

**Skills and education
for growth and well-being in Europe 2020:
are we on the right path?**

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The logo for 'well-being 2030' features the words 'well' and 'being' in a blue sans-serif font, with '2030' below them in a larger, bold blue font. A red arrow points upwards from the 'i' in 'being' towards the '0' in '2030'.

'Well-being 2030' is a two-year research project, co-funded by the EPC and the European Commission, which started running in April 2009. Based on a belief that policy can shape our future, the project is seeking to establish a strategic vision for the long-term development of social policy in Europe. To that end, the project investigates what policy choices are most inclined to deliver a higher level of well-being for European citizens by the year 2030. The reflection on the future of Europe's economic and social models including the trends, challenges and constraints framing policy choices for improving citizens' quality of life are at the core of the project.

The reflection of this forward-looking project is stimulated through a range of activities, from analysis to research, panels and communication activities, which aim to deliver three key outputs:

- to bring the insights of the research on well-being definition and measurement into the policy debate over the long-term future of Social Europe;
- to analyse Europeans' values and preferences in order to sketch a picture of a future society delivering higher level of well-being for its citizens;
- to identify the strategic policy choices (social, economic and environmental) reflecting Europeans' preferences and considering the current challenges as well as resources available to deal with these challenges.

The project analyses the main policy areas that impact on citizens' quality of life, with a particular emphasis on areas where there is a specific European policy interest. This includes labour market policies, health/lifestyles, education, demographics/migration, integration and inequalities, and public finances/financial sustainability. The key question of how to 'measure' well-being, the challenges and factors which influence social conditions, and what kind of social provision citizens want in the European Union of the future is also addressed. Moreover, the project pays particular attention to highlighting trade-offs or synergies among policy areas.



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Foreword

By Hans Martens

If Europe wants to move forward on the basis of smart, sustainable and inclusive growth as set out in the Europe 2020 strategy, we must invest more in innovation and in education. Europe is not necessarily a world leader in education at all the different levels anymore, and there is certainly no guarantee that it will therefore be taking the lead in innovation. This is very unfortunate, as it is innovation that should help us overcome our present financial difficulties, and confront future challenges that Europe will be facing as a result of demographic developments.

It has therefore been central to our joint project with the European Commission on Well-being 2030 to stress the importance of education, not only for the well-being of the individual, but for the well-being of European societies and Europeans as well.

As we are moving further into the knowledge economy, education indeed will be crucial for ensuring that Europe will continue to be a competitive region in the world. Education will also play an increasingly important role in enabling the social inclusion of all European citizens. To understand and be able to benefit from the increasingly complex environment in which we live will require higher and higher levels of education.

The present paper has been written with this in mind, and in the context of the concern for our future well-being rather than for the sake of education in itself. Indeed, it is the benefits that good education can bring individuals and European societies that matters. This is why the present paper is so important in the debate about the future that we want for Europe.

Hans Martens is Chief Executive of the European Policy Centre.

Executive summary

The Europe 2020 strategy is designed to achieve ‘smart’, ‘sustainable’ and ‘inclusive’ economic growth, and it sets out headline targets to reach this. The target for education aims to reduce the share of early schools leavers to 10% and increase the share to at least 40% of those aged 30-34 who have completed tertiary education.

This Issue Paper addresses a number of key questions regarding the skills and education targets and policies in the strategy:

- Are the targets to raise participation levels in education (as a means of building up the necessary human capital) necessary for achieving smart, inclusive and sustainable growth? What specific skills do we need to achieve these growth objectives?
- Will increasing participation targets in education deliver these skills, and contribute to EU growth?
- What can public policy do to make the most of raising participation levels in education? Should the EU coordinate these policies when education is not one of its competences?

This Issue Paper explains why skills are necessary for smart, sustainable and inclusive growth but argues that future skill needs are difficult to predict accurately enough to steer policies appropriately. Seeking to meet the targets for participation in education on its own is not necessary for delivering the appropriate skills, as much also depends on the quality of Europe’s education systems. In addition, even if education systems deliver, skills alone are not sufficient to boost growth, as these must be accompanied by policies to create employment to benefit from them.

This paper makes the following specific recommendations:

- National statistics services and researchers must define and develop adequate indicators for measuring skills and the quality of national education systems, to assist policy-makers to craft measures to fulfil EU growth objectives.
- Given the difficulties in predicting future skill needs and the tight public budget constraints in the foreseeable future, publicly-funded policies should focus on investing in high-quality, early education as this provides the general skills’ foundation for acquiring technical/functional skills later in life.
- Invest in job creation to create opportunities for those with a diverse body of skills to boost sustainable growth and reduce the numbers of those at risk of social exclusion.
- Education policies *per se* are not an EU competence, but the goals in this field should be monitored and coordinated with those in other important areas, such as public finances, industrial and innovation policies.

I. Introduction

The Europe 2020 strategy, agreed at last June's Summit set out its objectives as achieving 'smart', 'sustainable' and 'inclusive' growth in the European economy.

One of the main innovations was to include a headline target and related flagship policy initiatives for education and skills. The headline target was to "reduce the share of early schools leavers to 10% from the current 15%, and increase the share of the population, aged 30-34 having completed tertiary education, from 31% to at least 40%". The two initiatives were 'Youth on the move' and an 'Agenda for new skills and jobs'.

The importance of skills in achieving the EU's growth objectives cannot be overstated – they are important for innovation, which in turn is crucial for long-term growth, green or otherwise.

The benefits of retaining and upgrading skills as a means of helping people remain active in the labour market have been increasingly highlighted since the 1990s. The welfare states in Europe started maturing in the 1970s and the 1980s, and even at that time, their sustainability was threatened by the high unemployment rates as the number of benefit recipients rose while the number of contributors fell. Activation policies to tackle high unemployment and achieve greater sustainability became a key element in welfare state reforms.

One popular measure that policy-makers advocate to protect citizens against the risk of unemployment is to ensure that the workforce has the appropriate skills to maximise its employability. In addition, technological advances and structural change in the European economies have made it necessary for individuals to update their skills during their working life.

Given these considerations and the strong possibility of a substantial mismatch between the European workforce and labour market demands in the coming decade, the EU launched its policy initiative 'New Skills for New Jobs' in December 2008. It was designed to contribute to the Europe 2020 strategy and sets priorities for action to ensure that the EU workforce has the right skills' mix for the future.

This issue paper sets out to address a number of key questions regarding skills and education policies in the Europe 2020 plan. More specifically,

- Are the targets to raise participation levels in *education* (as a means of building up the necessary human capital) necessary for achieving smart, inclusive and sustainable growth? Do we need *skills* for smart, sustainable and inclusive growth? If so, do we know what specific kind of skills are needed?
- Is increasing participation targets in education sufficient to deliver these skills, and will they help achieve greater smart, sustainable and inclusive growth?
- What can public policy do to make the most of raising participation levels in education? Is it necessary for the EU to coordinate policies to raise these, even though education is not among the EU competences?

The determinants of educational outcomes are complex and multi-dimensional and a document of this size can only focus on a few selected issues, from a particular perspective. Given the focus of the Well-being 2030 project, which the EPC is carrying out in conjunction with the European Commission, we are particularly interested in what public policy can do to help deliver the skills required for the EU's growth objectives. This will be a particular challenge, given the constraints and challenges that policy-makers face in the next decade, especially in the aftermath of the crisis.

II. Skills for smart, sustainable and inclusive growth

The aim of setting headline targets on participation in education is to ensure that European citizens have the necessary skills to achieve smart, sustainable and inclusive growth. To assess whether this target is sensible and helpful we need to understand why and how skills are necessary for achieving these objectives.

Why skills?

Helping the European workforce acquire more and better skills is at the heart of the EU policy strategy for growth. Economic theory tells us that human capital, i.e. skills and competences, helps sustain long-term growth, an important source of, and pre-requisite for, well-being. Human capital works with physical capital to sustain long-term productivity increases and help an economy achieve a perpetual improvement in living standards. People with the necessary skills can also generate *innovation*, an important ingredient in growth.

In affluent societies, such as those in Europe, the bulk of value-added and employment is created in the services sectors, and the traditional division between modern manufacturing and services sectors has become increasingly blurred. This makes innovation all the more important for growth. Compared to industry, many services sectors, especially the most labour-intensive, are inherently prone to relatively low productivity growth.¹

However, this does not mean services cannot contribute to growth in other, more dynamic sectors where they are used as intermediate commodities to improve effectiveness.² The growth of market services sectors (i.e. by the private sector) also enables households to outsource caring and personal services to the private sector, thus allowing family members to use their skills to produce other commodities. The ability to innovate in *this* sector is key to enabling this to happen.

The nature of innovation in services is different from that in industry. Innovative services firms put more emphasis on innovation in *processes, organisational arrangements and markets*.³ Moreover, they engage in *ad hoc* innovation, creating a specific solution to a particular problem posed by a customer. In that sense, the potential for innovation in the services sectors can be far more widespread and, unlike industry, is not limited to sectors which use high- or medium-level technology.

