

THE EUROPE 2020 STRATEGY

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CAN IT MAINTAIN THE EU'S COMPETITIVENESS IN THE WORLD?

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PROLOGUE

When the European Commission drafted the Europe 2020 Strategy and the European Council adopted it in 2010, the financial and economic crises had already been in full swing for over two years. At that time, however, it was thought that thanks to an unprecedented deployment of monetary and fiscal stimulus, the developed world had stopped the downward spiral and could return to a 'normal' growth path. Few anticipated at the time that the crisis would mutate into a fully fledged eurozone crisis with the potential to tear the eurozone and the European Union apart.

At first sight it might appear that the Europe 2020 Strategy and the eurozone crisis are completely unrelated. However, our report shows that in reality there are close links. Two aspects are particularly striking:

First, the crisis seems to strike in particular countries which in our analysis stand out as under-performers.

Second, the most important omission from the Europe 2020 Strategy flagged by us concerns the integration and regulation of financial markets.

The Europe 2020 Strategy looks at the EU27 as a whole, but for it to work, it requires efforts at the member state level, especially those that are lagging on a number of indicators.

The eurozone crisis has rendered this need even more apparent and brought into sharp focus the deep structural imbalances between the core of the eurozone, here in particular Germany, but more generally all member countries north of the Alps, and a number of Southern countries like Spain, Italy, Portugal and Greece. All four of these Mediterranean countries suffered and still suffer from the same phenomena: overall employment rates are low due to the fact that the utilization of their female labour force lies idle, and the overall stocks of intangible capital are below the EU average leading among other things to suboptimal investment in the innovation capacities of their firms. To these handicaps one has to add

high levels of corruption and inefficient governmental structures, especially in Greece and Italy.

These fundamental factors are the underlying cause of the crisis, which is unlikely to abate until deep reforms allow the crisis countries to increase their productivity..

The second aspect which the euro crisis has brought into sharp focus is the malfunctioning of financial markets. During the boom phase, capital flowed into today's crisis countries at unprecedented rates, financing construction and consumption sprees that should have been recognized as unsustainable even when they were happening, and not only in hindsight. Now, during the bust phase, the same markets are withholding all capital from the periphery countries, thus deepening the crisis by pushing their governments and banks to the brink of insolvency, thus making a recovery even more difficult. This constitutes a real-life illustration of our observation that a key element missing in the Europe 2020 strategy was a profound reform of financial markets, which is needed not only to overcome this crisis (as was recognised by the euro area summit of 29 June 2012) but also so that the boom/bust patterns at national level can be avoided in future.

We still retain the hope that a combination of profound reforms in the crisis countries and the reform of financial market supervision now in process will allow the eurozone and thus the entire EU to emerge strengthened from the present crisis.

Daniel Gros and Felix Roth
Brussels, August 2012

INTRODUCTION

Launched in March 2010 by the European Commission, the Europe 2020 strategy (European Commission, 2010a) aims at achieving “smart, sustainable and inclusive” growth. The engines driving this growth are: i) knowledge and innovation, ii) a greener and more efficient use of resources and iii) higher employment combined with social and territorial cohesion.

More concretely, the Europe 2020 strategy aims to:

- i) achieve a target for R&D expenditure of 3% of GDP (but also acknowledges the need to develop an indicator that would better reflect innovation intensity),
- ii) increase the employment rate of the population aged 20-64 from the current 69% to 75% (through a greater involvement of women, older workers and better integration of migrant workers),
- iii) lower the dropout rate to 10% from the current 15% and increase the share of the population aged 30-34 having completed tertiary education from 31% to 40%,
- iv) cut the number of Europeans who are at risk of poverty or exclusion by 20 million citizens and
- v) reduce greenhouse gas emissions by at least 20% compared with 1990 levels or by 30% if the conditions are right, raising the share of renewable energy sources in our final energy consumption to 20% and moving towards a 20% increase in energy efficiency.

This report sheds light on the question of whether these five goals of the Europe 2020 strategy will foster the global competitiveness of European economies. The report is structured as follows: chapter 1 elaborates upon the different concepts of competitiveness given in the literature and highlights the authors’ own definition of competitiveness. Chapter 2 looks

at the dimension of innovation, considering whether investment in R&D is a useful indicator of innovative capacity and proposing an alternative indicator, namely investment in intangible capital. Chapter 3 focuses on employability and argues that the planned skills upgrade will constitute the best means to increase employment, but that this might not be enough to reach the 75% employment benchmark. Chapter 4 discusses education along with the quality and quantity of the labour forces in the European economies in comparison with OECD countries and China. Chapter 5 delves into social cohesion in terms of the determinants of the rates of those at risk of poverty or exclusion. Chapter 6 finds that the current climate goals are unlikely to have a significant impact on global warming and that the conditions are right to be more ambitious, arguing the EU's internal pricing of carbon should be complemented by an external element (a carbon import tax). Chapter 7 briefly reviews the new governance structure and the coherence of the macroeconomic scoreboards, as well as the trade-offs between the various indicators of the Europe 2020 strategy, the European semester and the euro-plus pact. Chapter 8 concludes with relevant policy steps to foster the future capability of European economies and their prosperity.

A first question one might ask is how likely it is that the 2020 targets will be reached on the basis of the performance of the EU economy over the last ten years? A rapid, simple exercise projecting the performance of 2000–10 forward to the year 2020 yields some interesting conclusions.

