution analyses the data that it collects on its students.
Mexico	The Federal Ministry of Education does not have records on the employability of higher education graduates, nor on their impact on the labour market. Mexico's Ministry of Labour and Social Security (STPS) in conjunction with the National Institute of Statistics and Geography (INEGI), conducted the National Occupation and Employment Survey (ENOE), which allows analysis of labour issues.
Slovak Republic	The labour force survey provides information about graduates' earnings and educational attainment, field of study and year of graduation. Information is broken down only at field of study level, and not at the level of institutions.

Higher education practices to enhance labour market relevance and outcomes

Work-based learning

6.11 Participation in work-based learning can improve the labour market outcomes of students and graduates by developing work-relevant technical and professional skills as well as "soft" skills such as

teamwork, communication and negotiation. Work-based learning plays a role in the higher education systems of all the jurisdictions that responded to the questionnaire. It is more prevalent (and sometimes mandatory) in certain types of programmes (e.g. professional programmes), certain fields of study (e.g. business, teaching, health and certain programmes in science, technology, engineering and mathematics (STEM)), and at certain types of institutions (e.g. applied universities and vocational training institutes).

Jurisdiction	Description
Austria	Internships are mandatory in all bachelor's degree programmes at universities of applied science. The trend in Austria is towards greater provision of internships in higher education programmes.
Belgium Flanders	An internship in a workplace is a requirement for every professional bachelor's and most professional master's programmes. There is a good deal of diversity in terms of the length of the internship, which can run for as little as a few weeks. Internships are especially common in programmes in where trade unions have a strong presence.
Canada	Work-based learning plays an important role in post-secondary education in Canada, and takes many forms. One of the key recommendations of the Premier's Highly Skilled Workforce Expert Panel in Ontario is that every high school and post-secondary student should have at least one experiential learning opportunity during their studies.
Czech Republic	Work-based learning is prevalent at higher education business incubators.
Denmark	Work-based learning is compulsory at university colleges and in some programmes at business academies. Some university programmes allow internships. The structure and format of these internships differs greatly across institutions.
Estonia	Work-based learning takes place mostly in professional programmes.
Korea	Field work and internships with corporations are offered to students. Some of these internships take place during school breaks. In some programmes, students earn credit hours toward graduation.
Latvia	Work-based learning is a mandatory component in all professional study programmes in Latvia, and is found in about 30% of all other higher education programmes.
Poland	There is an obligatory three-month internship in practically-oriented programmes of study. The Law on Higher Education requires employers and higher education institutions to work together to integrate internships into the curriculum.
Slovak Republic	Work-based learning is found mainly in degree programmes that lead to the regulated professions. It is especially common in nursing and medicine.

Partnerships with social partners (employers and trade unions)

6.12 Engagement with social partners helps higher education institutions gain insight into the skills that are needed in the labour market. Most questionnaire respondents indicated that their higher education systems have strong links with social partners. Respondents indicated that employers, and often trade unions, play a role in higher education governance bodies (e.g. Boards of Governors or Senates). Social partners are also often consulted during the development of academic programmes. This practice is more common – and sometimes mandatory – in professional programmes and at certain types of institutions.

6.13 Some jurisdictions (e.g. Denmark and Estonia) report that consultations between social partners and higher education institutions tend to be more *ad hoc* in nature, occurring on an institution-by-institution basis. On the other hand, jurisdictions like Austria and Belgium Flanders report that the consultative role of employers and trade unions is enshrined in legislation.

Jurisdiction	Description
Austria	<p>Social partners in Austria, e.g. the employees' representatives (Chambers of Labour, trade unions) and employers' representatives (the Austrian Economic Chamber, the Association of Austrian Industries) participate in higher education decision-making via the university councils. They are also involved in the development of curricula, and work together to ease graduates' entry into the labour market.</p> <p>At Universities of Applied Sciences, the social partners are also involved in programme accreditation.</p>
Belgium Flanders	<p>Legislation requires that all public higher education institutions have representatives of social partners (such as employers, unions, social services, etc.) on their board of directors.</p>
Canada	<p>A significant proportion of post-secondary institutions in Canada indicate that they develop learning outcome definitions in partnership with employers or other stakeholders. Many polytechnics and colleges undertake this through formal Program Advisory Committees.</p> <p>In addition, the Business Council of Canada has created the Business-Higher Education Roundtable to bring together business and higher education leaders in order to support young Canadians as they transition from education to the workplace; to strengthen research collaboration between industry and higher education institutions; and to help Canadian employers as they adapt to the economy of the future.</p>
Denmark	<p>Partnerships between higher education institutions and social partners are generally left up to the initiative of individual higher education institutions.</p> <p>University colleges and Business academies have representatives from social partners on their education committees</p>
Estonia	<p>Cooperation with the professional sector is important at all higher education institutions. It often takes the form of research partnerships, the use of industry professionals as teachers, and real projects that students work on for companies.</p> <p>Representatives of trade unions also participate on advisory and governance boards at higher education institutions.</p>
Korea	<p>Higher education institutions and employers often partner to develop tailored curricula focusing on the skills and competencies that are relevant to employers.</p> <p>Contract-based departments are a relatively new initiative in the Korean higher education system. These are a special type of department created at higher education institutions to retrain current employees and improve their capacity for performance.</p> <p>Employers who engage with contract-based departments help shape the curriculum, and agree in advance to hire students from the programme following the completion of their studies. Currently over 1,800 students are engaged in learning through contract-based departments. These departments are most prevalent in the field of engineering.</p>
Latvia	<p>Representatives of the Employers' Confederation of Latvia are members of a commission which evaluates programmes during the accreditation process.</p> <p>Employers help finance applied research at scientific research institutes.</p> <p>Employers also play a role in the "Youth Guarantee" which has been implemented in colleges and vocational schools (up to ISCED 5) with the support of European Union structural funds. The project provides youth aged 15-29 with a professional education that helps ensure quick access to the labour market for those without any qualifications, and therefore minimises the risk of long-term unemployment.</p>
Mexico	<p>The universidades politécnicas are more likely than other institutions in Mexico to form partnerships with regional private sector companies. These partnerships help them identify employer needs and enable them to design programmes accordingly.</p>
Poland	<p>Industry/employer representatives and trade union representatives sit on the collegial bodies of higher education institutions.</p>

Jurisdiction	Description
Slovak Republic	Some employers partner with higher education institutions to support the provision of programmes in selected fields: they provide funding for educational activities, teaching materials and laboratory equipment.

Student intake

6.14 “Student intake” refers to approaches that systems and institutions used to ensure that students are sufficiently prepared to benefit from higher education. In some jurisdictions standardised exams play an important role in ensuring that students have the skills needed to enter and succeed in the higher education. In other countries, admission decisions are left up to individual institutions.

Jurisdiction	Description
Austria	An introductory and orientation period in study programmes at universities was introduced in the 2011-12 reforms of higher education. Students must successfully complete the introductory and orientation period in order to continue their studies.
Belgium Flanders	Institutions can voluntarily develop and deploy (and students can voluntarily participate in) instruments that assess the capacity and interest of incoming higher school students for certain programmes.
Canada	Decisions about intake requirements and procedures are made by post-secondary institutions. Institutions determine who will be admitted and what preparation these students require.
Czech Republic	Students may need to pass entry exams into programmes for which student demand exceeds the supply of places. However, entry exams are not used in some technical disciplines, nor in agriculture.
Denmark	Individual institutions may have specific intake procedures.
Estonia	Institutions select students on the basis of results in national exams. In addition, individual institutions set specific tests (in a written or practical format), or conduct interviews with students.
Latvia	The Rules of the Cabinet of Ministers on admission criteria and requirements stipulate that the main criterion for admission are the results of the centralised school exams. Higher education institutions have a right to apply additional admission criteria depending on the field of study.
Luxembourg	An entry exam is required for some bachelor’s programmes (medicine, economy, education, law) and for all master’s level programmes.
Mexico	Higher education institutions may require that incoming students complete the DESCAES (Desarrollo de competencias de aprendizaje para la educación superior), an exam that measures students’ skills, as part of admission requirements.
Poland	A higher education institution may set admission tests to assess an artistic aptitude, physical fitness or other particular aptitudes for a degree programme in a given field, when these fall outside of the scope of secondary school exit exams.
Slovak Republic	Entrance exams are more prevalent in the admission procedures of public and state higher education institutions. In 2015, 51% of successful applicants at public higher education institutions were admitted without sitting an entrance exam. This compares to 79% of successful applicants at private higher education institutions, but only 7% of successful applicants at state institutions. The requirement to sit an entrance exam is least prevalent in the fields of engineering and technology.

Remedial support for students

6.15 As enrolments in higher education expand, there can be greater variation in the academic aptitude and preparedness of incoming students. As a result, higher education institutions may need to provide support that help students catch up so that they can succeed in their studies. Questionnaire responses

indicate that the remedial efforts of higher education institutions most commonly focus on upgrading mathematics and language skills.

Jurisdiction	Description
Austria	Students are provided remedial support in German, mathematics and writing skills. In addition, students have the opportunity to develop the skills required to succeed in a given programme through the introductory and orientation period of academic programmes. it strives to ensure that
Belgium Flanders	Higher education institutions organise remedial courses during the summer to address skill gaps students have in certain subjects such as mathematics and academic Dutch. Participation in these remedial courses is voluntary.
Czech Republic	Remedial courses are available for new entrants to higher education.
Denmark	Individual institutions are responsible for developing remedial courses based on the needs of their students.
Latvia	Many higher education institutions offer preparatory courses for prospective students. These may also take place during students' first academic year.
Luxembourg	Higher education institutions make limited use of remedial instruction.
Poland	First-year students are offered the option of participating in remedial classes.

Information for students

6.16 Higher education institutions sometimes inform students about the labour market prospects of their programmes via various forms of labour market information, including information about the outcomes of past cohorts.

Jurisdiction	Description
Austria	Many universities use graduate surveys to obtain information about the employment status, competencies and labour market experiences of their graduates. The results of these surveys contribute to quality management, and are incorporated into teaching and the curriculum to enhance labour market relevance.
Czech Republic	Higher education institutions collect data about the outcomes of their graduates, but this information is primarily used for internal quality assurance and is not specifically targeted at incoming students.
Estonia	Higher education institutions carry out graduate surveys and use that information to support career counselling and other activities.
Korea	Higher education institutions are required to collect information on the employment rate of their graduates. They submit the information for inclusion on the College Information Notifications site .
Latvia	Each higher education institution provides outcomes data to its prospective students.
Luxembourg	Individual institutions may provide information to students, but this does not occur on a systematic basis.
Poland	Higher education institutions monitor graduate outcomes three and five years after graduation. This is an important element of internal quality assurance
Slovak Republic	Some higher education institutions publish information on their faculties from this "ranking", e.g. for marketing purposes.

Interdisciplinary approaches

6.17 Interdisciplinary approaches can expose students to a broad range of knowledge and skills. Respondents to the country questionnaire often highlighted entrepreneurship skills in this section of their answers.