Achieving long-term growth is one possible way of addressing the effects of demographic change on the European welfare states, especially the more mature. Fertility rates have plunged below the so-called population 'replacement rate'. Technological advances in medicine, ever-extended life expectancy and the inherently low productivity growth-potential of service sectors, such as healthcare and education, have put pressure on public spending on pension and healthcare systems, the traditional pillars of the European welfare state.

One solution is to improve the effectiveness/efficiency of public services. For example, one could partly manage rising costs in healthcare by exploiting the possibilities that information technology advances can offer (e.g. e-health). However, in order to be able to do so, IT skills would have to be widely distributed across the population and it would also be important to have the skilled personnel to develop and use IT-related innovations.

Globalisation and the development of information and communications technology (ICT) have intensified competition between countries with low labour costs to produce goods using low- and medium-tech manufacturing. The existence of generous welfare states in Europe means that wages will never drop to the currently-observed levels of those in developing countries, so they will not be able to compete to produce these goods. In order to stay in this competitive race they can try to specialise in the production of higher-end goods and services. As a result the workforce will need to possess the new knowledge and the appropriate skills to retain its competitive edge in this sector.

Moreover, given the ease with which capital can be moved round the world, the growth of IT and the Internet, and ever-decreasing communications costs, productive capital can now be invested in the production of knowledge-intensive goods and services anywhere in the world. Having an abundance of skilled labour is one of the key factors that will attract this capital.

Skills are also important for sustainable 'green' growth and the ability to innovate is paramount for finding ways to contain and adapt to climate change, while maintaining prosperity and well-being. Skills are important for developing innovation that makes conventional energy use more efficient, and for allowing the introduction of cleaner forms of energy, such as renewables. This requires new energy resources that can sustain economic growth without aggravating climate change, particularly in the face of increasing competition for natural sources of energy.

In today's world, skills are also an important means of gaining access to the labour market and avoiding social exclusion. The goods and services produced and consumed in knowledge societies are more sophisticated, even if they are not always 'knowledge-rich'. Those producing them need to have the appropriate skills, including for very labour-intensive services, such as personal services, retail trade services and some social services, which are not necessarily high- or even medium-tech. Although those working in these sectors generally do not need to have high-level qualifications, they need to possess other, more generic and 'soft' skills.

In addition, these sectors traditionally employ large numbers of low-skilled workers, the group at most risk of social exclusion. If one gives these people even a minimum level of appropriate skills, it will improve their potential for finding employment, and thus help them avoid poverty and social exclusion. Therefore, policies that encourage and sustain adequate investment in human capital flows are of utmost importance for growth in Europe. Human capital contributes to the generation and use of knowledge and innovation, commodities which, once generated, can be used freely. Thus investing in the country's manpower can have far-reaching spill-overs for a society.

Which skills are important for growth?

Having established the paramount importance of skills for smart, sustainable and inclusive growth, the next question is what skills are needed? This will depend on a number of factors. In general, economic growth requires skills that match both the sectoral specialisation of an economy and the product-market strategies of the firms that generate the country's wealth. These may vary from one Member State to another.

To find out what skills the European workforce should have by 2020 to meet the growth objectives, we need to start by analysing the objectives of the Europe 2020 strategy. According to these, *smart* growth means not only growth in 'knowledge-intensive' sectors, but also innovation in other, less knowledge-intensive sectors, such as wholesale and retail trade services.

Looked at in this way, smart growth does not only require people with the skills certified by higher education qualifications. There are two reasons for this. First, as mentioned above, innovation in services often focuses on improving processes, organisational arrangements, new markets and custom-tailored services. This requires 'softer' skills such as creativity, management, entrepreneurship and interpersonal skills. Skills like these can only partially be taught, as they are mainly associated with particular personality characteristics that develop from a young age.

Second, research on the knowledge economy has shown that knowledge-intensive sectors and organisations employ large proportions of people, who, on the basis of their qualifications, would be defined as medium- or low-skilled,⁴ but who contribute to innovation.

The types of skills needed to support *sustainable growth*, as outlined in Europe 2020, seem fairly straightforward. As far as climate change and the use of clean and efficient energy are concerned, here

the skills required relate to the production, diffusion and use of cleaner energy. This is a fairly diversified range of skills, at least in terms of the level of qualifications, as they range from engineers/developers of green technologies to those who work or use green technologies.

When the strategy stresses *inclusive growth*, it means working to prevent the social exclusion that comes from long-term unemployment or from being one of a country's 'working poor'. In this case, it implies that the workforce should be given the skills necessary to find and remain in work that pays an adequate salary. This entails that, at the very least, those people who are potentially active should be capable of adapting their skills and knowledge to changing labour-market needs. This, in turn, presupposes that the jobs on offer provide adequate pay and skills-development.

An analysis of the Europe 2020 strategy suggests that a broad range of skills will potentially be required to meet its objectives. However, it is unclear whether these skills need to correspond to high, medium or low qualifications gained through education systems or whether they are best acquired in the context of basic, secondary or vocational training. To answer this it is useful to examine some predictions on future EU employment trends.

Future employment trends in Europe

The structure of European economies has continued shifting towards services and away from agriculture, traditional manufacturing and clerical jobs. In 2007, the average share of services in total value-added and in employment stood at 71% and 70% respectively in the EU25.⁵ According to European Centre for Development of Vocational Training (CEDEFOP) forecasts for the current decade,⁶ marketed services are likely to expand by approximately 7 million jobs, with moderate growth in distribution and transport.

Growth in public (non-marketed) services will be driven by demand for healthcare and education. Given the tight public finances there is likely to be a reduction in job creation in public administration, although employment in this sector will remain high.

According to the same forecasts, business and financial intermediation services are likely to have the highest annual growth rate until 2020, at 1.4%. These sectors are also likely to have one of the highest shares in employment across the EU27 by 2020, at 23.2%. The main bulk of employment growth is predicted to come from 'other business services', such as consultancy, computer, research and development (R&D), marketing, accounting and legal services. These are all sectors that require employees with medium- to high-level qualifications.

Other sectors for which annual growth is expected to be slightly positive (of the order of 0.2 to 0.6%), but which also have relatively high shares in employment in EU27, are distribution, hotels and catering, transport services sectors, education, health and social work. Growth rates among these are expected to be highest in the hotels and catering sectors, distribution, and health and social work. The skills required for these sectors are more mixed in terms of the levels of qualifications. Distribution, hotels and catering usually do not require very high qualifications for the bulk of their employees, although entrepreneurial, management and interpersonal skills are important.

Health and social services are also a mixed bag. They need highly-qualified life-science and health professionals, as well as many associate professionals with only medium- to high-level qualifications. At both levels, interpersonal skills are again very important. Overall, therefore, employment is expected to expand the most in sectors where qualifications are required.

All these sectors have the potential to contribute to smart growth in that they may use new technologies to introduce innovations. Some of them, for example business services, can also contribute to 'sustainable' growth by increasing the competitiveness of European economies. However, as even the most 'knowledge-intensive' sectors employ people from a range of educational levels, getting a fuller picture also requires examining the employment trends by occupation.

According to CEDEFOP data above, the largest employment expansion is expected in the 'other professionals', 'technicians and associate professionals' occupations, especially in 'other associate professionals' and in 'teaching associate professionals', as well as in 'customer services clerks'. 'Other professionals' includes highly-skilled occupations such as lawyers, accountants and other business professionals and economists and other social scientists, among others.⁷

Matching skills to jobs

Even after considering the occupations that are likely to offer most job opportunities in the next decade, the picture of skills that will be necessary remains rather vague, at least with regards to what kinds of qualifications would be needed.

There is a further important distinction between skills, depending on their specificity for a job/sector or for general use.⁸ General skills are those which can increase an employee's productivity in any firm or sector, for example those related to general information technology. Specific skills, on the other hand, are those which can increase an employee's productivity in a specific firm or sector. This distinction has important consequences when making decisions about investing in training.

Specific skills are often taught on-the-job and come at a cost for the company, as the trainee is less productive than someone who is already trained. These costs are often rolled over to the employee in the form of a lower wage in exchange for training. Moreover, once s/he is trained on-the-job, the employee, who now possesses specific skills, may decide to move to another company, which would then reap the benefits of that training. Unless companies that incur these costs are likely to reap some of the returns of these skills in the form of increased productivity, for example by securing a longer-term employment relationship with the employee who receives the training, it is unlikely they will invest in on-the-job training.

However, specific skills can also be taught at an educational institution. In this case it is a cost both for the student (for example, in loss of income and time resources) and possibly for society, if the education is publicly-subsidised. From the student's and future employee's perspective the choice of whether to invest in skills for a specific sector will depend on whether her/his future returns from using these skills will increase sufficiently to recoup the earlier costs of education.

The expected future returns from investment in specific skills will be determined by the employment and income prospects that they may generate. This in turn will depend on the economic prospects of the sector in which these skills will be in demand and on whether they will make future retraining and up-skilling easier (for example, in the context of lifelong learning).