It is difficult to see how the target for R&D spending could be achieved, given that the share of R&D in GDP has practically remained constant at slightly below 2% of GDP over the last decade and one does not see many concrete measures being taken that could lead to a jump in R&D spending.

Similarly, it is difficult to see how the employment target can be reached given that the employment rate has moved by only about 2.5 percentage points over the last few years and would have to increase by more than 6 percentage points over the next decade. But it is hard to judge the extent to which the current employment rate has been affected by the recession and how much it would increase if the EU economy were to recover fully from the impact of the financial market crisis of 2007–09 and the euro debt crisis of 2010–11.

The target for education should be easy to reach, considering that the tertiary graduation rate among the younger cohorts has increased over the

last ten years from 22% to about 33%. A similar increase over the next ten years would bring it to over 43% and thus way over the target.

The target for reducing the dropout rate to 10% (from 14.1% in 2009) should be attainable, bearing in mind that this rate fell between 2000 and 2009 by 3.5 percentage points. A rate of progress that is only a little higher than in the past would be needed for that.

The target on poverty or exclusion reduction is more difficult to judge. At the aggregate level, the official statistics report a rapid reduction in the number of persons at risk of poverty or exclusion (about 10 million) in the last four years for which data are available (2005–09). However, this improvement was due almost exclusively to the 10 new member states from Central and Eastern Europe, and in particular to Poland (with a reduction of 6.6 million citizens).

How can this 2020 target be reached? One cannot just project the indicators from the last five years of the 10 new member states (the transition countries) forward to 2020. At best they might converge to the EU average (of poverty or exclusion rates). This would yield a maximum reduction of another 10 million citizens from poverty or exclusion. However, the sum of the national targets of these countries is only about 3.5 million, which would imply that the transition countries would in one decade cut the distance to the average by about one-third. However, this leads to the question where the other 16.5 million needed to attain the target would come from. The overall 2020 targets can only be achieved if the older member states really start to actively fight poverty and exclusion, but the rates of poverty and exclusion have actually increased over the last few years in these countries. It is difficult to judge how much of this is due to the recession and how much a recovery in the overall economy would help to achieve the 2020 targets these countries have set from themselves. Summing the national targets that exist for the old member countries yields only about 7.2 million.

The sum of the existing national targets is thus only about 10.7 million – a bit more than one-half of the official overall target. It is thus difficult to see how this target will be reached. As an aside, we note that the last official survey of the 2020 process does not even give the sum of the national targets with the official justification that the “result cannot be calculated because of differences in national methodologies” (see Table A.1 in the Annex). Any independent evaluation of the Europe 2020 process would remain impossible if this were to remain the case.

The only area where reaching the target does not seem to pose any problem is that of the environment. This is due to the fact that for the two binding targets in this area there are precise mechanisms with either international obligations at the EU level or directives which ensure the result. However, for the only aspect in this domain for which no constraining EU mechanism exist (an increase of energy efficiency of 20%), the sum of the national commitments again falls significantly short of the overall EU target.

One key aim of the Europe 2020 strategy was to be more transparent and credible by focusing on a small number of quantifiable and precise targets. This rapid survey of the five main targets shows, however, that at least one target cannot be even assessed because of differences in national definitions, and on most others it is doubtful that they will be reached.

1. EUROPE'S COMPETITIVENESS IN AN AGE OF RELATIVE DECLINE

1.1 Defining the concept

Classical definitions of competitiveness concentrate on the capacity of an economy to export and stress the notion that national economies, similar to companies, directly compete against one another. For example, the OECD's Glossary of Statistical Terms defines competitiveness as "a measure of a country's advantages or disadvantages in selling its products in international markets".¹ The definition given by the *Longman Dictionary* relates competition between firms to that between countries and defines competition as "the ability of a company, country, or a product to compete with others".² The same comparison between a firm and a nation is made by the *Business Dictionary*, which refers to competitiveness as "the ability of a firm or a nation to offer products and services that meet the quality standards of the local and world markets at prices that are competitive and provide adequate returns on the resources employed or consumed in producing them".³

Yet all three of these definitions of competitiveness have at their heart the idea that competitiveness is about competing nations. This thought has been strongly rejected by Krugman (1994). To him, such a definition of competitiveness and the policies centred on it are flawed. More specifically, Krugman argues that "competitiveness is a meaningless word when

¹ See "Competitiveness in International Trade", Glossary of Statistical Terms, OECD (<http://stats.oecd.org/glossary/detail.asp?ID=399>).

² Refer to "Competitiveness", *Longman Dictionary of Contemporary English* (<http://www.ldoceonline.com/dictionary/competitiveness>).

³ See "Competitiveness", *BusinessDictionary.com* (<http://www.businessdictionary.com/definition/competitiveness.html>).

applied to national economies", that "the doctrine of widely accepted competitiveness is flatly wrong" and that "national living standards are overwhelmingly determined by domestic factors rather than by some competition for world markets".⁴

Krugman's concept of competitiveness is in accordance with the definitions of other academics that place less stress on competition between nations and more on a nation's ability to produce efficiently with its given resources. In this vein, Porter (1990), for example, emphasises that "a nation's competitiveness depends on the capacity of its industry to innovate and upgrade" and that "the only meaningful concept of competitiveness at the national level is productivity".