Jurisdiction	Description
Austria	Several universities have specific departments for entrepreneurship and the other universities offer individual courses in this area. Courses cover topics such as business planning, intellectual property rights and idea generation. They are usually set up as project or field work.
Denmark	Higher education institutions are placing a greater emphasis on entrepreneurial skills within various fields of study.
Estonia	Entrepreneurship is one of approaches that is being embedded in various fields of study.
Latvia	Numerous interdisciplinary study programmes combine specific fields of study with entrepreneurship and management courses. Riga Technical University, for example, offers a master's degree in business informatics , combining IT and management studies.
Luxembourg	There are various interdisciplinary programmes, including a master's in Entrepreneurship and Innovation.
Poland	Higher education institutions have launched entrepreneurship incubators. These support the development of entrepreneurial skills and provide start-up support to students in all fields of study.
Slovak Republic	Students can obtain information on labour market outcomes of graduates (measured in terms of unemployment rates of recent graduates) from a ranking of higher education institutions and faculties according to the unemployment rates of their graduates over the past three years. The ranking is published annually by the Academic Ranking and Rating Agency, a non-profit organisation,). Some higher education institutions publish information on their faculties from this ranking for marketing purposes.

International experience

6.18 International experiences and internationalisation of the curriculum can develop discipline-specific knowledge and skills and transversal skills and cross-cultural competencies. All of the European jurisdictions that responded to the questionnaire identified the ERASMUS+ programme as the primary vehicle that facilitates international experiences for their higher education students. But many also report that their higher education institutions continue to engage in bilateral agreements with institutions outside of the European Union.

Jurisdiction	Description
Austria	Austria has already met the European Union goal that 20% of graduates should have an international experience. It has now raised its national goal to 30-35% of graduates.
Belgium Flanders	All institutions take part in the Erasmus+ programme. In addition, there are individual collaborations between institutions and foreign partners. At the level of the ministry, there is an action plan to promote student mobility.
Canada	International exchanges and other international educational experiences are offered at many Canadian post-secondary institutions.
Czech Republic	Higher education institutions widely offer international experiences, especially via ERASMUS+ funding.
Denmark	Starting in 2017, the University of Southern Denmark will make it compulsory for all students to have an international dimension to their studies. They might fulfil this requirement by study abroad, taking a course of study in English, enrolling in subjects that have an international dimension, or by tutoring international students.
Estonia	There is a large offering of study abroad opportunities (e.g. via Erasmus and agreements with partner universities).
Korea	Study abroad programmes most prevalent at four-year universities.

Jurisdiction	Description
Latvia	Students can study abroad using the opportunities provided by ERASMUS+ programme. There are also bilateral cooperation projects between Latvian and foreign higher education institutions, including common study programmes.
Luxembourg	International experience is compulsory for all bachelors' programme students.
Mexico	Some higher education institutions have concluded national and international partnership agreements which allow their students to engage in professional activities before they graduate.
Poland	Polish higher education institutions take part in the Erasmus+ programme. There are also bilateral agreements between Polish and foreign higher education institutions that include, for instance, provisions for student and staff mobility and for common study programmes. An internationalisation strategy for higher education has been developed at the ministerial level, and a website promoting studies in Poland is available.
Slovak Republic	Most higher education institutions provide study abroad opportunities to students, as well as opportunities to undertake a traineeship abroad. This is usually accomplished via the ERASMUS+ programme.

Career counselling services

6.19 Career counselling helps students make good academic choices and prepare for their transition into the labour market. In some countries career counselling is a recent development, while in others it is a well-established practice. Questionnaire results show that career centres are providing services that go beyond traditional career fairs and resume-writing workshops.

Jurisdiction	Description
Austria	Career centres and alumni associations at universities offer a range of counselling, training, and self-assessment tools.
Canada	Institutions in Canada have diverse student support systems, providing services that range from mental health initiatives to career planning support. One relatively unique approach career counselling is the Alberta Aboriginal Construction Careers Centre , a collaboration between government, post-secondary education, social partners and the community that seeks to increase the number of work-ready Indigenous job seekers and to address workforce and skills training needs.
Denmark	Higher education institutions offer career and counselling services to their students.
Estonia	Career counselling takes place on individual campuses, helping students with academic or career planning. Tartu University provides specialised entrepreneurship support. For example, it offers support for business idea analysis; consultation in business model development; advice in start-up and spin-off company development; seminars on the entrepreneurial mindset; business planning (including knowledge about how to use the online business tool iPlanner, and about product development); and, preparation for investor readiness.
Korea	Higher education institutions provide career counselling services (both online and offline) and an online portfolio service that helps students develop and keep track of their own career plans. They also run programmes to help students prepare job applications and build interview skills.
Latvia	All higher education institutions offer career counselling services.
Luxembourg	Career counselling is widespread in Luxembourg.
Poland	Poland's Academic Career Offices have expanded their mandate to provide programmes that help students develop entrepreneurial and transversal skills, e.g. at the University of Warsaw .
Slovak Republic	Higher education institutions do not typically have career and counselling services on campus. Career information for students is available at the annual Career Days organised by higher education institutions.

Funding policy levers to enhance labour market relevance and outcomes

Funding to support certain fields of study

6.20 Many jurisdictions report providing funding to higher education institutions that targets specific fields of study either for infrastructure or ongoing expenditures. Such funding seeks to encourage higher education institutions to expand enrolments in programmes that have strong labour market outcomes. But not all jurisdictions report doing this – and some indicate that they have moved away from this sort of approach.

Jurisdiction	Description
Canada	Canada provides many examples of funding that is specifically earmarked to support certain fields or levels of study. Examples include funding to support programmes aligned with high labour market demand (e.g. British Columbia, Alberta); programmes to support students with disabilities and Indigenous students (e.g. British Columbia, Alberta); and specific funding for certain fields such as French language training, healthcare and trades (e.g. New Brunswick, Alberta, Saskatchewan).
Czech Republic	The Czech Republic has moved away from support for specific fields of study. Higher education institutions determine the number of students that are required in a given field of study in order to meet labour market needs.
Denmark	Denmark is reforming the higher education funding system to stimulate quality and the relevance of programmes to the labour market.
Estonia	The <i>Tallinn University of Technology Act</i> requires that the university “provide possibilities for the acquisition of higher education based on the development of science and technology at all the levels of higher education in engineering sciences, natural sciences and social sciences” and “be the leading university for engineering education and science in Estonia, and be responsible for ensuring the development of engineers and engineering scientists”. These goals are supported by targeted funding.
Japan	Japan provides management expense grants for national universities and private higher education institutions, including national colleges of technology (Kosen). This funding supports one of the stated goals of the Kosens, which is to foster practical engineers. Japan also provides funding through programmes that support the training of doctors ; nurses and pharmacists ; engineers and agricultural students and information technology specialists .
Korea	Through the Programme for Industrial Needs-Matched Education (PRIME), the government aims to reduce the mismatch between the higher education curriculum and industry needs, and to develop students with labour market relevant skills. The government selects about 20 higher education institutions. In assessing applications, the government considers factors such as whether the higher education institution has adjusted the size of individual programmes, i.e. reduced the size of programmes with poorer labour market prospects, or increased the size of those with good prospects; whether it has revised the curriculum of specific programmes to make it more labour-market friendly; and whether it provides a support system for student employment and job preparation.
Latvia	European Union structural funds are being used to: <ul style="list-style-type: none"> • expand science, technology, engineering and mathematics (STEM) programmes in Latvia (including places in medicine and creative industry studies) • improve first-level professional higher education in STEM subjects • reduce the fragmentation of the study programmes and encourage the sharing of resources • strengthen higher education institutions’ academic staff in smart specialisation areas.
Poland	Public higher education institutions receive grants from the state budget for the provision of specialised postgraduate training for doctors, dentists, veterinary surgeons, pharmacists, nurses and midwives, and laboratory diagnosticians. Specific state funding is also available for the training of pilots, naval students, and infrastructure maintenance professionals.

Jurisdiction	Description
Slovak Republic	Public higher education institutions may request additional funding to provide practical training for students in the fields of social work, pedagogy, medicine, veterinary medicine, agriculture, forestry, and theology. Operating funding is set aside annually to support additional activities on the part of higher education institutions. For instance, in 2016 the Ministry began financing a project aimed at developing the skills of law students via legal clinics.

Funding to support transversal skills

6.21 Public funding can also encourage higher education institutions to focus on the development of transversal skills. Questionnaire results suggest though that this is a less common approach.

Jurisdiction	Description
Belgium Flanders	The Ministry of Science provides targeted funding for doctoral programmes to develop transferrable skills in PhD students and ease their transition to the labour market.
Canada	One example of a subsidy to post-secondary institutions to support transversal skills in Canada is the federal government's Adult Learning, Literacy and Essential Skills Program. The programme funds a project with Dalhousie University, in Nova Scotia, which assesses student literacy skills at the point of entry and refers them to upskilling supports as required. The project will also measure the effects of the interventions on students' academic success and labour market attachment.
Denmark	The government's national innovation strategy "Denmark – a nation of solutions" established a programme that supports the development of entrepreneurship across Denmark's higher education system.
Estonia	Estonia is supporting the development of transversal skills (including entrepreneurship) in programmes that train teachers.
Japan	Japan funds a programme that supports the development of problem-solving skills for advanced medical professionals and a programme that support the development of educational programmes that foster management skills .
Poland	In 2015, Poland launched the first round of its Competencies Development Programme that is aimed at strengthening the labour market skills and competencies (particularly transversal skills) of higher education students. The programme places a strong emphasis on cooperation between higher education institutions and employers and includes training sessions and workshops to help build key skills such as entrepreneurship; courses delivered jointly with employers; project-based learning; and career guidance.

Funding contingent on graduate labour market outcomes

6.22 By tying public funding to labour market outcomes, governments can give higher education institutions an incentive to ensure that the skills their programmes develop are relevant to the labour market.

Jurisdiction	Description
Austria	There is no funding directly tied to the development of labour market relevant skills, but there are concrete efforts to identify new means of financing universities and to provide incentives for innovations in teaching which may foster better labour market outcomes.
Czech Republic	Funding for certain programmes is influenced by the unemployment rate of graduates
Estonia	A new funding model will be established starting in 2017. Performance funding will account for up to 20% of the funds allocated to higher education. The labour market outcomes of graduates will be one of the six performance indicators used to allocate performance funding.
Korea	In Korea, the government has launched the Cultivate Specialized Technical Colleges programme to encourage vocational colleges to strengthen their role in job training/employment education

Jurisdiction	Description
	and to increase higher education institutions' labour market relevance. The programme provides support to 80 vocational colleges.
Slovak Republic	The calculation of the state subsidy for the provision of accredited study programmes at public higher education institutions includes the number of students weighted by the graduate employment coefficient. This coefficient reflects the unemployment rate among graduates of a particular higher education institution in a particular field of study.

Funding contingent on collaborations with social partners

6.23 Funding can be provided to higher education institutions to encourage collaborations with social partners which support the development of labour market relevant skills.