General skills, on the other hand, are transferable or 'transversal', and may increase an employee's productivity in any job or sector. Given their transferability, it is unlikely that a firm would invest heavily in training for these type of skills, so they are more likely to be taught at education institutions, and their costs borne by individuals and society.

A firm or sector usually needs both general and specific skills in varying proportions in order to be competitive. A firm's ability to achieve and maintain competitiveness depends very much on its ability to innovate. The proportion of general vs. specific skills in any enterprise will depend on the nature of production and on the kind of innovation needed to increase competitiveness. For example, high-quality manufacturing in Germany relies on high engineering and specialised middle-skills for manual workers, while business services require more general/transferable skills.⁹

To sum up, skills are crucial for productivity growth and innovation and therefore, for smart, sustainable and inclusive growth. This is a good reason for including a skills-related target in the Europe 2020 strategy.

However, when it comes to defining what kind of skills the European workforce should have by 2020 to be capable of producing the required growth and in what proportions, the picture is less clear. The kind

of skills needed for most of these objectives, i.e. 'soft skills' such as entrepreneurship, creativity, interpersonal skills, do not clearly correspond to any particular level of qualification. In addition, the current forecasts of employment growth by sector and occupation suggest that it will be necessary to have skills corresponding to different levels of qualifications.

This lack of clarity creates difficulties with regards to setting helpful and meaningful policy targets, as will be discussed below.

III. Are education targets appropriate for public policies to achieve the desirable skills goals?

The headline targets on education are aimed at reducing the proportion of early school leavers to 10% and raising the share of people aged 30-34 holding a higher education (or equivalent) qualification to 40% by 2020. Are these targets likely to help focus public policies on delivering the skills necessary for smart, sustainable and inclusive growth? Are they necessary?

A first, crude test for the relationship between increased participation in education and smart, sustainable and inclusive growth is to check whether there is any linear association between the two.

Figures 1 and 2 below show the share of early school leavers in the EU in 2008 and the share of those aged 30-34 with a tertiary education level degree or equivalent in 2007, and indicate whether Member States are already achieving the targets outlined in the Europe 2020 strategy.

According to 2008 data, on average in the EU27, about 15% of people aged 18-24 leave school early. The average is even higher for EU15, where in the worst three countries: Malta, Portugal and Spain more than one-third of young people drop out early. At the other end of the scale, the best performers are found in the new Member States: Poland, Slovenia, the Czech Republic and Slovakia. Austria, Finland and Lithuania have also met this target.

In terms of reaching the targets, fewer than half the Member States, mostly those in EU15, have met the 40% target for 30-34 year olds with at least tertiary education in 2007, while the EU27 average stood at just above 30%. The countries failing to meet this target included the new Member States, southern European/(formerly) cohesion countries, and Germany and Austria. However, the popularity of vocational education in these latter countries is a very likely reason for the apparent failure to meet this target.

Figure 1: Early school leavers in the EU, 2008

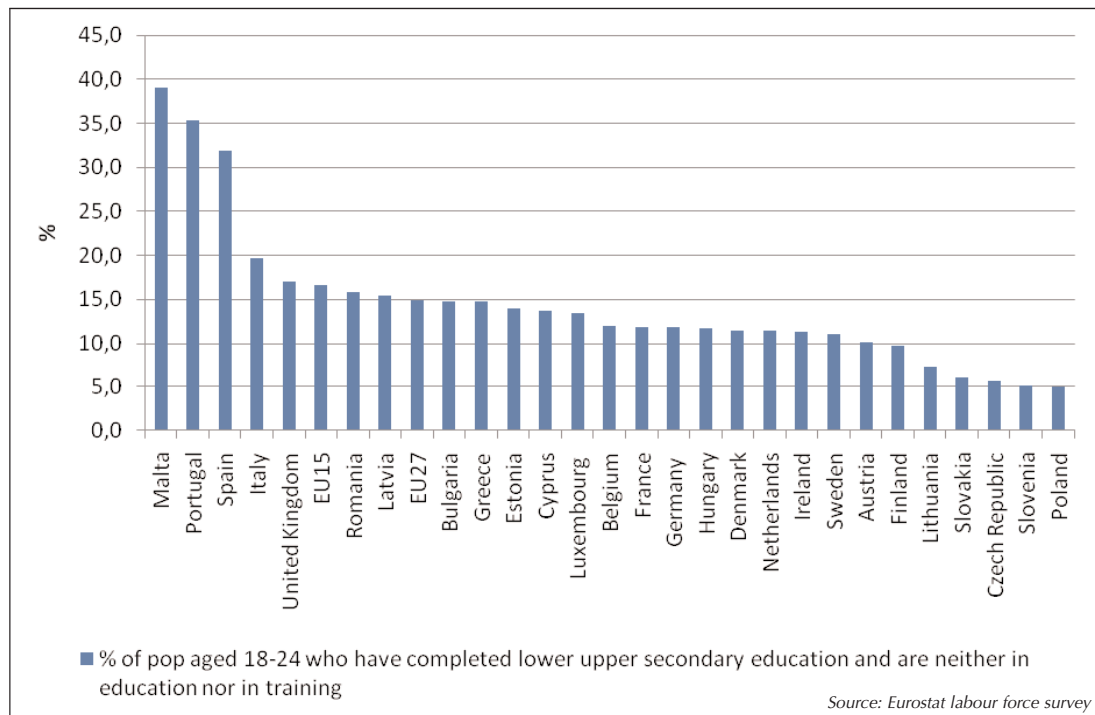
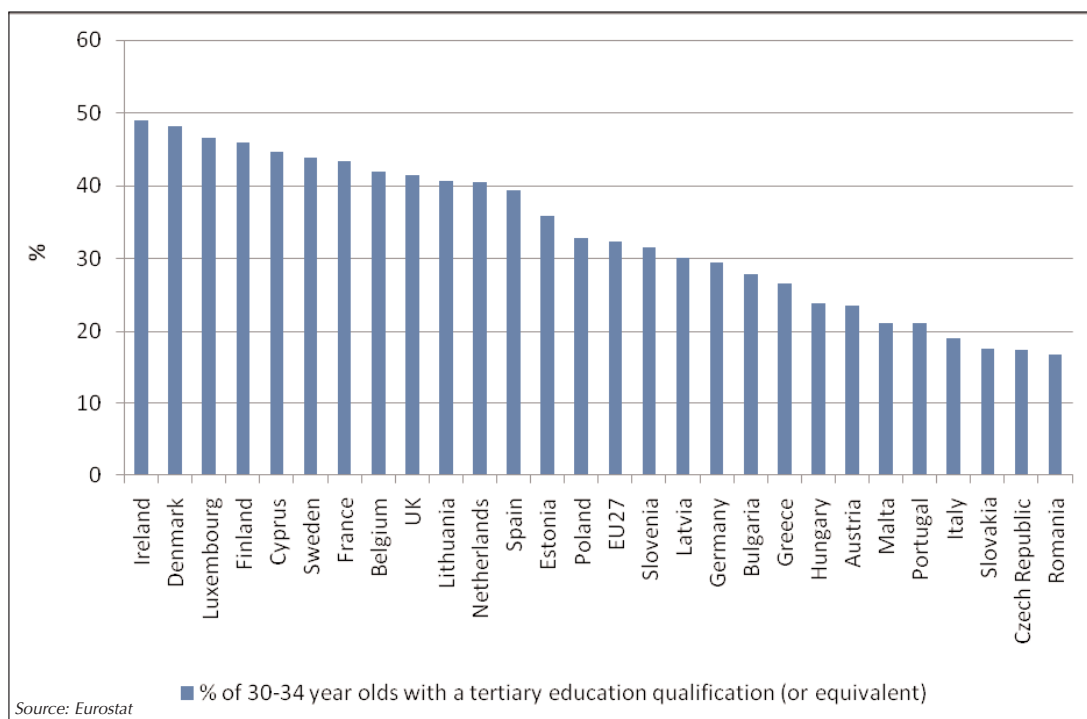
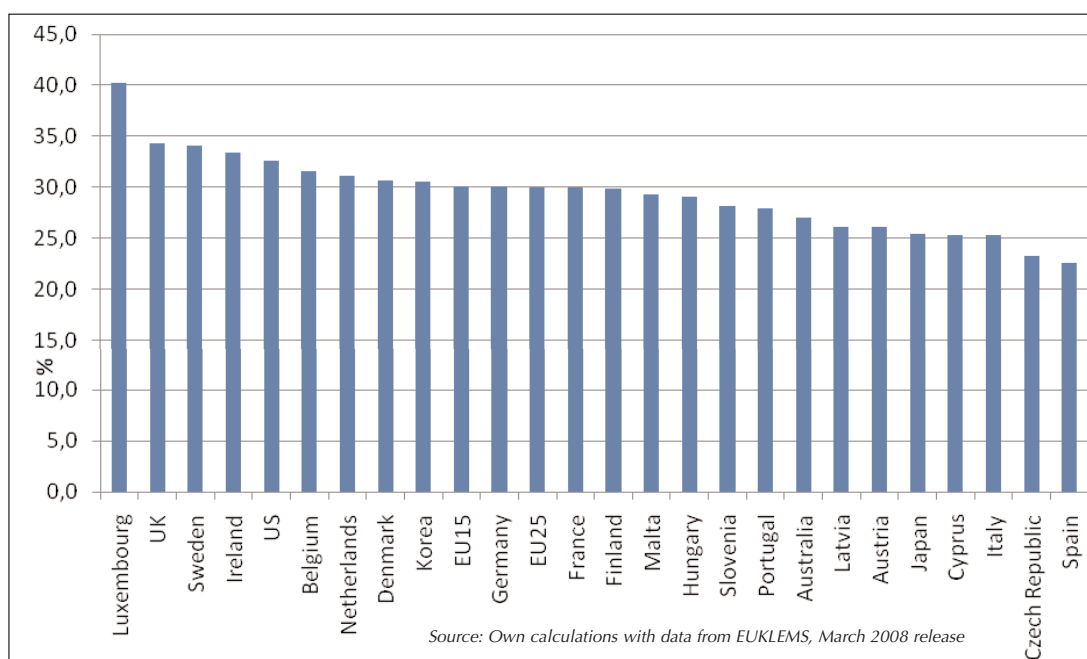