In a recent presentation, Porter (2011) also defines state competitiveness as "the productivity with which a state utilizes its human, capital, and natural resources" and Lawrence argues that "the most important concept of competitiveness is not, therefore, how national performances compare or even how well countries perform in international trade. The critical issue for each economy is whether it is making the best use of its resources."⁵ Similar definitions of competitiveness are used by the two international competitiveness indexes: one published by the World Economic Forum (WEF) (Schwab, 2010) and the other one by the Institute for Management and Development (IMD, 2009). The *Global Competitiveness Report 2010–2011* of the WEF defines competitiveness as "the set of institutions, policies and factors that determine the level of productivity of a country" (Schwab, 2010, p. 4).⁶ The IMD's *World Competitiveness Yearbook* defines competitiveness as "how nations and businesses are managing the totality of their competencies to achieve greater prosperity" (IMD, 2009).⁷

⁴ See also the argumentation by Flassbeck & Spieker (2011).

⁵ See R.Z. Lawrence, "Competitiveness", *Concise Encyclopedia of Economics*, Library of Economics and Liberty (<http://www.econlib.org/library/Enc1/Competitiveness.html>).

⁶ The report covers 12 pillars of competitiveness. It includes various indicators, such as education and training, technological progress, macroeconomic stability, good governance, firm sophistication, market efficiency and public trust in politicians.

⁷ The IMD's *World Competitiveness Yearbook* includes 20 sub-indicators under four main dimensions: economic performance, government efficiency, business efficiency and infrastructure. In addition to growth and economic performance, IMD's index also considers softer indicators, such as quality of life.

Following the second set of definitions of competitiveness, from our own understanding, we would define economic/productivity growth as one of the most robust indicators of competitiveness. Thus in assessing an economy's competitiveness, one should examine those factors that have the possibility to enhance productivity. The Europe 2020 strategy correctly takes into account that measured GDP growth should not be the only policy goal. We agree that measures such as GDP per CO₂ emissions and income inequality also constitute important measures to capture ecologically and socially sustainable economic growth (see also Sen et al., 2009).

In our view, a nation's competitiveness refers to its capability to use its available resources as efficiently as possible to produce socially and ecologically sustainable wealth over the long term, thereby providing a sustainable increase in living standards for its citizens. In our opinion this is best achieved with appropriate and sufficiently high investment in innovation (e.g. business intangibles), human and social capital.

The qualification with the 'available resources' is very important if one wants to judge the EU's performance, given that its available human resources have stopped growing. This, together with the financial crisis, is also the reason why the implicit Lisbon goal⁸ of a 3% growth rate in real GDP is no longer realistic in the Europe 2020 strategy. Moreover, if one looks back over the last decade, one finds that the growth rate in GDP *per capita* has been approximately the same on both sides of the Atlantic, although the absolute growth rate of the US economy has been about one-half of 1% higher. The difference is of course due to the very low rate of population growth in the EU. Moreover, since birth rates are lower in the EU than in the US, the growth of the working-age population has been even lower on this side of the Atlantic (Table 1.1).

⁸ As a kind of precursor to the Europe 2020 Strategy, the 'Lisbon Agenda' was a development plan devised by the EU in 2000. Its aim was to make the Europe "the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion", by 2010. See European Council (2000).

Table 1.1 The demographic outlook for the G-3: Cumulative growth in the working-age population by decade (%)

	1990–2000	2000–10	2010–20
China	13.3	13.3	1.9
US	12.3	10.9	3.9
EU	3.2	3.6	-1.5

Note: Working-age population constitutes the population aged 15–65.

Source: Eurostat and UN population projections.

As a result one finds that growth in the EU in terms of GDP growth per working-age population has been slightly higher than in the US. This is illustrated in Table 1.2, which shows the cumulative growth of GDP per person aged 15–64 over the last decade (10% for the euro area versus 9% for the US). Another interesting conclusion to emerge from this table is that one should not consider a ‘Japanese decade’ a period of dismal performance, since in Japan real GDP per working-age population has actually increased more than in Europe or the US.

Table 1.2 Cumulative growth in real GDP, per person aged 15–64, 2000–10 (2000 = 100)

Area	Cumulative growth
US	109
Japan	116
Euro area	110

Source: Own calculations based on IMF data.

Looking ahead, the differences in demographics on both sides of the Atlantic will remain and the absolute growth rate in the working-age population will fall further in the EU, as shown in Table 1.1 above. The working-age population of the EU is projected to shrink until 2020, albeit only slightly (compared with the small positive growth between 2000 and 2010). This means that the EU will over all probably record even lower growth over the next decade than during the previous one and continue to experience lower overall growth rates than the US. Table 1.1 also shows that the working-age population will decelerate even more sharply in China over the next decade (the growth rate falls from about 1.3% per year to 0.19%), but given its much lower starting point in terms of GDP per capita, the country (along with most other emerging markets) is likely to continue to record much higher overall growth rates.

1.2 The global context

When the Lisbon strategy was formulated in 2000, the US appeared (for the then EU-15) to be the shining example of a competitive mature economy. Its employment rate became the target for the EU for the year 2010 and the ambition for the EU was to overtake the US to become “the most competitive knowledge economy” in the world.

Ten years later, the US no longer appears to constitute the best example to follow and it is clear that the emerging markets have become the key growth pole of the world economy. The ambition of the EU must now be reduced from becoming the most competitive economy to ensuring that it does not fall back given its deteriorating demographics and the weakness of its financial markets.

This relative decline is apparent in a number of areas. The most obvious one is that the share of global GDP of the EU is declining rapidly, while that of China and other emerging markets is increasing (Table 1.3).