Jurisdiction	Description
Canada	<p>Canada has government programmes that match the funds that post-secondary institutions raise from the private sector and community-based partners. One example is the province of Saskatchewan's Innovation and Opportunity Scholarship. This programme matches private sector and community-based partners funding, up to a maximum amount per institution. The programme has three main components:</p> <ul style="list-style-type: none"> • Innovation and excellence: funding is targeted to students in new and emerging areas of study; fields of study where innovative work is being undertaken; fields that are in high demand by industry; or areas that represent improvements to service delivery/quality assurance. Areas of study include (but are not limited to) mining, energy, agriculture and biotechnology, the environment, science, nuclear medicine, forestry, manufacturing, and engineering. • Opportunity: funding is used to help institutions provide financial assistance to students in accordance with the priorities established in the institution's strategic plan. • International Education: funding is intended to help institutions provide financial assistance to Canadian students studying out of country, or to foreign students studying in Saskatchewan at a designated post-secondary institution and at any level of study.
Estonia	The funding model for higher education institutions that is planned for after 2017 includes performance funding (20% of public funding). Higher education institutions' revenue derived from partnerships with employers will be one of the six performance indicators that serve to measure performance.
Korea	Through the Programme to Foster Leading Universities with Focus on Industry-Academic Cooperation, the government evaluates universities and industrial universities on criteria such as the following: their graduate employment rate; the proportion of professors with industry experience; and the proportion of students who have completed internships and fieldwork. It selects approximately 50 institutions to receive funding. Institutions can freely allocate the funding to advance university-industry collaboration (e.g. develop their human resources, design industry-related curriculum, or support partner companies).
Latvia	A €12 million euro fund is available to match funding that higher education institutions have earned through partnerships with municipalities, international projects and private industry.
Norway	<p>The Research Council and Innovation Norway provide a wide range of funding for co-operation projects between the higher education sector and business. Often this funding is used to support research partnerships, but it can also support higher education and employer partnerships related to teaching and learning.</p> <p>The Ministry also provides direct funding. For instance, Norway Opening Universities is an initiative that seeks to stimulate the development of more programmes of study and new teaching methods in entrepreneurship and innovation. Emphasis is placed on providing good examples of how entrepreneurship can be integrated in different types of education; on enhancing the competencies of academic staff; on cross-disciplinary co-operation between an institution's faculties and departments; and on collaboration across educational institutions and with business.</p>

Funding through performance agreements

6.24 Performance agreements between governments and higher education institutions outline agreed expectations in a range of areas. Certain aspects of these agreements may refer to the relevance of skills to the needs of the labour market. They may set targets, and reward achievements and/or impose penalties if targets are not met. Very few jurisdictions that responded to the questionnaire, however, made specific mention of this kind of use of performance agreements.

Jurisdiction	Description
Austria	Austria recently launched its performance agreements for 2016-2018, drawing on the work of the HEInnovate tool. They put special emphasis on fostering cooperation amongst higher education institutions, enhancing the use of resources in research and teaching, and increasing the visibility of higher education for society (“the third mission”). Performance agreements with institutions included the development of entrepreneurship as one of their objectives, raising its importance for universities’ activities, integrating it more strongly into teaching, and increasing entrepreneurship competencies.
Canada	The use of outcome agreements between governments and institutions has become more common in recent years in Canada. Four provinces (British Columbia, Nova Scotia, Ontario and Québec) have outcome agreements in place that cover a range of issues. Each jurisdiction focuses on different objectives (such as differentiation within the PSE system, fiscal accountability, capacity, quality, accessibility, labour force relevance, innovation and R&D) according to the priorities of the government and the results of negotiation with the institutions. In jurisdictions where formal outcome agreements are not in place, institutions still report to governments on a number of measures. This includes financial reporting, as well as output metrics such as the status of newly created programmes, enrolment levels, the anticipated employment rates of targeted groups of students, etc.
Denmark	Denmark has had performance agreements (also known as development contracts) with its higher education institutions since 2011. The legal framework for these development contracts was recently amended to focus on a smaller range of targets that can be tailored more specifically to individual higher education institutions.
Estonia	Performance agreements between the university and the Minister responsible last for three years. The contract specifies the rights and obligations of the parties, liabilities, and procedures for the allocation of support.
Latvia	There are agreements concluded every year between Ministry of Education and Science of Latvia and higher education institutions conclude agreements every year on the number of state funded study places, number of graduates, and on other requirements such as academic integrity.
Luxembourg	The Ministry requires a key performance indicators report each year. The university needs to provide evidence that it has respected its commitments to the government.
Norway	The Ministry of Education introduced performance agreements between the Ministry and individual higher education institutions in 2016, and plans to expand these agreements in the future to all institutions.

Financial subsidies to students to encourage specific fields/ levels study or transversal skills

6.25 Policymakers can indirectly shape the skills developed in higher education indirectly by providing targeted supports to students that encourage them to develop specific kinds of skills.

Jurisdiction	Description
Austria	To promote cross-cultural competencies, foreign language skills and other transversal skills, mobility grants support students who complete a bachelor's or master's programme at a recognised university, University of Applied Sciences or university college of teacher education in an European Economic Area country outside Austria, or in Switzerland. Students in the final stage of their degree course may apply for an end-of-studies grant with a maximum of €1040 per month for a maximum period of eighteen months. This is awarded by the study grant authority.
Canada	<p>All provinces and territories, as well as the federal government, offer financial support to students through student financial assistance (SFA) programmes that typically include a mix of loans and grants. These programmes encourage and support participation in post-secondary education in general, and are not typically differentiated by field or level of study.</p> <p>However, the British Columbia Access Grant - Labour Market Priorities Program provides an example of funding to encourage eligible students to attend targeted high priority programmes at eligible British Columbia public post-secondary institutions. These include, for instance, power engineering, electrician, ironworker and other key trades' programmes.</p> <p>In addition, some programmes provide special support for students studying medicine and nursing. For example, the Canada Student Loan Program provides loan forgiveness for family doctors and nurses who work in under-served or rural communities. Saskatchewan has a similar program called The Saskatchewan Student Loan Forgiveness for Nurses and Nurse Practitioners Program, and the government of Alberta provides financial incentives to offset the tuition costs for health care professionals under its Health Workforce Action Plan.</p>
Estonia	<p>A specialisation stipend of €160 per month is given to students enrolled in bachelor's level programmes in computer engineering, materials science, physics, geology and environmental technology, gene technology, computer science, chemistry, mathematics, mathematical statistics, and information technology. The stipend is also provided for master's level programmes in computer engineering; robotics and computer engineering; materials science, biomedicine, physics, gene technology, computer science, chemistry, mathematics, mathematical statistics, and software engineering.</p> <p>An additional stipend is available to students enrolled in a bachelor's (€240 per month) or master's degree programme (€300 per month) in computer science.</p>
Japan	Japan supports the development of cross-cultural competencies through the facilitation of international exchanges via the study abroad support programme and the Tobitate (Leap for tomorrow) Study Abroad Initiative , which funds (in cooperation with industry) scholarships for Japanese students to study abroad.
Korea	<p>The Overseas Internship Program aims to develop students' labour market relevant knowledge/skills by supporting student internships abroad. The government selects students and provides them with round-trip tickets and monthly living expenses for up to six months.</p> <p>Brain Korea 21 (BK21) aims to expand HEI's research capacity by supporting graduate students and postdoctoral researchers.</p> <p>The Programme for Fostering Regional Innovative and Creative Human Capital is another form of support. It seeks to enhance graduate students' labour market relevant skills and encourage their collaboration with industries/businesses, especially at the local level.</p> <p>In addition, the Scholarship for Humanities 100 Years aims to support the best and brightest students studying humanities and the social sciences at the undergraduate level and the Presidential Scholarship for Sciences and Engineering aims to support the best and brightest students studying natural sciences/engineering at the undergraduate level</p> <p>Finally, the Scholarship for Hopeful Leaders aims to encourage students to work for middle-sized enterprises or start their own businesses.</p>
Latvia	It is possible to forgive the student loans of graduates who choose to work in education, health care at state and local government institutions, and non-governmental institutions that provide social services for state or municipal institutions.
Luxembourg	A mobility grant supports the development of transversal skills by facilitating the ability of students to study and live abroad.

Regulation policy levers to enhance labour market relevance and outcomes

Accreditation

6.26 Accreditation includes institutional and programme accreditation, external quality assurance, and regulations concerning the structure and content of the curriculum.

6.27 Policymakers may take steps to mandate the structure and content of higher education programmes so that graduates develop skills that are relevant for the labour market. For instance, jurisdictions report that new programmes have to be approved by the government, government-sponsored bodies or by professional associations, and that these actors take labour market relevance into account. And accreditation processes often mandate activities that support labour market relevance, e.g. a requirement that programmes include supervised work-based learning placements or internships.

Jurisdiction	Description
Belgium Flanders	<p>The key professional programmes have to adhere to regulations, including those of the European Union (e.g. the medical professions, teaching). A law requires internship in teacher training programmes.</p> <p>In order for a programme to be accredited, it has to be offered by an official institution of higher education which has received a positive recommendation from an external accreditation organisation.</p> <p>Institutions establish the specific learning objectives for each programme, which are then ratified by an independent accreditation service.</p>
Canada	<p>In Canada, mandated external quality assurance plays a key role in the accreditation process. For example, in the province of Saskatchewan, the Degree Authorization Act established the Saskatchewan Higher Education Quality Assurance Board, which is made up of higher education experts who oversee a quality assurance process.</p> <p>In Québec, the Commission d'évaluation de l'enseignement collégial ensures that the quality of teaching offered by colleges meets high standards.</p> <p>In the province of British Columbia, the Degree Program Review Criteria (which outline the requirements for submitting a proposal for a new degree programme), as well as the assessment criteria for giving or refusing consent or approval of a new programme, have been developed with advice from many stakeholders and quality assessment experts.</p>
Czech Republic	<p>All programmes that are deemed professionally-oriented must provide a 12-week placement at the bachelor's level, and a six-week placement at the master's level.</p> <p>Higher education institutions that develop programmes in a regulated profession must submit their programme to a regulatory body for approval (e.g. to the Ministry of Health for medical professions, the Czech Bar Association for lawyers) so as to ensure that it properly prepares students for the profession.</p> <p>The national accreditation process that reviews programmes must include representatives from employers. Accreditation processes examine whether higher education institutions have sufficient educational infrastructure and personnel for a given programme of study (since 1998) or field of study (since 2016).</p>
Denmark	<p>In Denmark, each new programme must be individually reviewed and accredited. Institutional accreditation was introduced in 2013. A third of institutions have been accredited since 2013.</p>