Figure 2: Tertiary education attainment of 30-34 year olds



While these figures are not very encouraging, how does the recent performance of Member States correlate with their performance in smart, sustainable and inclusive growth?

Figure 3: Share of the smart economy in total value-added, 2005



Starting with the smart economy (i.e. those sectors considered as 'knowledge' intensive), Figure 3 above shows the share in total value-added of smart sectors¹⁰ in the EU, US, Japan and Korea in 2005. (Here the value-added of so-called 'smart sectors' is used as indicative, instead of the proportion of spending on R&D over GDP, as R&D is only one possible source of innovation.¹¹ In fact, as already mentioned in the services sectors, R&D is not the dominant source of innovation.) Luxembourg, the UK, Sweden, Ireland, the US, Belgium, the Netherlands and Denmark all top the list and, with Germany, are above the EU25 average.

These figures indicate that there is a (weak) correlation between the share of people aged 30-34 who graduated from tertiary education in 2005 and the share in total value-added of the smart sectors (correlation index is equal to 0.47). However, given that this indicator examines how closely related the variation in these two aspects is, a low value does not imply that the two are not associated but more likely that there are also other factors that shape the effect of the skills acquired in tertiary education on the growth of smart sectors. Not very surprisingly, the data indicate that in countries where there are a high proportion of early drop-outs, the share of the smart economy is virtually non-existent (0.07).

Seen in the context of achieving sustainable growth, the figures show very little correlation between the proportion of people aged 30-34 who graduated from higher education in 2008 and the volume of greenhouse gases the country emitted that year. Similarly, there was very little correlation between the numbers of graduates and the share of renewables in inland energy consumption in 2007.

Last but not least, there seems to be some correlation between the share of people at risk of poverty in the EU Member States in 2008 and the level of education. There was a link between countries with a high proportion of people at risk of poverty and the number of early drop-outs, but no link between poverty levels and those aged 30 to 34 who had at least a higher education degree or equivalent.

Despite the apparent weak association between Member States' performance in the education targets and their performance in terms of smart, sustainable and inclusive growth, this does not refute the fact that skills are important for achieving these growth objectives. Instead, it suggests that there are several conditions that have to be fulfilled in order to achieve these skill goals and growth objectives.

There are three important sets of conditions. First, the quality of the education systems has to be good enough so that if a country reaches the targets for participation in education, students can gain the necessary skills. Secondly, the skills an education system can, and wants to, teach must also be the ones that will result in the EU's growth objectives. Thirdly, there have to be sufficient public policy resources to create the right conditions, and this will depend on the constraints and opportunities available.

The question then is whether, and if so how, public policy can help create these conditions and provide the opportunities, given the limited resources that are available and the current financial constraints under which European governments and the EU have to operate.

Why participation in education is not enough

One of the reasons why there does not seem to be a strong empirical association between meeting the education targets and achieving the growth objectives is that these targets only refer to the *quantity*, not the *quality* of education and its ability to teach the relevant skills. The quality of education input matters at least as much, if not more, than the quantity of education. First, there is the quality of the *education system*: all the material and human resources, organisation and governance elements that maximise its capacity to confer skills. Secondly, quality may refer to the *objectives* of particular education systems, for example the types of skills they aim to teach.

The quality of education will differ between countries, and therefore public policies that would help Member States meet the education headline targets on participation would not necessarily contribute to growth. To illustrate the importance of quality, Table 1 below shows the length of full-time compulsory education in EU Member States in 2009-2010. As we see it varies between nine and 13 years.

Table 2 shows an indication of the average quality of competence that 15-year olds, (i.e. the average age at which students complete compulsory (secondary) education), have acquired in three fields, namely, reading, mathematics and science, as evaluated by PISA (OECD Programme for International Study Assessment) framework in 2006.

These show that there is little correlation between the duration of full-time compulsory education (quantity) and the average score in each of the three areas of competence (quality).¹² To illustrate this, Finland which has nine years of schooling, scores very highly in the competences table, while Hungary, which has 13 years of compulsory schooling, has an average score.

Table 1: Compulsory education in 2009-2010

Country	Starting Age	Ending Age	Duration of full-time compulsory education
BE	6	15	9
BG	7	16	9
CZ	6	15	9
DK	6	16	10
DE	6	15	9
EE	7	16	9
IE	6	16	10
EL	5	15	10
ES	6	16	10
FR	6	16	10
IT	6	16	10
CY	4.75	15	10.25
LV	5	16	11
LT	7	16	9
LU	4	15	11
HU	5	18	13
MT	5	16	11
NL	5	18	13
AT	6	15	9
PL	6	16	10
PT	6	15	9
RO	6	16	10
SI	6	15	9
SK	6	16	10
FI	7	16	9
SE	7	16	9
UK/ENG-WLS	5	16	11
UK/NIR	4	16	12
UK/SC	5	16	11

Source: Eurydice

Table 2: Average PISA Scores in each of the three areas of competence, 2006

Science		Reading		Mathematics	
Finland	563	Finland	547	Finland	548
Estonia	531	Ireland	517	Netherlands	531
Netherlands	525	Poland	508	Belgium	520
Slovenia	519	Sweden	507	Estonia	515
Germany	516	Netherlands	507	Denmark	513
United Kingdom	515	Belgium	501	Czech Republic	510
Czech Republic	513	Estonia	501	Austria	505
Austria	511	United Kingdom	495	Slovenia	504
Belgium	510	Germany	495	Germany	504
Ireland	508	Denmark	494	Sweden	502
Hungary	504	Slovenia	494	Ireland	501
Sweden	503	OECD average	492	OECD average	498
OECD average	500	Austria	490	France	496
Poland	498	France	488	United Kingdom	495
Denmark	496	Czech Republic	483	Poland	495
France	495	Hungary	482	Slovak Republic	492
Croatia	493	Latvia	479	Hungary	491
Latvia	490	Luxembourg	479	Luxembourg	490
Slovak Republic	488	Croatia	477	Lithuania	486
Spain	488	Portugal	472	Latvia	486
Lithuania	488	Lithuania	470	Spain	480
Luxembourg	486	Italy	469	Croatia	467
Italy	475	Slovak Republic	466	Portugal	466
Portugal	474	Spain	461	Italy	462
Greece	473	Greece	460	Greece	459
Bulgaria	434	Bulgaria	402	Romania	415
Romania	418	Romania	396	Bulgaria	413

Source: PISA, available at www.pisa.oecd.org/pages/0,2987,en_32252351_32235731_1_1_1_1_1,00.html

The relation between participation in higher education and skills is harder to gauge as there is no available evidence to measure the skills that higher education graduates have acquired, in a manner similar to PISA.

Unfortunately, using more indirect measures of the skills outcomes of higher education is not as straightforward because some outcomes related to higher education may be influenced by other unrelated factors. For example, the ease with which higher education graduates make their transition to the labour market will partly depend on the qualifications they have when they leave higher education and partly on the conditions in the labour market and the possibility of matching their skills to the jobs available.

Thus, drawing conclusions about the quality of the higher education system from how well its graduates fare professionally makes it more difficult to isolate the effects of different factors on the outcome.

Defining the quality of education

There are many conditions that weigh on whether the quality of education can help to deliver the desirable skills for smart, sustainable and inclusive growth. As well as a host of factors within and across systems it also depends on the specific context, from the learning environment, to the curriculum, to the governance of education institutions, the quality of teachers and the variability of, and access to, education.