Table 1.3 Growth poles in the global economy: Share of world GDP growth (%)*

	1990-2000	2000-10	2010-20
EU	15	25	16
- Euro area	15	19	9
Developing Asia	12	23	29
- China	8	15	19
US	41	25	15

* Measured in PPP.

Source: IMF (2011).

Another characteristic of the relative decline of the EU is in the area of innovation or at least the expenditure on R&D. Whereas a decade ago the EU ran a relatively close second to the US in terms of R&D expenditure, this is no longer the case, as China is now on course to overtake the EU and by 2020, on present trends, will spend much more in absolute terms (and about a similar percentage of GDP). Table 1.4 suggests that by 2020 China will spend about 40% more than the EU on R&D if it can maintain its past growth rates. The difference would disappear (i.e. the EU would spend as much as China in 2020) only if the EU were to really achieve its 2020 target of spending 3% of GDP on R&D.

Table 1.4 Total R&D spending by the EU, US and China
(with projections to 2020)*

	2000	2008	2020
EU (27 countries)	160	201	264
US	233	283	356
China	24	87	368
Japan	86	107	139

* At constant 2000 euros (in PPP).

Source: Own calculations based on Eurostat data.

The one aspect where the relative decline in the importance of the EU is welcome concerns the environment. The share of the EU in global emissions is indeed rapidly declining. This is only partially due to the efforts of the EU to reduce its own emissions. Still, in reality EU emissions have declined by only about 16% relative to the Kyoto Protocol baseline of 1990. Over the same period the emissions in emerging markets have nonetheless increased by a multiple of this value. Table 1.5 shows that in the year 2000 the EU still accounted for 19% of global emissions; today this value is only 12% and by the year 2020 it will have declined to about 10%. By contrast the share of the emerging Asian nations (non-OECD Asia) will have increased to over 40% of the world's total. This implies that the EU's own direct contribution to solving the global climate change problem is on course to becoming marginal.

Table 1.5 Share of world CO₂ emissions (%)

	2000	2010	2020
EU	19	12	10
US	23	18	15
Non-OECD Asia countries	17	34	41

Source: Own calculations based on IEA (2010).

1.3 The forgotten dimension: Financial markets

The Europe 2020 strategy makes explicit reference to financial markets, but it does not set any specific goals, nor does it contain any concrete measures despite the fact that the 2008 global financial crisis and the ongoing debt crisis in the euro area should have shown us that financial stability is a precondition for growth. Moreover, liberalising financial markets had been part of the Lisbon strategy. But the result of capital market liberalisation

(and integration) has been disappointing to say the least: R&D investment has not increased materially as a share of GDP and the bubble years saw a massive misallocation of capital into excessive construction investment in the Baltics, Spain and Ireland and excessive consumption in Portugal and Greece. There has been therefore a huge misallocation of capital within Europe and in particular within the eurozone. Increasing the efficiency of the allocation of investment and capital should have been a priority.

Growth, including growth in employment, will materialise over this decade only if financial stability is re-established in the eurozone (which accounts after all for over 60% of the EU's GDP). The drafters of the Europe 2020 should have taken this prognosis more explicitly into account.

1.4 Managing relative decline

Given that the emerging economies, chiefly China, are set to outgrow the EU over the next decade by a large margin, it is clear that success for the Europe 2020 agenda will be measured not by whether the EU is able to maintain a top position in economic league tables, but rather whether it can manage relative decline in such a way that the standard of living of the greying EU population still increases modestly.

What are the strategic implications of the more rapid growth in emerging markets?

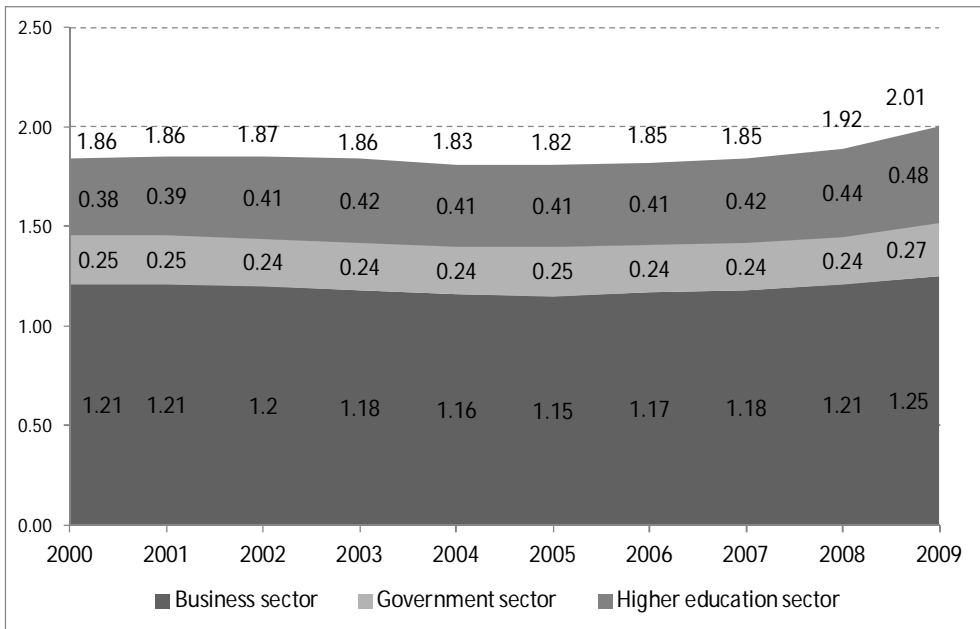
In principle, the EU should benefit from the strong growth of these economies, especially in terms of exports of investment goods. Also, the even faster growth of R&D expenditure in countries like China should not in principle be a cause of concern, as the economic literature indicates that the international spillovers from R&D should be positive. At the same time, it seems that the payoff from really path-breaking inventions is rising as the size of the global economy grows along with the pool of incremental R&D activity. (The greater the number of consumers who can afford a new gadget like an iPad, the more the inventor will profit. And the inventor will also benefit from the increased availability of software engineers who can contribute incremental improvements.) This would suggest that the quality of education, especially higher education and research, will in future matter even more. The relative absence of EU universities in global rankings is not a good sign in this respect.