Jurisdiction	Description
Estonia	<p>The <i>Universities Act</i> and the <i>Institutions of Professional Higher Education Act</i> define academic levels, but touch only briefly upon the content of the curriculum.</p> <p>The <i>Standard of Higher Education (KHS)</i> establishes uniform requirements for higher education studies. The KHS sets requirements for curricula, studies, and for theses and final examinations. It also outlines the goals and objectives of higher education studies, and defines the learning outcomes that are to be achieved. According to the KHS, study programmes must be in line with an educational institution's areas of activity: they must help fulfil the institution's mission, and must take into consideration the needs of the labour market and of target groups.</p> <p>Universities must be accredited at least once every seven years by the Estonian Higher Education Quality Agency (EKKA), or an approved foreign quality assurance agency.</p> <p>Higher education institutions must apply for the right to launch a new programme. They must show in their application that they have the facilities, amenities and teaching staff required to deliver the programme.</p>
Japan	<p>In Japan, universities have a high degree of autonomy. They have a high degree of latitude to make decisions on the content of education in accordance with the Standards for Establishment of Universities and other related ordinances. However, some disciplines that require a high degree of expertise (e.g. physician programmes) sometimes have a national core curriculum.</p>
Latvia	<p>Legislation governs the structure of curriculum.</p> <p>The Cabinet of Ministers reviews and makes decisions on the licensing of study programmes.</p>
Luxembourg	<p>External evaluation of the public university is undertaken by an independent external agency. This process also includes a qualitative evaluation by a panel of international experts every four years.</p> <p>Certain programmes are required to have an international exchange component.</p>
Norway	<p>The Norwegian Agency for Quality Assurance in Education (NOKUT) is an independent government body that was established by law with the aim of monitoring and developing the quality of higher education in Norway through evaluation, accreditation and the recognition of quality assurance systems, institutions and study programmes. External quality assurance system covers all of the higher education system and operates at the national level.</p> <p>NOKUT has, among its other tasks, a responsibility to accredit study programmes. However, institutional accreditation allows an institution to provide programmes at certain levels (depending on the institutional category) without applying for accreditation from NOKUT:</p> <p>University colleges may establish new programmes at the bachelor's level without applying to have them externally accredited. State-owned colleges that have the right to award the Ph.D. may establish master's programmes within the subject area of their Ph.D. degrees.</p> <p>Private higher education institutions that are accredited in one of three relevant categories have the same freedom to establish programmes as state-owned institutions that belong to that same category. However, private higher education institutions that do not have institutional accreditation must apply to NOKUT for accreditation of all new programmes.</p> <p>To ensure relevant skills, supervised professional training (via work placements) is obligatory for most programmes in health education and teacher education.</p>
Poland	<p>Programme assessment is carried out by the Polish Accreditation Committee, which defines the criteria of effectiveness for internal quality assurance systems. The committee examines the quality of education, the outcomes of graduates, and the programme's relevance to labour market needs.</p> <p>Minimum staff requirements and infrastructure conditions are defined in the ministerial regulation on the conditions for providing degree programmes.</p>

Jurisdiction	Description
Slovak Republic	Legislation sets out the minimum mandatory practical training required for selected regulated professions (e.g. architecture and construction engineering, the healthcare professions). Professionally-oriented bachelor's programmes must demonstrate their relevance for the labour market before obtaining accreditation. This does not apply to more theory-based degree programmes.

Internal quality assurance

6.28 Internal quality assurance helps control the quality of knowledge and skills that a higher education institution or a programme produces. This can serve labour market ends: poor quality skills are of lesser relevance to the labour market. Requirements related to internal quality assurance are often part of external accreditation/approval mechanisms, which makes them an indirect public policy lever.

Jurisdiction	Description
Austria	Pursuant to the Universities of Applied Sciences (Fachhochschule) Study Act, higher education institutions have to establish a quality management system for the purposes of service and quality assurance. For instance, courses must be evaluated by students, and the results of that evaluation must be used for quality assurance. The internal quality management system of accredited providers of universities of applied sciences is subject to periodic audits by government according to the Act on Quality Assurance in Higher Education.
Belgium Flanders	Belgium Flanders is partway through a process which is moving it away from a system where each programme has to be accredited by an external accreditation institution towards a system of institutional-level reviews undertaken by an external organisation. In the new review process, higher education stakeholders must be involved in internal quality assurance.
Canada	The Ministerial Statement on Quality Assurance of Degree Education in Canada (2007), adopted by the Council of Ministers of Education, Canada, outlines procedures and standards for the authorisation of new degree programmes and new degree-granting institutions. Each jurisdiction has its own quality assurance processes.
Czech Republic	Standards for accreditation require that the approval and evaluation of study programmes be undertaken in consultation with relevant employers' associations, labour unions, professional associations, etc. Higher education institutions must also monitor the employability of their graduates.
Estonia	According to the regulations in the Standard of Higher Education, an institution's study programmes and new study programmes must meet its internal quality standards, and be consistent with national and international quality requirements and agreements.
Japan	Regulations concerning internal quality assurance processes for all levels of education are set out in the Schools Education Act and the Ordinance for Enforcement of School Education Act.
Korea	According to the "Regulation Regarding Self-Evaluation of Higher Education Institutions", based on Article 11 of the Higher Education Act, all higher education institutions (universities, industrial universities, teachers' colleges, distance education colleges, vocational colleges, technical colleges, other types of colleges) are required to regularly self-assess their teaching, research, organisation and management, facilities and equipment, and make an official report of the results (via the University Information Disclosure System).
Norway	The primary responsibility for quality assurance rests with higher education institutions themselves. But internal quality assurance at institutions must adhere to nationally set standards, and it is externally evaluated by the Norwegian Agency for Quality Assurance in Education (NOKUT). All higher education institutions are required by law to have a quality assurance system that has been approved by NOKUT.

Jurisdiction	Description
Poland	The regulations of 22 September 2016 concerning the programme assessments carried out by the Polish Accreditation Committee require institutions to actively work to improve the quality of education. Criteria include for instance the involvement of employers in curricular design and teaching, and active use of the results derived from monitoring the careers of graduates and from labour market analyses.

Qualification frameworks

6.29 Qualification frameworks help to codify the skills developed in higher education. Qualifications frameworks exist in the majority of jurisdictions surveyed, but vary in their scope.

Jurisdiction	Description
Canada	<p>The Council of Ministers of Education, Canada defines the contents for bachelor's, master's and doctoral programmes in the Pan-Canadian Degree Qualifications Framework, which was adopted in 2007. The framework is not a prescriptive, but rather is intended to guide expectations of the new programmes (in particular) which are authorised by provincial/territorial governments.</p> <p>In addition to the Pan-Canadian Degree Qualifications Framework, the provinces of British Columbia and Ontario have their own individual frameworks. The Ontario Qualifications Framework, first published in 2007, describes the main purposes and features of post-secondary credentials and apprenticeship certificates offered in the province. In British Columbia, the Degree Program Review Criteria (which outline the requirements for submitting a proposal for a new degree program, and the assessment criteria for giving or refusing consent or approval) have been prepared with advice from many stakeholders and quality assessment experts.</p>
Czech Republic	A national qualifications framework has been prepared but has not yet been formally approved.
Denmark	The first Danish qualifications framework for higher education was initiated in 2001 and implemented in 2003. The framework was revised in 2008.
Estonia	<p>Regulations in the <i>Standard of Higher Education (KHS)</i> define the qualifications framework as a tool for categorising vocational and educational levels on the basis of criteria regarding the knowledge and skills to be acquired, and the extent of institutional independence and responsibility. An internationally comparable qualifications framework that connects the professions system and the educational system was approved in Annex 1 to the Professions Act. The framework is divided into eight levels. Annex 1 of the KHS defines the learning outcomes of the cycles of higher education and specifies their connections to the qualifications framework.</p> <p>The levels of the Estonian qualifications framework are in accordance with European Union qualifications framework.</p>
Poland	<p>The Amendment of the Law on Higher Education introduced the National Qualifications Framework for Higher Education (with the legislation coming into force in October 2012). Curricula are defined by learning outcomes which include knowledge, skills and social competencies such as team work, creativity, and entrepreneurship. Higher education institutions now have more programme autonomy, since they are entitled to create their own study programmes based on learning outcomes identified in the National Qualifications Framework.</p> <p>The Amendment of the Law on Higher Education introduced an academic profile of studies that places greater emphasis on theoretical modules, and a practice-oriented profile that puts more emphasis on practical modules and on substantial employer participation. On the basis of Law on Higher Education, higher education institutions submit data about their faculties, fields of study, profiles of study and other relevant information to government. The data are used in the national process to monitor graduates' career paths.</p>

Mandated numbers of students

6.30 Mandated numbers include ceilings or floors on the size of individual programmes, or mandates regarding the number of students in specific fields of study and/or at specific levels of study.

6.31 Caps on the number places offered in certain higher education programmes or fields are used to link the number of graduates produced to labour market needs. Caps can be used to control the costs of higher education. Floors on enrolments ensure that a minimum number of graduates are produced.

Jurisdiction	Description
Austria	The <i>Hochschulraum-Strukturmittelverordnung</i> regulates the allocation of the university programme spaces at individual universities.
Denmark	Denmark has caps on student intake in programmes whose graduates have historically experienced unemployment rates that are systematically and significantly higher than those of graduates in general. This is a new approach, and it will be evaluated in 2017.
Estonia	Performance agreements with universities can include ceilings or floors on the size of individual programmes. Different caps and ceilings have been agreed to by different institutions.
Norway	Mandated floors encourage more graduates in areas deemed to meet special societal needs, such as health and teacher education.
Poland	Increases in enrolment that are greater than two percent of previous year levels must be approved at ministerial level. There are some mitigating factors involved in the decision, including the labour market demand for graduates in particular fields of study. In that latter case, a waiver of enrolment control levels can also act as a regulatory lever.

Mandated provision of information

6.32 In order to inform skills planning and policy, governments may mandate that higher education institutions collect and submit data to them. They may also require that institutions provide information to the public (e.g. on graduate outcomes).

Jurisdiction	Description
Belgium Flanders	In the new accreditation system being introduced, higher education institutions are required to provide public information about the quality of their programmes.
Canada	Legislation varies from province to province, but post-secondary institutions are required to provide reports as requested by their provincial Minister of Education. For example, in the province of British Columbia, each public post-secondary institution is required to submit a plan, and to report on its activities. This submission includes commentary on labour market support/outcomes as well as reports on 15 performance measures (two of which are specifically related to the labour market outcomes).
Latvia	The Cabinet of Ministers establishes procedures for higher education institutions outlining how to submit information on their activities to the Ministry of Education and Science. Higher education institutions provide information to the government about the number of students admitted, and the number of graduates. Higher education institutions are also obliged to supply information to the ministry on the labour market outcomes of their graduates for three years after their graduation. This information is reported by each institution, and is broken down by programme of study.
Luxembourg	In accordance with European Union regulations, institutions are required to report data on students, graduates, personnel and finances, and transmit these data to the European Union.
Poland	On the basis of <i>Law on Higher Education</i> , higher education students submit data about their faculties, fields of study, profiles of study and other relevant information to government. The data are used in the process of national monitoring of graduates' career paths.
Slovak Republic	Information is provided to government indirectly through higher education institutions' mandated annual reports.

Mandated cooperation between social partners and higher education institutions

6.33 Policymakers can mandate partnerships between higher education institutions and social partners to ensure that key information is available to support curricular design and development. Questionnaire results suggest that collaboration is most often mandated for professional programmes and for higher level governance bodies.