Looking more specifically into compulsory education, where participation is one part of the headline targets, some of the factors that either define or determine its quality are:¹³ (for indicators on some of these aspects, see Annex):

- the type and level of knowledge/competence students acquire in a number of important areas, such as reading, mathematics, science, information and communication technologies (ICT), foreign languages, 'learning to learn' and civics;
- students' success (i.e. their graduation rates) and their transition to further education or the labour market;
- the level of monitoring of school education, including its evaluation, steering and parental participation;
- the resources and structures available, such as the training and education of teachers, the participation of students in pre-primary education, the number of students per teacher and computer, and educational expenditure per student.

The level of student attainment and student success rates are the results that *define* the quality of the system. The evaluation and steering of school education, in which parents may play a role and the resources and structures available *determine* the quality of the system. (Including these different types of factors suggests the difficulties in defining, disentangling and measuring inputs and outputs of an education system.)

In terms of the *quality* of higher education, to a large extent it is defined by, and depends on, similar factors as compulsory schooling. Parents are not involved at this level of education, so student assessments replace their monitoring role. As the skills students bring to higher education programmes help to shape higher education and its outcomes, the quality of primary and secondary education is an important pre-requisite.

Unfortunately, the available data for assessing education and training on an internationally comparative scale does not adequately take these different dimensions into account.

The OECD database on education and training mainly focuses on: expenditure; numbers of enrolled and graduating students; and the numbers and characteristics of teachers. Its Teaching and International Learning International Survey explores issues related to school governance and the teachers' professional development and evaluation in lower secondary education. The Eurostat database, on the other hand, has a similar focus on student enrolment and attainment and teacher numbers as well as indicators of quality in compulsory and upper secondary education (e.g. number of students per teacher, number of PCs per student).

In addition to enrolment and graduation rates, to assess the quality of higher education one has to rely on university and departmental rankings, such as the Shanghai international university ranking.¹⁴ In most cases this assesses aspects of the research output these institutions produce. While this is an important dimension of the quality of universities, especially the innovative capacity in some economic sectors, it is insufficient to judge the quality of teaching and education for the majority of students who are not interested in academic careers in their disciplines.

A first policy pointer is the need to develop more adequate indicators to assess the quality of education that goes beyond a mere uni-dimensional input and output record. This is important if public policy is to help shape the quality in education systems to ensure that increased participation is being used to teach skills that are useful for smart, sustainable and inclusive growth.

Teaching the right skills

The quality of the education system is not the only factor that shapes the extent to which participation in education is likely to deliver the skills for the growth targets. It is also important to assess the system's skills' objectives and whether relevant skills can be taught within an education system. As mentioned above, the so-called 'soft skills' are of paramount importance for growth in the advanced knowledge society. Yet, it is not always clear whether, and at what stage of education, such skills can be taught, let alone accredited.

Moreover, it is not always a straightforward task to determine the skills needed for the goals of smart, sustainable and inclusive growth in an economy, in order to gear public policies to this end. First, technological advances and global capital flows have created supply chains, whereby different components of a single product are produced in different countries. Partly to adapt to this change in trade and specialisation, advanced economies like those in Europe, have shifted wealth creation towards the services sectors.

Secondly, globalisation has created large migratory flows of highly-skilled labour both within Europe and also across the world, and circular and temporary migration has become more prominent. As a result, the skills' base of an economy no longer just depends on the native population; in addition to depending on policies dealing with national education, it also depends on those on labour mobility and migration.

These developments underline the fact that taking prompt measures to adapt a country's education systems, especially beyond the compulsory education level, to the economy's skill needs, is likely to be subject to limitations. As well as taking account of the speed with which the demand for skills changes to reflect shifting production patterns, policies will also need to take into account the availability of skills as a result of migration flows.

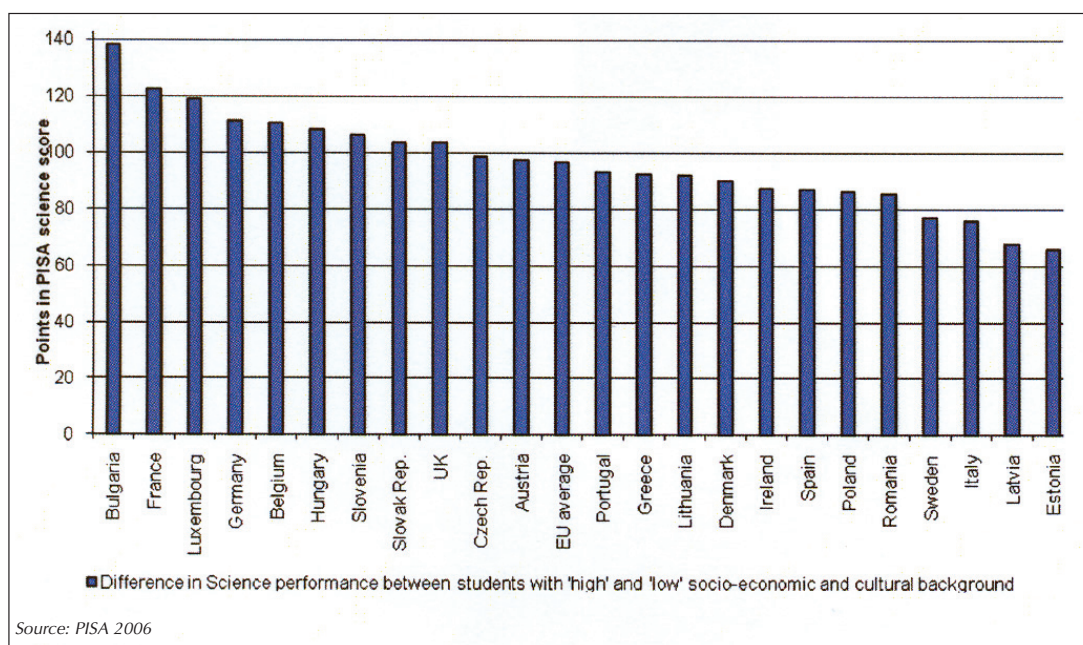
Of course, this does not suggest that adapting education systems to meet skills' needs is no longer worthwhile but rather that one must take account of these new realities. It is easier to react more quickly to fast-paced changes at the micro- (e.g. firm, sector, individual) rather than the macro- (i.e. national) level.

Students' personal characteristics and their socio-economic background are also important determinants of whether their participation in an education system, given its quality, will help them to acquire the skills needed for EU growth. There is considerable evidence to suggest that factors such as the quality of parenting and household poverty matter substantially in determining the outcomes of any schooling system. Last, but not least, personal ability is also an important determinant.

To illustrate these considerations, Figure 4 below shows the difference in performance in the PISA assessment for students with more, and less privileged socio-economic and cultural backgrounds in the EU in 2006. These differences, even at their minimum, can be substantial, whatever the quality of the education system.

Given that the PISA test scores provide only a partial picture of the skills outcomes of compulsory education, the differences shown below could be an underestimation. Nevertheless, these suggest that public policies seeking to shape the skills base of an economy for growth purposes should pay attention to the extent to which socio-economic and cultural inequalities and differences impact on education systems.

Figure 4: The effects of socio-economic and cultural differences on 15-year olds' performance in science, 2006



Are these education participation targets necessary for smart, sustainable and inclusive growth?

The answer to this question depends on the kind of skills needed to achieve the growth objectives of the Europe 2020 strategy, and the extent to which participation at the levels of education prescribed by the headline targets is necessary for delivering these.

This paper argues that, provided the conditions pertinent to the quality of education systems are met, the target of reducing early drop-outs to 10% can make a big difference. Early education provides the base for developing not only future functional skills but also the capacity to learn, specialise and develop further.

Moreover, 'soft' skills, such as creativity and entrepreneurship, depend on personality characteristics which are shaped at an early age. As discussed earlier, some of these 'soft' skills are important for innovation, especially in the services sectors. Other 'soft' skills, such as interpersonal relations, are just as important for employment in sectors forecast to be growth employment sectors, such as personal and social services.