Finally, in the area of climate change, the relative decline of the EU means simply that action at home will not contribute much to the solution of the problem.

2. THE TARGET OF INNOVATION

There is good and bad news in this area if one looks purely at the numbers. The good news is that investment in R&D has held up well despite the unprecedented depth of the recession and the fact that finance for R&D must presumably have become more difficult to obtain owing to the financial and banking crises. The bad news is that the EU's investment rate in R&D (as a share of GDP) has been very sluggish for more than a decade and that achieving the 2020 target would require a significant departure from the longer-term trend (see Figure 2.1 below).

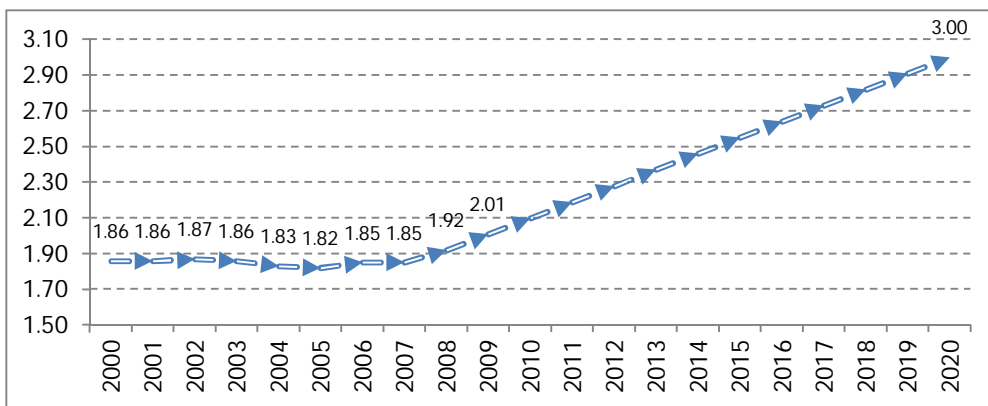
Figure 2.1 Expenditure on R&D as a % of GDP in EU-27, 2000–09



Source: Own estimations using Eurostat data.

Moreover, since fiscal policy is likely to remain under pressure for some time it is clear that public expenditure is unlikely to increase significantly. This implies that business expenditure, which in any case constitutes the largest part of R&D spending, has to rise very strongly over the next decade if the EU is to reach the 2020 target. Business R&D expenditure would actually have to increase by 80% if the 3% of GDP target is to be reached exclusively in this way, because business R&D expenditure now accounts for about 1.25% of GDP. It would have to increase to 2.2% of GDP in the EU-27 if the GDP shares of public and higher education expenditure are to remain constant (as one would expect given the pressure on budgets). Figure 2.2 shows graphically what change would be needed to reach the intended 3% benchmark in the year 2020. However, there is little sign of this happening so far.

Figure 2.2 Expenditure of R&D as a % of GDP in EU-27—Projection to reach the Europe 2020 target



Yet the likelihood that the EU will once again miss its own target perhaps becomes less relevant if one asks whether R&D is actually the proper target for innovation activity. This chapter therefore discusses alternative, broader indicators of innovation activities.

2.1 R&D expenditure – Flawed measure for innovation?

The importance of innovation for productivity growth has been stressed by many classical economic papers (see for example, Solow, 1956; Romer,

1990; Grossman & Helpman, 1994; Aghion & Howitt, 1992).⁹ Thus it is reasonable and sound for a competitiveness strategy, such as the Europe 2020 strategy, to put innovation policies at the centre of its dimensions of competitiveness. To measure innovation, the Lisbon agenda had already set the 3% benchmark of R&D investment in 2000. The Europe 2020 strategy (European Commission, 2010a) has agreed on the same benchmark, although it has indicated that a broader indicator of innovation should be utilised once one becomes available.¹⁰ The use of R&D as a sole indicator has been criticised as concentrating too much on the manufacturing sector, thus leaving out to a large extent the service industry and a large chunk of innovation activity within advanced EU economies (see here Tilford & Whyte, 2010; Roth et al., 2010).

But until recently there has not been an indicator available to measure this activity. This situation has changed with the official publication of the intangible capital dataset¹¹ by the INNODRIVE project (Jona-Lasinio et al., 2009, 2011; Piekkola, 2011; INNODRIVE, 2011). Its broader set of indicators to measure innovation is now available for an EU-27 country sample. This set of indicators is based upon an approach by Corrado et al. (2005, 2009) and has been applied to several country studies outside the US (Marrano et al., 2009; Edquist, 2011; Fukao et al., 2009; Jalava et al., 2007; Roth & Thum, 2010b). The new measure conceptualises innovation in wider terms by specifying innovation as also including: i) software and computerised information, ii) scientific and non-scientific R&D and iii) economic competencies. Economic competencies are further grouped into the three single aspects: i) marketing and advertising investment, ii) investment in firm-specific human capital (staff training) and iii) investment in organisational capital (organisational efficiency). A thorough description of

⁹ The papers that have specifically stressed the importance of R&D are those by Lichtenberg (1993), Coe & Helpman (1995), Park (1995), Guellec & Van Pottelsberghe (2001), Griffith et al. (2004), and Khan & Luintel (2006). Studies emphasising the importance of ICT include those by Van Ark et al. (2009) and O'Mahony & Vecchi (2003). Most recently, some authors have stressed the importance of intangible capital, for instance Corrado et al. (2009), Marrano et al. (2009), Edquist (2011), Fukao et al. (2009), Jalava et al. (2007), Van Rooijen-Horsten (2008).