Jurisdiction	Description
Canada	Mandated forms of cooperation are relatively common in Canada. For example, Québec institutions work with employers and unions (through the Comité national des programmes d'études professionnelles et techniques) to develop and adapt technical programmes to labour market needs.
Denmark	Universities are required to set up employer panels that contribute to development of programmes and study plans. Other higher education institutions are required to set up education committees whose members include individuals from outside the institution and have knowledge of the labour market. The role of these committees is to ensure that programmes are relevant to the needs of the labour market.
Latvia	The <i>Law on Higher Education Institutions</i> stipulates that higher education institutions must consult employers.
Norway	The Council for Collaboration between higher education institutions and Business Life (RSA) was created to enable a more structured and binding collaboration between higher education and businesses. This organisation promotes strategies for collaboration, including through information sharing. All state-owned higher education institutions are required to have established RSAs.
Poland	Vocational higher education institutions must involve employers in designing curricula and teaching processes. Industry/employers' representatives sit on the collegial advisory bodies of higher education institutions.

Information and persuasion policy levers***Information on graduate outcomes aimed at higher education institutions***

6.34 Some jurisdictions report that governments directly provide information to higher education institutions on the labour market outcomes of graduates. This information seeks to inform and influence their programme offerings.

Jurisdiction	Description
Austria	Higher education institutions have access to the Public Employment Service research network . This is a comprehensive information system and service platform whose goals are to undertake activities and present and utilise results in the fields of labour market, vocational, educational and qualification research.
Belgium Flanders	Each year the public employment service of Flanders creates a report on the employment rate of graduates one year after graduation. The lowest level of the analyses is the programme level (i.e. data are not further broken down by institution).
Canada	Post-secondary institutions have access to provincial graduate surveys on a regular or periodic basis. The National Graduate Survey (NGS) administered by Statistics Canada also collects key information. Graduate surveys can shape public perception of the outcomes of recent graduates, and cause institutions to adopt practices to address perceived challenges. The Canadian University Survey Consortium (CUSC) also administers surveys to recent graduates, as well as first-year students and to all cohorts of students. Surveys take place on a rolling three year cycle.

Jurisdiction	Description
Czech Republic	Labour market data are provided to higher education institutions and are used in the funding formula. Data are also made available to the public on the Ministry website or the websites of other public bodies. Some of this data is included in the annual reports that higher education institutions produce.
Denmark	Some institutions use labour market data provided by government to create key performance indicators (KPI) that inform their management and boards student performance. The KPIs are for internal benchmarking purposes only.
Estonia	Data from Estonian Education Information System is analysed together with data from Tax and Customs Board of Republic of Estonia, and Social Insurance Board, and is provided to higher education institutions. Data from Estonian high school graduate surveys are also made available.
Norway	The Nordic Institute for Studies in Innovation, Research and Education carries out a graduate survey . The survey has typically focused on areas like employment, unemployment, place of work, occupation, salary etc. In the recent years, the survey has also focused on how graduates perceive certain aspects of their education such as its quality and relevance.
Poland	A national system of tracking graduates' employment outcomes is based on data contained in the ministerial students' database, combined with data collected by the Social Insurance Institution. According to the <i>Law on Higher Education</i> this system will present the outcomes of graduates one, three and five years after graduation. The national system was launched in May 2016 and so far only contains data and reports on students who graduated in 2014. Each year data on a subsequent cohort will be added.

Career guidance and information on graduate labour market outcomes for students

6.35 Several jurisdictions report the use of online tools to provide students with career guidance, and to give them information on the labour market outcomes of graduates. Labour market information seeks to inform students' choices, and to highlight fields and levels of study that are particularly relevant.

Jurisdiction	Description
Austria	Since 2003, the "Jobchancen Studium" information series has been updated every two years. This information is transformed into accessible brochures and is also available online . It provides students and prospective students with information about professional opportunities for graduates of all fields of study in Austria. More specifically, this includes the information about the requirements of different areas of work, and about the employment conditions in different fields and industries. Some brochures also contain information on career counselling, career planning, and further education.
Belgium Flanders	A website hosted by the centre for student counselling (and aimed at the high school students, rather than higher education students) provides information about the performance of high school students who entered specific programmes in higher education. There is also a link to information about the unemployment rate of each higher education programme.
Canada	At a national level, Job Bank offers job market reports which provide labour market information (LMI), including information on jobs, wages, outlooks, and skills and the education requirements for over 500 different occupations in Canada. This LMI is sorted using the National Occupational Classification (NOC) system, and is disaggregated at the local and regional levels. Job Bank also offers the Job Market Trends service, which gathers labour market reports, data, and news items – and groups these by industry and location. Different Canadian provinces also provide learning and about labour market information, e.g. Alberta's Alberta Learning Information Service , and British Columbia's EducationPlannerBC.ca website.
Czech Republic	The Czech Republic uses "educational consultants", who are present in every secondary school (except small ones), to provide students with various supports including career guidance.

Jurisdiction	Description
Denmark	Uddannelseszoom.dk, a digital tool, allows users to compare three educational programmes at one time, using parameters that they themselves select, e.g. salary after graduation, unemployment rates, or attainment.
Estonia	The National Resource Centre for Guidance/Euroguidance Estonia has begun implementing a project called “The Development of the Guidance System in Estonia”. This is financed through European Union Structural Funds. It includes Rajaleidja (Pathfinder) Centres and a website that disseminates career information and supports career planning
Korea	Labour market information on the outcomes of recent graduates is available to students online
Latvia	Each higher education institution provides information to the prospective students on the labour market outcomes of its graduates. The Ministry of Education and Science is developing an information system that will allow for the tracking of the learning and labour market outcomes of each student.
Luxembourg	The Centre de Documentation et d'Information sur l'Enseignement Supérieur (a service of the Department of Higher Education in the Ministry of Higher Education and Research) offers guidance to high school students, current higher education students, and adults who wish to return to higher education.
Poland	The Ministry of Science and Higher Education introduced centralised monitoring of graduates' employment outcomes in May 2016. The portal Wybierz studia! provides career guidance information to students.
Slovak Republic	In Slovakia a portal provides information about the labour market outcomes of graduates, job match, skills acquired during studies, and graduates' satisfaction with their studies (broken down by higher education institution, faculty, and field of study). The information is based on the Graduates' Survey (2014) and on administrative data.

Publicity campaigns for certain fields of study

6.36 Publicity campaigns are a form of persuasion that can steer students towards the development of labour market relevant skills. Most of the publicity campaigns identified in the questionnaire responses aim to raise awareness of, and to encourage enrolment in, STEM fields of study.

Jurisdiction	Description
Austria	Austria has developed a self-assessment tool to help individuals analyse their personal and professional suitability for different types of programmes. The self-assessment information is not shared or graded, but is simply used to inform student choices.
Belgium Flanders	Belgium Flanders has specific campaigns aimed at increasing the participation of students (both at primary/secondary and tertiary level) in STEM-programmes.
Canada	In Canada, many provinces and territories (as well as the third sector) promote post-secondary education. One example of these campaigns is the province of Québec's “Tout pour réussir” initiative, which aims to increase enrolment in 50 vocational or technical training programmes that are projected to be most in-demand.
Czech Republic	The Czech Republic has a campaign to support enrolment in technology and natural sciences programmes.
Denmark	The Ministry of Higher Education and Science launched a media campaign just ahead of the deadline for higher education applications. It sought to encourage students to take labour market outcomes into consideration when making their choices.
Latvia	Representatives of the Ministry of Education and Science stress that a shortage of STEM specialists is projected for the medium-term when making public speeches, presentations and comments to the media. Higher education institutions themselves actively advertise their study programmes, e.g. providing information on the employability of their graduates.

Jurisdiction	Description
Norway	Various recruitment campaigns have targeted enrolment in teacher education, mathematics and science.
Poland	In 2008, Poland launched a national campaign – Girls to Polytechnics – aimed at increasing the participation of female students in STEM fields.

ANNEX A. POLICY LEVERS TO ENHANCE THE LABOUR MARKET RELEVANCE AND GRADUATE OUTCOMES OF HIGHER EDUCATION SYSTEMS

This annex provides additional details about each of the policy levers that are examined in Chapters 4 and 5. Tables identify the goals of the lever and the issue it is addressing; how it works; factors that may enable its operation; and obstacles that may hinder it from operating.

Funding Levers

Funding policy lever: Performance agreements

Description	<p>Policymakers agree with each higher education institution (HEI) a set of deliverables (including outputs and outcomes) linked to labour market relevance.</p> <p>Performance agreements will generally seek to balance the activities and outputs of HEIs across the system.</p>
Goal(s)	<p>Increase the number of graduates in targeted fields or levels of study.</p> <p>Encourage HEIs to put more focus on labour market relevance and outcomes.</p> <p>Enhance the knowledge and skills that the entire higher education system produces.</p>
Issue/problem being addressed	<p>HEIs lack the incentive, the inclination or the capacity to re-shape their programmes to better meet labour market needs.</p>
How it works	<p>Performance agreements are contracts between policymakers and an HEI outlining what that HEI will accomplish over a course of several years. Such agreements usually contain agreed quantitative and qualitative targets (outputs and outcomes). HEIs decide how to allocate their resources to achieve the agreed performance targets.</p> <p>Funding arrangements are often included in the performance agreement, along with mechanisms to recover funding if performance targets are not met.</p> <p>Individual performance agreements are often embedded within a broader system-wide strategy for higher education.</p>
Enabling conditions	<p>Policymakers need a coherent overall strategy for higher education: the performance agreement with each HEI should fit within the strategy.</p> <p>Performance agreements need to take account of the context of individual HEIs (e.g. the characteristics of its student body) and other factors (e.g. macro-economic conditions, students' socio-economic background) that might affect performance.</p> <p>Measures of performance need to be valid, clear and reliable.</p> <p>The funding attached to the agreements needs to reasonably reflect the costs that HEIs will incur in achieving their agreed performance.</p> <p>There needs to be sufficient flexibility within the HEI to make the changes necessary to improve performance.</p>
Constraints and obstacles	<p>There is an asymmetry of information between individual HEIs and policymakers which can make it harder to reach optimal performance agreements and could result in significant transaction costs.</p> <p>If failure to achieve agreed performance targets has no consequences, then HEIs may be less likely to perform well.</p> <p>Focus on meeting agreed performance targets may result in unintended effects on other outcomes that have not been specified in the performance agreement.</p>