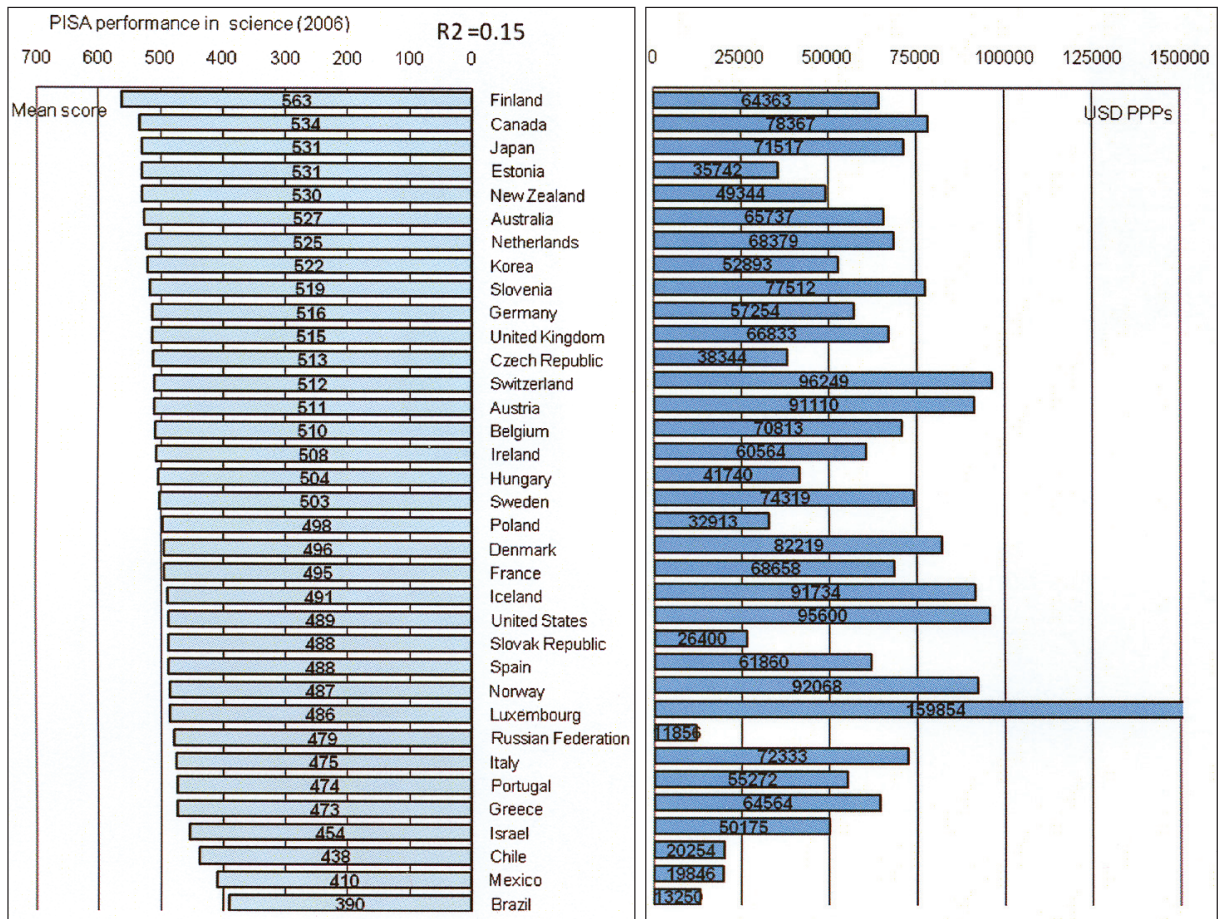
It is slightly less clear, however, whether setting a 40% target that those aged 30-34 in 2020 should hold a higher education qualification or equivalent, will bring similar results. Higher education offers more specialised functional skills. While some of these are important for cutting-edge innovation, others do not necessarily match the production strategies of firms in an economy. These could be better served by skills acquired through, for example, vocational training.

As higher education is non-compulsory and specialised, unless it is specifically steered to meet local employment demands, it is not very likely that people will choose to undertake courses that would lead directly to employment or to employment where they were able to recoup the financial investment. However, it is fairly difficult to predict national employment needs for a ten-year time scale, and policy measures that would steer higher education to meet market needs also take a long time to take effect.

People with higher qualifications have a higher chance of securing employment than those without, especially those of a relatively young age. However, it is not always clear whether this is because the specialised skills these qualifications provide are really in demand, or whether it is because it is assumed that those who have completed the course are likely to have other skills that cannot be taught, such as 'soft' skills like creativity, entrepreneurship and interpersonal skills. If higher education qualifications are used to signal skills that are not necessarily learnt in higher education programmes, then the investment is inefficient, and the certification ineffective.

Moreover, if the supply of workers with higher education qualifications increases without a commensurate increase in demand, then even the signalling power of these degrees will eventually decrease. Given that higher education involves additional costs to course fees and foregone revenues for the student, pushing for high proportions of university graduates may not always represent good value for money.

Figure 5. Relationship between PISA performance in science at age 15 and cumulative expenditure per student between 6 and 15 (2005, 2006)



Source: OECD, Education at a Glance 2008

Assessing the needs of European Member States for university graduates should also take into account the increasing mobility of workers, especially those with higher qualifications. As mentioned above, migration now takes different forms than in the past, for example, being circular or temporary, which may result in at least some of a country's needs for a skilled workforce being temporarily filled by people who have been educated elsewhere.

In conclusion, in terms of designing a public policy aimed at economic growth, it is questionable if raising the average proportion of people aged 30-34 in the EU who possess a higher education degree or equivalent to at least 40% is necessary for achieving the required skills, and an efficient use of resources. This chapter has argued that the education participation targets set out in the Europe 2020 strategy are neither sufficient nor wholly necessary for ensuring that the EU workforce will have the skills necessary for smart, sustainable and inclusive growth.

This does not mean that the issue of skills does not merit high-level policy attention, especially in the context of the EU's economic strategy. We turn to the question of what public policies can do to help implement this strategy in the next chapter.

IV. Public policies and skills for smart, sustainable and inclusive growth

During the discussion of the Europe 2020 strategy plan in spring 2010, some Member States objected to setting headline targets on education participation, on the basis that this is not an EU, but a national competence. Moreover, some critics have voiced concerns about how realistic it is to set education targets, given the tight financial constraints that many EU governments are facing in the aftermath of the current financial and economic crisis. At the same time, granted the potentially important role of education for facilitating social mobility, it has been feared that tight constraints on resources are likely to lead to, and perpetuate, greater inequality.

Given the importance of skills for achieving Europe's growth objectives, the opportunities and limitations of the Europe 2020 headline targets on education participation, and the constraints facing public policies and finances, what should be done to maximise the strategy's targets and the ability to deliver the necessary skills? Is there a point in discussing skills and education policies at the EU level, when education remains a national competence?

National public policies

Starting with public policy at the national level, the strategy urges governments to ensure 'efficient investment in education and training systems at all levels', from pre-school to tertiary.¹⁵ Efficiency in investment here can have both an external and an internal dimension.¹⁶ *External* efficiency refers to both the total resources devoted to education at all levels and the efficient distribution of investment across different levels of education. *Internal* efficiency refers to the way that education institutions, such as schools and universities, are run.

Increasing investment is not the only way to achieve high-quality skills. Figure 5 above shows rather a weak correlation between the PISA scores in science for 15-year-old students and the amount of cumulative expenditure (public and private) per student between the ages 6 and 15. As discussed earlier, the quality of an education system depends on many factors: its governance, the incentive structures for teachers and the content of the curriculum. Governments need to take all these elements into account if they are to invest efficiently.

Given the financial constraints, and the relationship between participation levels in education and skills outcomes, focusing public investment in high-quality, early education to reduce early drop-out rates to the 10% target, is likely to have results that spill over to other, higher levels of education.

High-quality early compulsory education can equip students with both strong fundamentals for further specialisation and more generic skills that will allow them to continue with lifelong learning, and adapt to changing labour-market requirements. Moreover, good early education will help develop the 'soft' skills that are important for innovation.

Last but not least, universal access to high-quality early education is expected to put students from poor socio-economic background on a better footing for further education beyond the compulsory level, together with better future employment prospects. In that sense, ensuring universal access to high-quality early education can go a long way to fighting social inequality.

The emphasis of public policy on early education would also be sensible in the face of financial constraints. Higher education is designed to provide more specialised, often functional skills and labour-market needs change, and are often difficult to predict far enough in advance to steer public policies accordingly.

Some flexibility is needed and a better public-policy objective would be to ensure that labour-market needs are effectively and promptly signalled and taken into account in shaping further/higher education choices. This requires institutions and mechanisms for information exchange between employers and

potential students/future employees. Some flexibility in the wage-setting mechanisms is also helpful to allow the demand for, and supply of, particular skills to be reflected in the future returns that people expect from their investments. Such returns are part of the incentive for investment.

Flexibility in wage-setting to reflect expected returns from higher education should be balanced with labour-market institutions created to ensure stability in employment relations, and to encourage employers and employees to jointly invest in company- and sector-specific skills. However, the drawback of encouraging firms to invest in skills-training for their employees is the possibility of the so-called 'hold-up' problem. This occurs when an employee who has been paid to upgrade his/her skills is then poached by another firm that has not borne the cost of this investment. This acts as a disincentive for employers to invest in helping their staff to acquire specific skills.

Similarly, individuals may not be sufficiently motivated to invest in sector-specific skills, as this would potentially reduce their mobility and future income, if they were made redundant or the sector declined. In this case there need to be adequate measures to replace this source of income and help them adjust. These are important considerations for two reasons. First, it is the individuals and the companies which choose to invest in higher education, not the government. This training is not compulsory and decisions are taken based on current local labour-market conditions. Secondly, under the current and future tight public-finance constraints, there is a stronger case for more private, rather than public, investment in higher education.