¹⁰ Thus the Europe 2020 strategy already indicates that while sticking to the 3% R&D target, it is necessary to develop an indicator that would reflect R&D and innovation intensity (European Commission, 2010a, p. 9).

¹¹ The data can be downloaded from the INNODRIVE website (<http://www.innodrive.org/>).

the dataset and the underlying methodology can be found in Jona-Lasinio et al. (2009, 2011). Our preferred measure of innovation activity is 'new intangible capital', which incorporates forms of intangible capital that are not included in national accounts. These types of intangible capital are the following: architectural design, new financial products, own-account and purchased organisational structure of a firm, firm-specific human capital (training), branding (advertising), market research and scientific R&D (Piekkola, 2011, p. 3 and Jona-Lasinio et al., 2011, pp. 34-54).

An important feature of the measure is that it does not contain any public sector investment, but is based solely on private sector investment. Thus, it encompasses the non-farm business sectors c to k, plus o.¹²

Figure 2.3 shows the intangible capital investment in new intangible capital¹³ in the EU-25.¹⁴ Roth (2010) shows that once adding economic competencies on top of R&D, this increases innovation activity significantly.

A first observation is that the intensity of investment in all forms of new intangible capital varies greatly among the 25 member countries for which this measure is available. The highest investment is in new intangible capital (without product development in the financial services industry) and can be observed in Sweden (10.6% of value added) followed by Belgium (9.4%) and the UK (9.02%). France (8.59%) and the Netherlands (8.44%) come in fourth and fifth place respectively, followed by Slovenia and Finland. The largest economy, Germany, is located in the upper-middle field of the distribution.

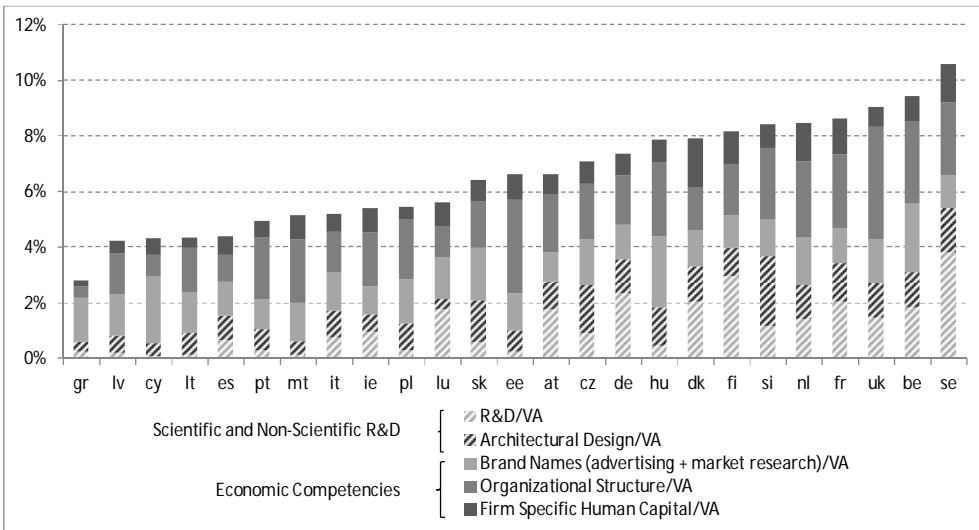
¹² In Figures 2.3-2.7 and 2.9 to 2.14, the VA reflects the gross value added for the non-farm business sectors, excluding real estate activity.

¹³ As software has already been included within the national asset boundary, it is not included in the concept of new intangible capital (which only incorporates assets that have not yet been included within the national asset boundary).

¹⁴ This indicator is only for the EU-25 because the cases of Bulgaria and Romania were not analysed owing to the fact that the data used from the INNODRIVE project do not include values for gross value added at current basic prices for these two countries. The indicator 'product development in the financial services industry' has not been included in Figure 2.2, as it has become more doubtful whether this indicator should still be included in the aftermath of the financial crisis. Furthermore, as in the case of Luxembourg, this latter indicator comprises a large bulk of intangibles. Figure A.1 in the Annex shows the new investment rates in intangible capital when product development in the financial services industry is included.

The economies that rank poorest overall are the Mediterranean and Baltic countries. Among the eight worst-performing countries are all six Mediterranean countries and the two Baltic countries, Latvia and Lithuania. This is particularly worrisome for economies such as those of Italy, Greece or Spain, which all badly need increased economic growth in the decade ahead to be able to service their progressively higher debts.

Figure 2.3 Investment in new intangible capital by businesses in the EU-25 compared with R&D, 1995–2005



Note: VA represents GVA expanded by intangible capital investment for the non-farm business sector (c-k+o) excluding real estate activities.

Source: Own estimations based on INNODRIVE data.