Funding policy lever: Performance-based funding

Description	<p>Policymakers tie some or all of the funding that higher education institutions (HEIs) receive to their performance on a set of agreed indicators linked to labour market relevance and outcomes.</p>
Goal(s)	<p>Increase the number of graduates in targeted fields or levels of study.</p> <p>Encourage HEIs to put more focus on labour market relevance and outcomes.</p> <p>Enhance the knowledge and skills that the entire higher education system produces.</p>
Issue/problem being addressed	<p>HEIs lack the incentive, the inclination or the capacity to re-shape their programmes to better meet labour market demand.</p>
How it works	<p>Policymakers set performance targets for HEIs to meet. In addition to labour market outcomes such as employment, earnings and job quality, policymakers may choose indicators that are related to good learning outcomes.</p> <p>HEIs may receive additional funding if they meet the targets or be denied funding if they fail to meet their performance targets.</p> <p>Typically, HEIs need to reach a certain threshold value to get the portion of the performance-based funding that is related to a given indicator.</p>
Enabling conditions	<p>Performance targets need to take account of the context of individual HEIs (e.g. the characteristics of its student body) and other factors (e.g. macro-economic conditions, students' socio-economic background) that might affect performance.</p> <p>Measures of performance need to be valid, clear and reliable.</p> <p>There needs to be sufficient flexibility within the HEI to make the changes necessary to improve performance.</p>
Constraints and obstacles	<p>The funding incentive or disincentive linked to any given indicator needs to be large enough to motivate action. But it cannot be so large that the HEI will be destabilised if it is not received.</p> <p>It can be difficult to take into account the context of individual HEIs while also applying a consistent set of performance targets across all HEIs.</p> <p>Focus on meeting specific targets may have unanticipated and unwanted effects on other outcomes that have not been specified in the performance targets.</p>

Funding policy lever: Formula-based funding to institutions

Description	<p>Policymakers adjust formula-based grants to give higher education institutions (HEIs) an incentive to provide certain kinds of programmes.</p>
Goal(s)	<p>Increase enrolments in targeted fields and/or at targeted levels of study</p>
Issue/problem being addressed	<p>The way funding is calculated in formula-based operating grants sometimes provides HEIs with:</p> <ul style="list-style-type: none"> incentives to offer places in fields/levels that do not lead to good labour market outcomes disincentives to offer places in fields/levels that do in fact lead to good outcomes.
How it works	<p>Policymakers modify the funding formula and adjust per-student funding for targeted fields/levels of study (more for some fields/levels of study and possibly less for others). The adjustment changes the financial incentive structure that HEIs face by:</p> <ul style="list-style-type: none"> • providing a stronger incentive to provide more places in targeted fields/levels of study; and/or • creating an incentive to reduce places in fields that are of lower priority <p>This approach also provides an incentive for HEIs to ensure that students succeed, as the increased funding will typically be linked to enrolments that persist over time.</p>
Enabling conditions	<p>This approach presupposes that:</p> <ul style="list-style-type: none"> • Governments are able to develop a reasonable estimate of actual cost structures underlying program delivery at HEIs • HEIs understand their own cost structures well • HEIs have the flexibility and capacity to expand their physical facilities and teaching staff in selected areas and an ability to scale down offerings in other field of study.
Constraints and obstacles	<p>HEIs may lack the capacity to make use of new financial resources (e.g. teaching staff; physical infrastructure).</p> <p>Miscalculations in grant amounts could lead to perverse incentives for HEIs and inadvertently drive an expansion of places in fields of lower priority.</p> <p>Various factors influence student enrolments and they may not respond to increased places in certain fields of study.</p>

Funding policy lever: Student vouchers

Description	<p>Policymakers provide funding to higher education institutions (HEIs) indirectly by providing students with “vouchers” to pay for the studies they choose. Income contingent loans for student fees can act as one form of voucher.</p>
Goal(s)	<p>Enable student choices to drive the number of places offered in each programme at each institution (and programme content) so as to enhance labour market outcomes and better respond to labour market demand.</p>
Issue/problem being addressed	<p>HEIs do not put enough emphasis on labour market outcomes when deciding:</p> <ul style="list-style-type: none"> • how many places to offer in different programmes • what students should learn during their study.
How it works	<p>Government funds higher education places through students in the form of a notional “voucher” which students use to pay some or all the costs of the HEI programme of their choice. Income-contingent loans to cover tuition fees can operate as a particular form of voucher. Funding to the HEI is not provided unless students enrol in a programme.</p> <p>The student voucher may cover all or part of the government funding for a place in higher education, either as a fixed proportion of tuition costs or by covering a variable amount depending on the graduate’s future earnings, as is the case with income-contingent loans.</p> <p>The capacity to compete to attract students provides HEIs with incentives to shape programmes in ways that could lead to better labour market outcomes.</p>
Enabling conditions	<p>The approach depends on the availability of good information on the outcomes of past graduates by institution and field of study.</p> <p>It assumes that:</p> <ul style="list-style-type: none"> • Students will choose study programmes (at different institutions) that will lead to good labour market outcomes • HEIs are responsive to student demand.
Constraints and obstacles	<p>Students may not choose programmes only or predominantly on the basis of labour market outcomes.</p> <p>HEIs may compete for students on criteria other than labour market outcomes (e.g. sporting facilities, accommodation etc.)</p> <p>If there are no limits on places or performance requirements, HEIs face incentives to compete for students even for programmes with poor labour market outcomes, taking advantage of the government as a third-party payer.</p> <p>In the short- and medium-term, HEIs may have difficulties in responding to changing student demand given their existing infrastructure and staffing, or they may choose not to risk diluting their student quality or programme prestige by expanding places.</p> <p>Less popular, but nationally important programmes may no longer be sustainable.</p> <p>Governments may be unwilling to let poor-performing HEIs who are unable to attract students to shut down.</p>

Funding policy lever: Targeted funding for specific fields or levels of study

Description	<p> Policymakers target funding to support specific fields or levels of study.</p>
Goal(s)	<p> Increase enrolments in targeted fields and/or at targeted levels of study.</p>
Issue/problem being addressed	<p> Higher education institutions (HEIs) are unable or unwilling to increase enrolments in targeted fields because of limited financial resources.</p>
How it works	<p> Policymakers provide new funding, or reallocate existing funding, for a specific operating purpose (e.g. to support the hiring of more staff) that allows HEIs to expand the number of students taught.</p> <p> This approach is not based on funding per student but it may be linked to targeted levels of enrolment or service delivery.</p> <p> The additional funding may be ongoing or for a limited time period.</p>
Enabling conditions	<p> This approach presupposes that HEIs have the flexibility and capacity to expand in selected areas (e.g. they have the requisite physical facilities, and access to teaching staff).</p> <p> HEIs understand their own cost structures and how these interact with the targeted funding. This is particularly important when the new funding is not recurring.</p> <p> Policymakers understand how HEIs are likely to respond to different levels and kinds of incentives.</p>
Constraints and obstacles	<p> HEIs may lack the capacity to make use of new resources (e.g. teaching staff; physical infrastructure).</p> <p> Various factors influence student enrolments and they may not respond to increased places in certain fields of study.</p> <p> Non-ongoing funding can reduce HEIs willingness to respond or the sustainability of their response.</p>

Funding policy lever: Targeted tuition fee levels

Description	Policymakers adjust tuition fees to make targeted programmes more attractive to students.
Goal(s)	Steer students towards fields/levels of study with better labour market outcomes.
Issue/problem being addressed	Students do not choose fields of study or levels of study in sufficient numbers to meet labour market demand.
How it works	<p>Policymakers and higher education institutions (HEIs) set lower tuition fee levels for specific programmes or levels of study that meet labour market needs.</p> <p>The lower cost provides a direct financial incentive to students to enrol in these fields.</p> <p>It also signals to prospective students, their teachers and those providing career guidance that these fields are considered important (e.g. potentially stimulating aspirations among secondary school youth to prepare for these fields).</p>
Enabling conditions	<p>This approach assumes that:</p> <p>Tuition fees apply at levels that could be expected to influence study choices</p> <p>HEIs have the flexibility and capacity to respond to increased student demand</p> <p>Students have information on the benefits of gaining qualifications in certain fields of study</p> <p>Jobs will be available to absorb a larger number of graduates.</p>
Constraints and obstacles	<p>Lower tuition fees may encourage students to enrol in a programme for which they are not well prepared, or for which they have little aptitude or interest, and steer them away from a programme where they might have achieved better results.</p> <p>Student sensitivity to tuition price changes is hard to model and it varies due to factors such as time, geography and socio-economic status. Because of this uncertainty, public funding spent to keep tuition low in certain programmes might have only modest effects.</p> <p>Reduced tuition revenue, if not made up for in other ways (e.g. increased public grants, cross-subsidies from other programmes), could place a strain on programme quality.</p>

Funding policy lever: Targeted loan and grant arrangements

Description	Policymakers offer students grants or special loan conditions that make certain fields/levels of study more attractive.
Goal(s)	Steer students towards fields/levels of study with better labour market outcomes.
Issue/problem being addressed	Students do not choose fields of study or levels of study in sufficient numbers to meet labour market demand
How it works	<p>Government offers grants or special loan conditions to those students who enrol in targeted fields/levels of study, thereby reducing the cost to the student. These may be subject to conditions such as a requirement to work in a particular occupation for a minimum period after graduation.</p> <p>The lower costs provide financial incentives to students and give a signal that certain fields are valued.</p> <p>Grants may have a particularly strong signalling effect, explicitly telling students that some choices may be more desirable than others.</p>
Enabling conditions	<p>This approach assumes that HEIs have the flexibility and capacity to respond to increased student demand.</p> <p>Students need to have information on the benefits of gaining qualifications in certain fields of study.</p>
Constraints and obstacles	<p>A promised student loan remission, or favourable loan conditions, might have less effect on student choice than a grant: students may heavily discount the value of a future benefit.</p> <p>A student loan or grant may give students an incentive to enrol in a programme for which they are not well prepared, or for which they have little aptitude or interest, and steer them away from a programme where they might have done better.</p>

Funding policy lever: Targeted infrastructure funding

Description	Policymakers target infrastructure funding to specific fields or levels of study, or specific labour market-relevant practices.
Goal(s)	<p>Increase enrolments in targeted fields and/or at targeted levels of study.</p> <p>Increase provision of other services that can help students gain labour market relevant skills (e.g. career advising or extra-curricular activities).</p>
Issue/problem being addressed	Higher education institutions (HEIs) are unable or unwilling to increase enrolments in targeted fields (or to increase other services provided) because of limited physical infrastructure.
How it works	<p>Policymakers provide one-time capital grants to support the construction or renovation of facilities, or the purchase of durable goods, that meet the needs of one or more targeted fields/levels of study or other programmes.</p> <p>HEIs use this funding to build the facilities and buy the equipment that will support the expansion of the targeted programmes.</p>
Enabling conditions	<p>This approach assumes that:</p> <p>HEIs have a good assessment of their capital needs</p> <p>HEIs have the operating funding needed to meet the cost of the additional enrolments that the capital funding enables (e.g. additional teaching staff)</p> <p>Policymakers understand how HEIs are likely to respond to different levels and kinds of incentive.</p>
Constraints and obstacles	<p>Facilities targeted to certain fields can be highly field-specific, committing HEIs to certain programmes for a substantial period even if labour market needs change.</p> <p>Various factors influence student enrolments, and they may not respond to increased places in certain fields of study.</p>