Of course, the requirements to balance out wage-setting flexibility with the rules and regulations of labour-market institutions, are influenced by an economy's need to choose between specific and generic skills. Evidence suggests that successful product-market strategies rely on both types of skills.¹⁷ Moreover, increasing labour mobility, especially within Europe, means that firms that follow strategies that deviate from the norm in the economy, can get around the constraints imposed by these institutions either by offering atypical contracts, or by hiring personnel from abroad.¹⁸

So far the discussion has focused on the process of producing skills. However, achieving the desirable skills does not mean that they will automatically be used to improve growth. Perhaps the most important condition for encouraging growth is to ensure that there are employment opportunities.

Ensuring that potential employees have the right skills focuses on the supply-side of the employment equation, but there must be sufficient demand to create jobs in the labour market. It is particularly critical in the current and near future, following the crisis, to ensure that investment in education and skills will not be wasted.

At the moment, unemployment, especially, among young people and new labour market entrants, has reached very high rates in Europe. Research has shown that an individual's skills depreciate as a result of prolonged spells of unemployment. Prolonged unemployment for young people is likely to substantially reduce their returns from their investment in education for the rest of their working life.

Coordination at the EU level

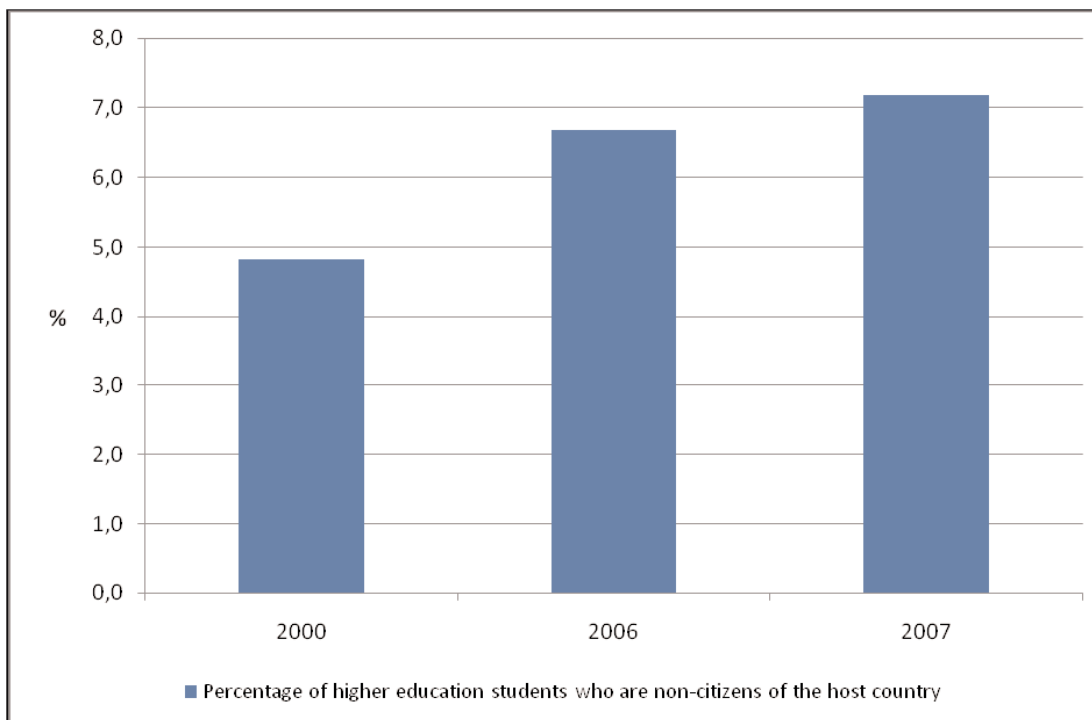
In spite of some Member States' initial criticisms about including education/skills targets in the Europe 2020 strategy, and as a consequence, including national education policies in the annual policy coordination process, there is a strong case for such coordination. In addition it also signals the importance of skills for achieving the future society goals for Europe.

Labour mobility across Member States, as traditionally measured by the proportion of the labour force in one Member State who originate from another, is still relatively low: according to EUROSTAT data the EU27 average was only 2.4% in 2005. However, new forms of migration are on the rise, namely circular and temporary migration. Temporary labour migration is one of the ways in which trade in services takes place. Given the prominence of services in creating value-added and employment in Europe, and their appearance in some of the current policy debates on the further completion of the Internal Market in

services, it is likely that this form of migration will rise further and more international data are required to assess these trends.

Moreover, as Figure 6 below suggests, while the mobility of higher education students, (defined as the percentage of higher education students who are non-citizens in the total number of higher education students in a country) is still low, it has been increasing since 2000. It is likely that as the Bologna Process (introduced to create the European Higher Education Area by making academic degree standards more compatible throughout Europe) is fully implemented, this trend will continue. Higher education graduates from other countries often then stay and work temporarily in the host country before they return home. They are also more likely to migrate to other EU Member States.

Figure 6: Higher education student mobility trends



Source: Eurostat Education and training database

As the labour force of national economies is likely to consist of increasing numbers of people from and/or educated in other Member States, there will be a growing need to coordinate policies to deliver the skills necessary for smart, sustainable and inclusive growth across Member States in order to avoid waste of resources. Areas of coordination could include the systematic and timely collection and diffusion of information about labour mobility flows, student mobility, and potentially, even the skill needs of different labour markets. Given the invaluable role that institutions such as employers' associations play in predicting future skill needs, their coordination role could be potentially extended to the EU level.

EU coordination is also important both in the field of education policies, and between education and other policies, especially where they affect macroeconomic conditions in Member States. Fiscal policies are coordinated at the EU level, especially within the euro zone and this has implications for the capacity of national governments to invest, especially given the current debt situation in several EU countries.

V. Conclusions and Recommendations

This issue paper has analysed whether it is sensible and helpful to include any education targets in the Europe 2020 strategy for smart, sustainable and inclusive growth. It has also explored whether the proposed education policy initiatives are likely to deliver the desirable outcomes in terms of skills and growth objectives and whether there is a case for coordinating policies for delivery at the EU level.

Skills are paramount for all three growth objectives in the Europe 2020 strategy, so it is sensible to make their acquisition one of the strategy's focal points. However, we do not have sufficiently specific knowledge about the skills that will be required by 2020 to reach these targets. This lack of specificity is especially acute when it comes to indicating which functional skills higher education systems should be conferring on students, and the most appropriate level of education for doing so.

Recommendation 1

National statistics services and researchers must define and develop adequate indicators for measuring skills and the aspects of quality of their education system. However, definition is not the only problem here. The lack of adequate measures of skills, such as 'learning to learn' as well as of indicators of quality in the education system is equally important.

This paper has argued that participation in education alone does not guarantee that students will acquire the skills that a country needs. The quality of the education system is also important. The determinants of quality are complex and multi-faceted and concern not only the amount of money spent on education but also its efficient use. Efficient use of resources is particularly important given the financial constraints that both the public and the private sectors are likely to face in the current decade.

The extent to which participation in education will lead to the desired skills' outcomes also depends on the students' personal characteristics, circumstances and motivation. This adds extra layers of complexity in shaping skills' outcomes.

Smart investment in education is particularly important in order to optimise the use of both public and private investment.

Given the difficulties in defining and measuring future technological developments and functional skills' needs, one possible avenue for focusing public spending is early education. This paper has argued that investing in early education can tackle the problem of inequality as well as mitigate the effect of other unfavourable factors that shape educational outcomes and which are related to the student's background.

Recommendation 2

Invest in high quality, early education as this provides the general skills' foundations for acquiring further technical/functional skills. In particular, public investment in widely accessible early education (including pre-primary) can be an effective tool for reducing inequalities in opportunity for children of more disadvantaged backgrounds.

This paper has argued that skills alone cannot secure smart, sustainable and inclusive growth. They need to fit with the technological needs of production. There must be a sufficient numbers of jobs both to ensure that as many people as possible are actively engaged in the labour market, thus reducing the risk of social exclusion, and so that individuals with a diverse body of skills are employed to promote smart and sustainable growth.

Recommendation 3

Invest in job creation to create opportunities for those with a diverse body of skills, thus helping to push for sustainable growth, and reducing the numbers of those at risk from social exclusion.

Employment conditions are all shaped by flagship policies in the Europe 2020 strategy, for example industrial policy, innovation policy, fiscal policies and so on.