It is interesting to observe the good position of the UK, as its investment in R&D is quite low compared with the two largest continental European economies, Germany and France. This fact is less astonishing, however, when taking into consideration that the UK has greatly specialised in services and knowledge production over the last decades.¹⁵ Thus an indicator such as R&D, which is mostly based on an economy's

¹⁵ As different economies tend to specialise in a variety of industrial sectors (see here also Hall & Soskice, 2001), an innovation factor such as R&D, which chiefly depicts the innovation within the manufacturing sector, will not be appropriate for the full range of European economies, among which some may have specialised in services, IT, design, etc.

specialisation in manufacturing, seems to be more problematic for those economies that have more heavily specialised in innovating in their service sectors. Taking a closer look at the UK, a large share of the new intangible capital investment seems to be invested in organisational capital.¹⁶

But more importantly, the criterion of 3% of R&D spending is simply the wrong measure because it centres on the manufacturing sector, and given the global division of labour, in which manufacturing has experienced a profound shift towards the developing countries, it is not an appropriate measure for service-dominated economies such as those in the EU-15, where the share of services in GDP is around several times larger than that of manufacturing.¹⁷ Therefore, to measure the innovativeness of Europe's service sector and knowledge economies, a broader indicator for innovation seems crucial. The Europe 2020 strategy should shift its innovation indicator towards a broader measure of innovation. This is already foreseen (at least in a footnote in the official documents) and should now be implemented given that such a measure is available.

Figure 2.4 highlights once more the dominance of investment in economic competencies over that in R&D. In all countries the investment in the three aspects of economic competencies are higher than investment in R&D.

This is less so in R&D-intensive countries, such as the three Scandinavian countries Sweden, Finland and Denmark, and the three coordinated countries¹⁸ Germany, Austria and France. Still, in all other

¹⁶ Some of the large variance concerning organisational capital could stem from the difficulties of the international comparability of the ISCO88 classification.

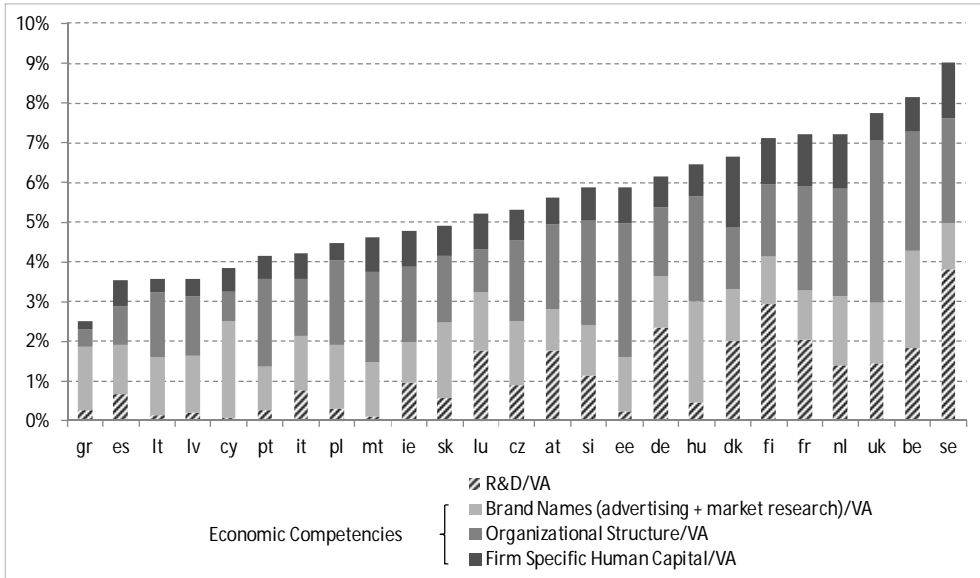
¹⁷ Different sources give somewhat different indicators. Eurostat reports that for 2008 manufacturing contributed 16.5% of total economy-wide value added (GDP), whereas services contributed 72%. The so-called EUKLEMS database reports give somewhat different results.

An example of the extent to which manufacturing has been relocated to the emerging markets is the manufacturing and sale of the iPod. The manufacturing of the iPod, which takes place in China, makes up the smallest fraction of the production of the iPod. Most of the costs are hidden in the design and economic competencies, such as firm-specific human capital, organisational capital and brand name.

¹⁸ For an introduction to the concept of 'coordinated countries', please see Hall & Soskice (2001). Contrary to the classification in Hall & Soskice (2001), however, France was considered a coordinated country.

countries, investment in new intangible capital clearly outweighs the investment in R&D.

Figure 2.4 Investment in R&D vs. economic competencies, 1995–2005



Note: VA represents GVA expanded by intangible capital investment for the non-farm business sector (c-k+o) excluding real estate activities.