Funding policy level: Targeted funding for teaching and learning

Description	<p>Policymakers provide targeted funding to support research into effective practices that support good teaching and learning, and/or the implementation of these practices.</p>
Goal(s)	<p>Ensure that students develop high quality, labour market relevant skills.</p>
Issue/problem being addressed	<p>Higher education institutions (HEIs) and academic staff lack knowledge of effective teaching and learning practices.</p> <p>HEIs lack resources to implement effective teaching and learning practices.</p> <p>Academic staff are resistant to changing how they undertake teaching and support learning.</p>
How it works	<p>Policymakers provide grants for research into effective teaching and learning practices, and/or grants that help HEIs defray some of the initial costs of implementing effective practices. These two activities may also be joined together: implementation of new practices can be undertaken in experimental ways to prove these approaches.</p> <p>Policymakers also ensure dissemination of research findings as well as communication of the results of new approaches at individual HEIs. This information is directed at academic staff, encouraging them to review how they support student learning and adopt effective practices.</p>
Enabling conditions	<p>Receptivity on the part of some academic staff to new approaches to teaching and learning.</p> <p>An effective knowledge dissemination strategy.</p>
Constraints and obstacles	<p>Without ongoing funding and institutional support, innovative approaches may not be sustainable.</p> <p>Resistance amongst some academic staff to investing the time and effort required to modify their approach to teaching and learning.</p>

Funding policy level: Targeted funding for higher education-social partner linkages

Description	<p>Policymakers provide funding to support the interactions of employers and trade unions with higher education institutions (HEIs).</p>
Goal(s)	<p>Support the development of labour market relevant skills through the involvement of employers and trade unions in creating and revising the curriculum, and by other interactions.</p>
Issue/problem being addressed	<p>Social partners fail to engage with HEIs (e.g. through advisory committees and classroom visits) because they lack the resources this engagement requires (e.g. staff time, information gathering), or because of costs that engagement generates.</p> <p>Employers may not be familiar with the opportunities open to them to contribute to HEI programmes.</p>
How it works	<p>Policymakers provide social partners with a subsidy to cover part of their costs of engagement with HEIs. This can be delivered as a grant, or via the tax system.</p> <p>It changes how social partners weigh the costs and benefits of engagement, making them more willing to support teaching and learning at HEIs. Smaller employers who have fewer resources may be especially interested.</p> <p>The subsidy also has a signalling effect, alerting employers to the potential to collaborate with HEIs.</p>
Enabling conditions	<p>This lever presupposes that social partners have existing capacity that can be leveraged and further developed with the support of public funding.</p> <p>It requires a culture at HEIs that is willing and able to work with social partners in curriculum design and other activities.</p>
Constraints and obstacles	<p>It is difficult to model with any precision how incentives will affect the behaviour of diverse groups of employers. There is a risk of wasted resources. This may call for experimentation via a pilot programme.</p>

Funding policy lever:

Funding to encourage employer participation in work-based learning

Description

Policymakers provide funding to encourage employers to offer students work-based learning experiences.

Goal(s)

Help students develop labour market relevant skills through work-based learning.

Issue/problem being addressed

Employers provide too few work-based learning experiences. Reasons for this include:
 They lack the resources required to offer work-based learning experiences (e.g. supervisors who can devote their attention to students).
 They find work-based learning too expensive to offer. This is particularly the case if the employer will not later reap the benefits of their investment by employing the graduate whom they have helped train. Some employers may prefer to “free-ride” on the training efforts of other employers.
 Employers may not be very familiar with work-based learning, nor understand why and how they might participate.

How it works

Policymakers provide employers with a subsidy to cover part of their costs of providing work-based learning. This can be delivered as a grant, or via the tax system. The subsidy changes how employers weigh the costs and benefits of work-based learning, making them willing to provide more opportunities to students.
 Smaller employers may be especially interested. This is because they may have less resources (e.g. supervisory staff time) and may be less able to hire students once they graduate.
 The subsidy also has a signalling effect, bringing the potential of work-based learning to the attention of employers who were unaware of it.

Enabling conditions

This approach presupposes that employers have existing capacity that can be leveraged and further developed with the support public funding.
 HEIs need to have the capacity to scale up their side of work-based-learning programmes (e.g. offices or faculty members who oversee the work-based experience).
 Students need to understand and be interested in work-based-learning.

Constraints and obstacles

It is difficult to model ahead of time what level of incentive would be sufficient to change the behaviour of disparate groups of employers. This may call for experimentation via a pilot programme.
 There is a risk that a subsidy will attract employers who are less interested in providing good work placements. HEIs would need to carefully supervise students’ experience.

Regulatory policy levers

Regulatory policy lever: Institutional accreditation

Description	<p>Institutional accreditation controls an institution's entry to, and continued operations within, a higher education sector. Institutions must meet certain criteria or threshold standards to operate as a higher education institution and qualify for a certain status. Institutional accreditation is also a prerequisite for higher education institutions (HEIs) to receive public funds in many countries.</p> <p>In some countries, a government body or a government-funded external agency assesses and accredits institutions. In other countries, it is the responsibility of independent professional bodies or specialised agencies, commissions and member institutions.</p> <p>It is mandatory in some countries and voluntary in others. Where it is voluntary, failure to be accredited may nonetheless affect an HEI's access to public funding. In some countries, there is no form of institutional accreditation, but HEIs (particularly universities) may be subject to other forms of government regulation through establishment laws and other regulations.</p>
Goal(s)	<p>Ensure that each HEI's graduates have a minimum level of labour market relevant knowledge and skills.</p>
Issue/problem being addressed	<p>Some HEIs do not provide their students with labour market relevant skills that enable them to achieve good labour market outcomes.</p>
How it works	<p>Government (directly or through agencies) uses accreditation procedures to enhance the labour market relevance and outcomes of the higher education system by imposing labour market relevant criteria or minimum standards on institutions. These could include outputs and outcomes such as minimum levels of professional or transversal skills, and labour market outcomes such as employment and earnings.</p> <p>Institutional re-accreditation processes typically have a quality enhancement element. In this way, they both control which HEIs are allowed to operate, and encourage HEIs to focus on the quality of their inputs, processes, outputs and outcomes.</p>
Enabling conditions	<p>Regulatory agencies and governments need to be willing to enforce the regulatory framework, particularly when an HEI receives a conditional accreditation and has been told it needs to improve its performance.</p> <p>Regulators need to establish relevant and robust threshold criteria for labour market outcomes.</p>
Constraints and obstacles	<p>Factors beyond an HEI's control can influence labour market outcomes. These factors may vary by region, over time and by the student body composition.</p> <p>Institutional accreditation can help eliminate very poorly performing HEIs, but it does not provide any incentive for HEIs to perform at levels above accreditation standards. The influence of policymakers may be reduced when institutional accreditation is performed by an independent third party.</p>

Regulatory policy lever: Programme accreditation

Description	<p>The accreditation of programmes can be used as a regulatory mechanism to ensure a higher education programme leads to a qualification that meets threshold standards and criteria and/or is recognised under a national qualifications framework.</p> <p>In some jurisdictions, certain higher education institutions (HEIs) are exempted from the obligation to have their programmes accredited.</p> <p>Programme accreditation may be undertaken by the same agencies or bodies that accredit institutions, or by another agency such as a qualifications authority.</p>
Goal(s)	Ensure that the students enrolled in higher education programmes are graduating with a minimum level of labour market relevant knowledge and skills.
Issue/problem being addressed	Students are not developing high quality, labour market relevant skills through some existing programmes.
How it works	<p>Government (directly or through agencies) uses programme accreditation procedures to enhance the labour market relevance and outcomes of the higher education system by imposing labour market relevant criteria or standards on programmes.</p> <p>Programmes are assessed against threshold standards that cover a range of functions and processes such as teaching; research and research training; institutional quality assurance; governance and accountability; and information.</p>
Enabling conditions	<p>Programme accreditation requires well-designed, up-to-date standards related to labour market relevance.</p> <p>Accreditation agencies need relevant programme-specific expertise.</p>
Constraints and obstacles	Programme accreditation can be costly.

Regulatory policy lever: Minimum entry requirements

Description	Policymakers stipulate minimum requirements that higher education institutions (HEIs) must observe when admitting students. This could include national entry exams, upper-secondary qualifications etc.
Goal(s)	Ensure that HEIs admit students who are capable of succeeding in their study programme and thus attaining good labour market outcomes.
Issue/problem being addressed	<p>Poorly prepared students are less likely to develop relevant skills that lead to good labour market outcomes.</p> <p>HEIs can face financial or other incentives to enrol students with little regard to whether those students will graduate or whether they will achieve good labour market outcomes.</p>
How it works	Policymakers impose minimum entry requirements to programmes or threshold criteria that HEIs must apply when evaluating applicants.
Enabling conditions	This approach requires instruments that meaningfully predict student success.
Constraints and obstacles	<p>Admissions criteria may be imperfect predictors of academic potential and future labour market outcomes.</p> <p>Measures to limit higher education entry to only those students whose performance is above a certain level may be in conflict with a policy agenda focussed on expanded access or improved equity.</p>

Regulatory policy lever: Required remedial support for students

Description	Policymakers require that higher education institutions (HEIs) provide remedial support to students who fail to meet certain criteria.
Goal(s)	Ensure that students admitted to HEIs can fully develop the skills they need for labour market success.
Issue/problem being addressed	Students entering higher education are sometimes poorly prepared. Poorly prepared and poorly supported students are less likely to develop relevant skills that lead to good labour market outcomes.
How it works	Policymakers require HEIs to address significant skills gaps identified in entering students.
Enabling conditions	HEI need to have the capacity and resources to provide effective remedial support to students with skills deficits.
Constraints and obstacles	Remedial programmes – especially those for which students earn no academic credit – may have high attrition rates, since they require student time and effort but do not directly lead to a credential.