Recommendation 4

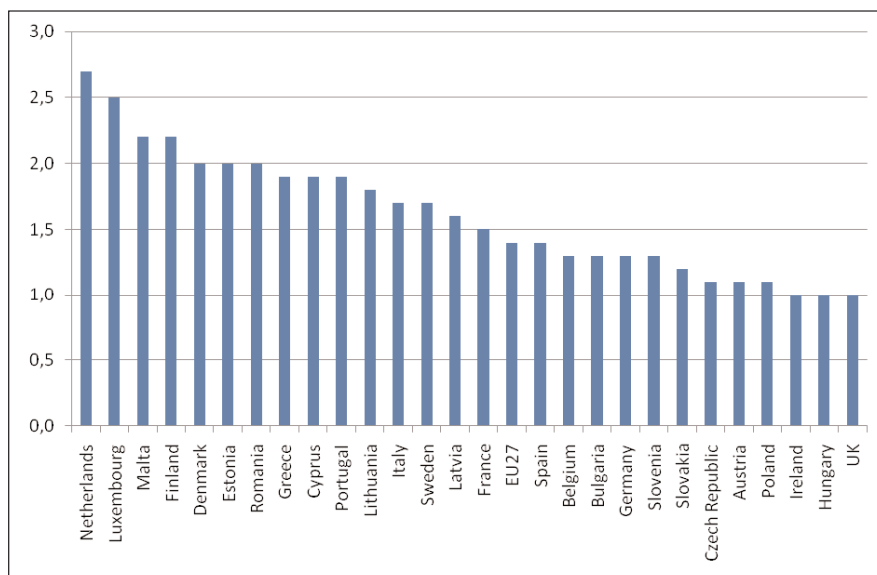
Even though education policies *per se* are not an EU competence, the goals set in this field should be monitored and coordinated with decisions taken in other important areas, such as public finances, industrial and innovation policies. This would help clarify priorities on all sides.

Annex

How well are EU Member States doing in terms of quality of their education systems? We present some evidence here, regarding compulsory and higher education.

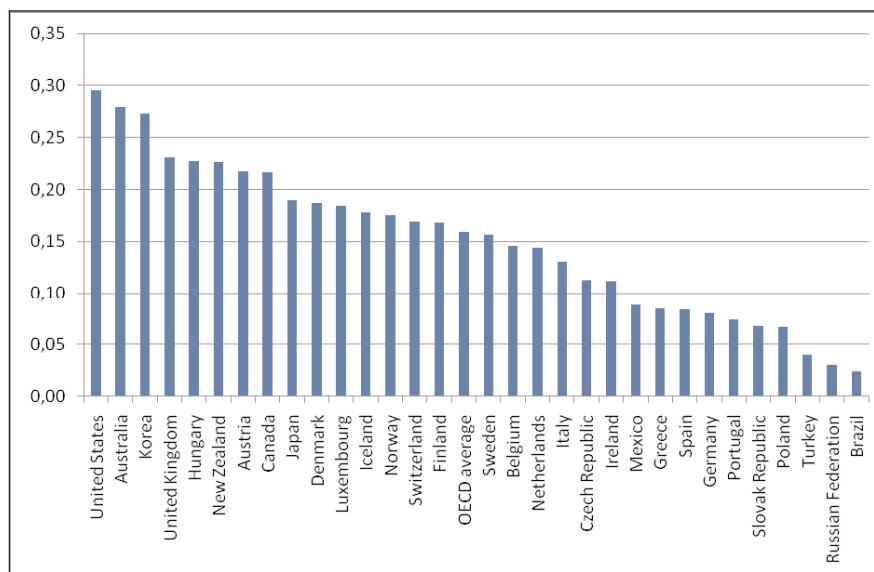
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Figure 7: Average number of foreign languages taught per student in lower secondary education, 2006 in the EU



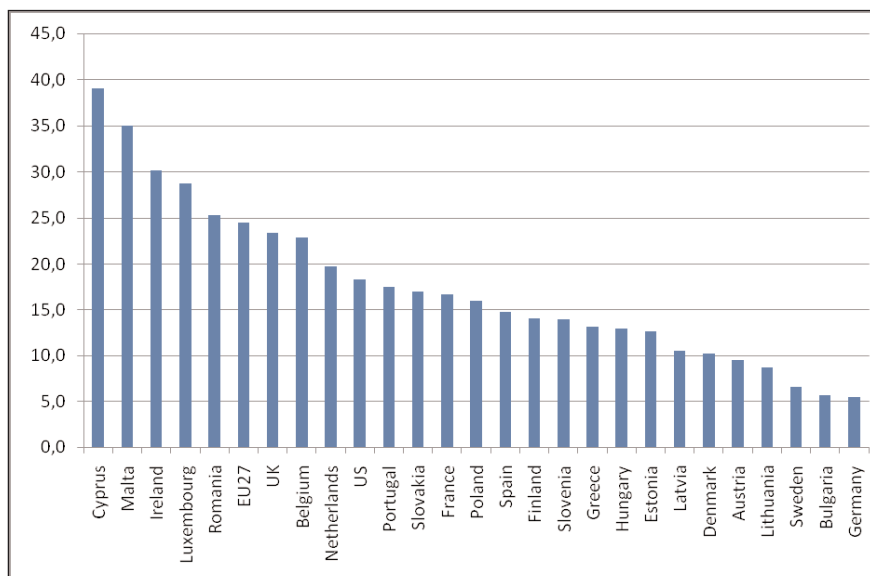
Source: Eurostat

Figure 8: Computers per student in schools, 2003, OECD countries



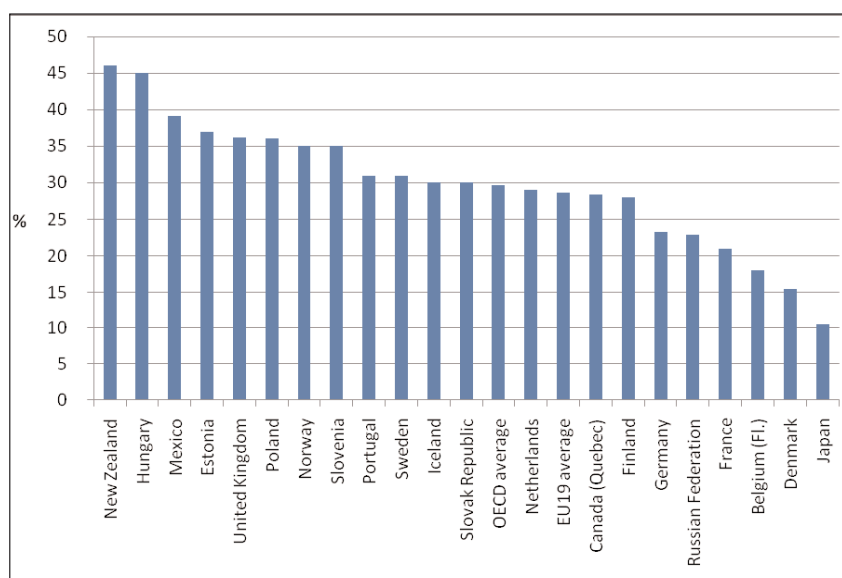
Source: OECD: Education at a glance 2006, PISA 2003

Figure 9: Students to teachers ratio in ISCED 1-3 in the EU and the US, 2006



Source: Eurostat: Education and training database

Figure 10: Proportion of students leaving tertiary education without a degree, 2005



Source: OECD Education at a glance 2009)

Endnotes

1. In some important services sectors, productivity growth is difficult to measure at least in conventional ways.
2. N. Oulton (2003) 'Must Growth Rate Decline? Baumol's Unbalanced Growth Revisited', *Oxford Economic Papers*, 53(4), 605-27.
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4. I. Brinkley, S. Theodoropoulou and M. Mahdon (2009) *Knowledge Workers and Knowledge Work*, London, The Work Foundation.
5. EU KLEMS database, November 2009 release, accessed on 7 July 2010.
6. CEDEFOP, (2010) *Skills Supply and Demand in Europe*, European Centre for the Development of Vocational Training: Thessaloniki.
7. Ibid.
8. This discussion follows from G. Becker (1964) *Human Capital : A Theoretical and Empirical Analysis with Special Reference on Education*, (3rd ed. 1993), Chicago University Press.
9. See P. Hall and D. Soskice (2001) *Varieties of Capitalism*, Oxford University Press.
10. Own calculations based on data from the EUKLEMS database, March 2008 release. The sectors counted as 'knowledge-intensive' are electrical and optical equipment, aircraft and spacecraft, post and telecommunications, financial intermediation and insurance, insurance and pensions funding, computer related activities, R&D activities, legal, technical and advertising services, education, health and social services.
11. OECD (2005) *Promoting Innovation in Services*, DSTI/STP/TIP(2004)4/FINAL.
12. The Correlation Index between the duration of compulsory education and the competence that 15-year-olds have acquired is 0.18 for Science, 0.37 for Reading and 0.47 for Mathematics.
13. See European Commission (2000), 'European Report on the Quality of School Education', Report based on the work of the Working Committee on Quality Indicators, DG Education and Culture.
14. See www.arwu.org for the latest rankings.
15. See European Commission, (2010), 'Europe 2020: A Strategy for Smart, Sustainable and Inclusive Growth', COM(2010) 2020.
16. See N. Barr (2004) *The Economics of the Welfare State*, Oxford University Press.
17. See Hall and Soskice, 2001 and S. Berger (2008) *How We Compete*, MIT Press.
18. See A. M. Herrmann (2008) 'Rethinking the link between labour-market flexibility and corporate competitiveness: a critique of the institutionalist literature', *Socio-economic Review* 6 (4), pp. 637-669.