Regulatory policy lever: Controls on enrolment levels

Description	The government imposes limits on the number of enrolments in specific programmes or fields of study with poor labour market outcomes.
Goal(s)	Reduce the number of students in programmes whose graduates have poor labour market outcomes.
Issue/problem being addressed	If higher education institutions (HEIs) are allowed to freely respond to student demand or to freely determine the number of places they provide, they may offer too many places in certain fields of study. These can include programmes that may not result in good labour market outcomes, but are popular with students and have relatively low cost structures.
How it works	<p>Policymakers limit the number of students HEIs are able to enrol in a given field or level of study, or limit the number of places they will fund, which places a softer cap on enrolments as HEIs may still admit full fee-paying students.</p> <p>When applied across an entire higher education system (so that students do not simply shift from one HEI to another), this sets a ceiling on the number of new graduates from a given field/level who enter the labour market.</p>
Enabling conditions	Policymakers need a reliable understanding of the labour market demand for different programmes.
Constraints and obstacles	<p>Establishing future labour market demand for different programmes and fields of study can be difficult: the elapsed time between entry and graduation may result in future over-supply or shortages.</p> <p>Caps tend to be artificial: it is hard to predict how the labour market will respond when additional graduates from a specific field are added on the margin. The fact that most fields of study do not neatly correspond to a single occupation further complicates such predictions.</p>

Regulatory policy lever: Access to student financial assistance

Description	<p>Governments control access to student financial assistance by applying regulatory thresholds at the institutional or programme level.</p> <p>If the programmes or institutions do not meet the regulatory thresholds (such as specified labour market outcomes), they cannot participate in the student financial assistance programmes offered by the government.</p>
Goal(s)	<p>Discourage students from enrolling in poor quality higher education institutions (HEIs) and programmes.</p> <p>Encourage HEIs to improve their programmes and their student outcomes, and to close poorly performing programmes.</p> <p>Eliminate poorly performing HEIs.</p>
Issue/problem being addressed	<p>Students enrol in programmes that have poor labour market outcomes. If they have taken loans to finance their studies, they will have difficulty repaying them, leading to personal financial distress or cost to the taxpayer.</p> <p>Access to student loans to cover tuition enables poorly performing HEIs/programmes to continue operating.</p>
How it works	<p>Policymakers stipulate minimum labour market outcomes that HEIs or programmes must meet in order to qualify for participation in a government student financial aid scheme.</p> <p>Students will not receive financial aid if enrolled in HEIs/programmes that do not meet those standards, making the programme less attractive to potential students. The decline in enrolments could force the HEIs/programme to close.</p>
Enabling conditions	<p>This approach requires data on labour market outcomes at the institution and/or programme level.</p>
Constraints and obstacles	<p>Factors beyond HEIs' control can shape labour market outcomes. These factors may vary by region, over time and by student composition.</p>

Regulatory policy lever: Required engagement with social partners

Description	<p>Policymakers require higher education institutions (HEIs) to engage regularly with social partners (employers and unions) in the design and development of programmes</p>
Goal(s)	<p>Ensure stronger linkages between HEIs and social partners (employers and unions) to improve labour market relevance and outcomes.</p>
Issue/problem being addressed	<p>HEIs fail to engage effectively with social partners (employers and unions).</p>
How it works	<p>Governments require HEIs to regularly consult with social partners to gain up-to-date insights into skills needs and to foster closer collaboration.</p> <p>Social partners can offer valuable insights on:</p> <ul style="list-style-type: none"> • The skills graduates need • Curriculum design • The performance of graduates in the labour market • Ways to strengthen work-based learning.
Enabling conditions	<p>This approach requires social partners to be willing and able to engage effectively with HEIs.</p>
Constraints and obstacles	<p>Employer advice may focus too narrowly on current needs of a few vocal employers or of a single sector, rather than skills for employability and better graduate outcomes over the longer term.</p> <p>There may be significant resistance from some academic staff to putting more emphasis on labour market relevance and outcomes.</p>

Regulatory policy lever: Required graduate competency statements

Description	Require higher education institutions (HEIs) to develop statements to accompany academic transcripts and provide additional information on the skills that graduates have acquired.
Goal(s)	Provide clearer and more complete information about the labour market relevant skills of graduates to facilitate their transition into the labour market.
Issue/problem being addressed	Employers lack information about the range of labour market relevant competencies of graduates and graduates, often find it challenging to communicate these.
How it works	<p>Governments require HEIs to develop an easy-to-understand statement that can accompany academic transcripts.</p> <p>The statement clearly indicates to potential employers what the graduate has learned and is able to do, which could include competencies developed within their study programme and extra-curricular activities and work experience undertaken.</p>
Enabling conditions	<p>This approach depends in part on:</p> <ul style="list-style-type: none"> • Employers' acceptance of the statements as valid and reliable descriptions of the skills of graduates • Students' willingness to use the statement to support their job search.
Constraints and obstacles	The information about competencies that statements can provide may be relatively limited.

Information Levers

Information policy levers:

Labour market information for students

Description	<p>Policymakers make information available to help students make better informed decisions that will enhance their labour market outcomes.</p>
Goal(s)	<p>Students choose programmes with better labour market outcomes.</p>
Issue/problem being addressed	<p>Students sometimes lack easily accessible and reliable information about labour market outcomes of the programmes they are considering.</p>
How it works	<p>Governments (or third-parties using publicly-funded information sources) provide students with information about the labour market outcomes they might expect from different programmes.</p> <p>Information might include, for instance, data on the earnings of graduates, their employment rates, and their job satisfaction.</p> <p>Students use this information – combined with knowledge of their own aptitudes and preference – to choose programmes at individual higher education institutions (HEIs).</p> <p>The combined weight of informed student decisions may drive HEIs to enhance the labour market relevance and outcomes of their programmes.</p> <p>In some countries HEIs are required to collect and publish information on labour market outcomes of their graduates.</p>
Enabling conditions	<p>This lever requires high quality, reliable data on labour market demand and the labour market outcomes of graduates.</p> <p>Students need to know how to make good use of this information and choose programmes on the basis of their labour market outcomes.</p>
Constraints and obstacles	<p>Students choose their higher education programmes for a variety of reasons, not only on the basis of labour market outcomes.</p> <p>Information on average labour market outcomes may be misinterpreted, especially in fields where earnings distributions are skewed by a few high earners.</p> <p>Students are prone to assuming their outcomes will be better than average.</p>

Information policy levers:**Labour market information for higher education institutions**

Description	<p>Policymakers provide labour market information to higher education institutions (HEIs) to encourage them to make planning decisions that are better aligned with expected future labour market demands.</p>
Goal(s)	<p>Ensure that HEIs' programmes are more closely linked to labour market needs.</p>
Issue/problem being addressed	<p>HEIs will often lack good information about the full range of current and future labour market needs, in particular those at the national level.</p> <p>HEIs may not be able to generate and to process relevant labour market information on their own.</p>
How it works	<p>Policymakers provide HEIs with labour market information, including information on graduate labour market relevance and outcomes. Information can be based on surveys, censuses, and administrative data.</p> <p>HEIs use this information to decide what programmes to offer, and for curriculum development.</p>
Enabling conditions	<p>This approach requires that HEIs have adequate capacity to make good use of information to achieve better outcomes.</p>
Constraints and obstacles	<p>Governments may face some challenges in generating high quality, reliable information about future labour market needs, especially in rapidly evolving economies.</p> <p>Information about future labour market demands is inevitably uncertain.</p>

Information policy levers:**Student enrolment information for employers**

Description	<p>Policymakers provide information to employers on students who are currently enrolled in higher education (stripped of any personal identifiers).</p>
Goal(s)	<p>Ensure smooth transitions of graduates into the labour market.</p>
Issue/problem being addressed	<p>Employers lack good advanced knowledge of the talent stream that will be entering the labour market as students graduate.</p>
How it works	<p>Policymakers provide detailed information on the structure of current enrolments in higher education programmes, including projections of how many students will be graduating at what time.</p> <p>This allows employers to engage in better human resources planning, and to identify higher education institutions (HEIs) where it might be especially beneficial to undertake recruiting activities.</p>
Enabling conditions	<p>A strong, consistent approach to enrolment management at HEIs, and government capacity to roll this information up in a timely fashion.</p>
Constraints and obstacles	<p>Concerns over privacy of information.</p>

Organisational Levers

Information policy levers:

Strategic planning

Description	Taking direction from their political masters, policymakers use data, consultation and analysis to help identify policy priorities, set goals, and identify potential pathways towards realising these. Analysis takes into account how different policies may interact with each other: the focus is on achieving overarching goals via a coordinated series of policy levers.
Goal(s)	Ensure effective and efficient use of public resources to serve public ends.
Issue/problem being addressed	Policy that is made in a fragmentary or poorly articulated fashion has less chance of success, and greater chance of generating unwanted effects.
How it works	<p>This is an example of a “procedural” policy lever, i.e. a lever concerned with <i>how</i> governments undertake their policy process.</p> <p>Taking direction from their political masters, policymakers gather and analyse data and information from multiple sources to understand policy challenges, identify policy priorities, and to lay out potential ways to achieve these. Work is “strategic” in that it takes a comprehensive approach that links up different policy actions, both within and across Ministries. Policy priorities and goals are both clear and clearly communicated. Progress is measured against these clear goals.</p>
Enabling conditions	<p>Strong support from central agencies within government.</p> <p>A collaborative culture within and across Ministries.</p> <p>Strong and effective stakeholder engagement throughout the policy process.</p>
Constraints and obstacles	<p>Siloes within government.</p> <p>Pressure for quick responses to emerging issues.</p>

Information policy levers:

Policy networks

Description	Policymakers ensure that the entire policy process is systematically informed by a broad range of stakeholders who contribute in a variety of ways.
Goal(s)	Effective and efficient public policies that are informed by solid and diverse evidence, and that succeed in their implementation phase.
Issue/problem being addressed	Constraints on policymaker knowledge, and gaps in awareness of multiple perspectives, lead to poor policy outcomes.
How it works	<p>Policymakers regularly engage with and potentially provide support for formal and or informal networks of diverse stakeholders who have an interest in identified policy areas (e.g. in the case of labour market relevance and outcomes of higher education: higher education institutions, education associations, students, parents, employers, trade unions, community leaders, the not-for-profit sector, think tanks, subject area experts etc.).</p> <p>Networks are engaged in the full policy process, i.e. running from the identification of policy challenges to the exploration of policy responses. They may also play a role in implementation. At the very least, their constructive engagement in the policy process can help ensure that implementation runs more smoothly.</p>
Enabling conditions	<p>Internal support within Ministries for engagement.</p> <p>Well organised stakeholder groups with whom policymakers can engage in dialogue.</p>
Constraints and obstacles	<p>Time constraints – policy networks are hard to make effective use of when quick policy responses are required.</p> <p>Low trust in government.</p>

Information policy levers: **Career centres for students**

Description	Government directly operate career centres on higher education institution (HEI) campuses.
Goal(s)	Ensure that students at all HEIs have access to high quality labour market information and career advice.
Issue/problem being addressed	HEIs may themselves lack sufficient resources to provide effect career advice and support for labour market entry. Providing this kind of support may benefit from economies of scale.
How it works	Public employees staff career centres that are located on HEI campuses, and that focus on meeting the needs of students as they prepare to enter the labour market (or recent graduates who may already be in the labour market). HEIs may provide some staff as well for these centres.
Enabling conditions	Good centralised planning of career advice services, taking advantage of economies of scale when governments operate across multiple HEIs at the same time.
Constraints and obstacles	Costs of provision Administrative challenges involved in operating on-site at an HEI.

Information policy levers: **Work-experiences for students**

Description	Governments employ students for work-based learning experiences.
Goal(s)	Supplement and diversify the pool of work-based learning experiences, while also identifying potential future public sector employees.
Issue/problem being addressed	Work-based learning is undersupplied because of cost and capacity constraints on employers. It may also be too focused on experience in the private sector.
How it works	Governments work with higher education institutions (HEIs) to directly provide work-based learning experience to students.
Enabling conditions	Adequate capacity within government departments and agencies to supervise and support students on their work experiences. Good relationships between higher education institutions and government departments and agencies.
Constraints and obstacles	Risk aversion in the public service – e.g. concerns about the effects of untrained employees on sensitive operations. Costs involved in supervising students.