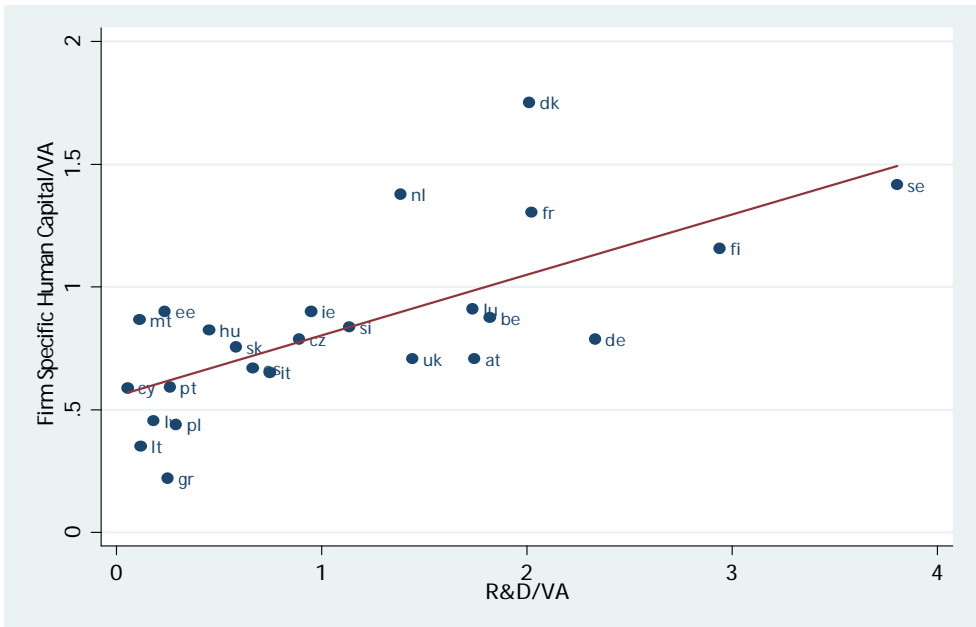
Source: Own estimations based on INNODRIVE data.

The key question to explore now is whether the single intangible-capital aspects are grouping themselves around the R&D activity of European economies or whether the other intangible capital dimensions are independent from investment in R&D. Figure 2.5 shows a scatter plot of R&D investment and investment in firm-specific human capital. The scatter plot clarifies that investment in R&D seems to go hand-in-hand with investment in firm-specific human capital within an EU-25 country sample. The R-square value of 0.48¹⁹ indicates a moderately strong association. Thus, typically, R&D investments in the market sector of an economy are related to the investment of the market sector in firm-specific human capital (or staff training). One could conclude that investments in R&D and staff training are complementary. The relationship between R&D and firm-

¹⁹ This value is the highest among all correlations between investment in R&D and the other indicators of new intangible capital.

specific human capital is strongly driven by the two economies Sweden and Finland, in which large investment in R&D is associated with high levels of investment in training. The outlier here is Denmark, which invests more in training than in R&D.

Figure 2.5 The relationship between investment in R&D and firm-specific human capital, 1995–2005

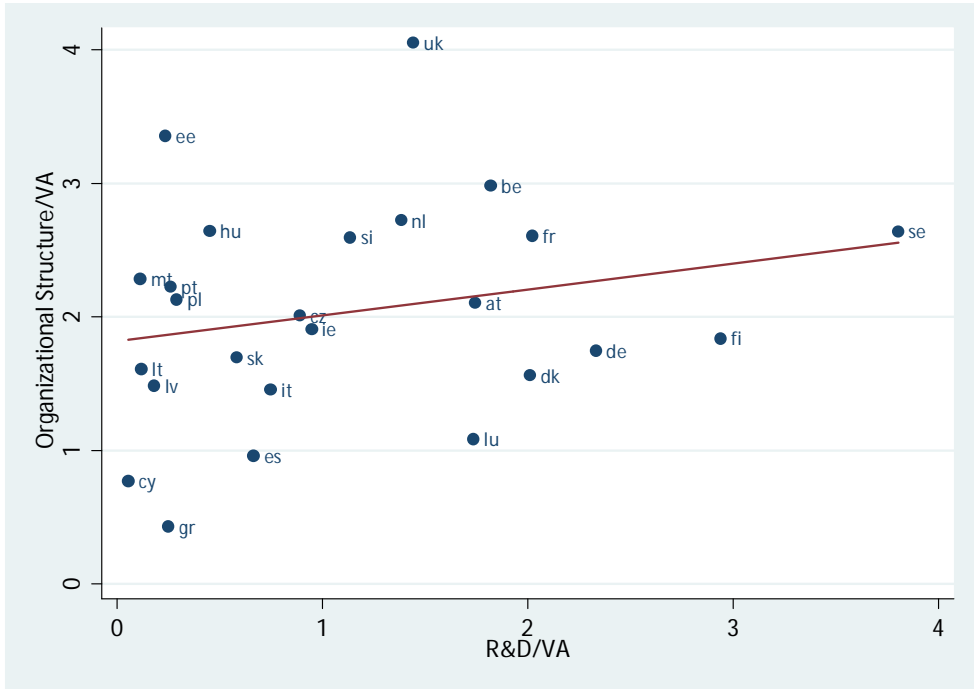


Note: VA represents GVA expanded by intangible capital investment for the non-farm business sector (c-k+o) excluding real estate activities.

Source: Own estimations based on INNODRIVE data.

But the picture looks somewhat different if one compares the investment in organisational capital with R&D investment (Figure 2.6). As has already been pointed out by Roth (2010), the investment in organisational capital is only weakly associated with investment in R&D. As mentioned above, here the UK is a clear outlier in that it invests significantly in organisational capital but only moderately in R&D. This is largely owing to the own-account spending on managers' salaries. Hence, as proposed by previous studies (e.g. Tilford & Whyte, 2010), these results suggest that the UK has put greater emphasis on restructuring its organisations, which is more closely related to its innovativeness in the services sector.

Figure 2.6 The relationship between investment in R&D and organisational structure



Note: VA represents GVA expanded by intangible capital investment for the non-farm business sector (c-k+o) excluding real estate activities.

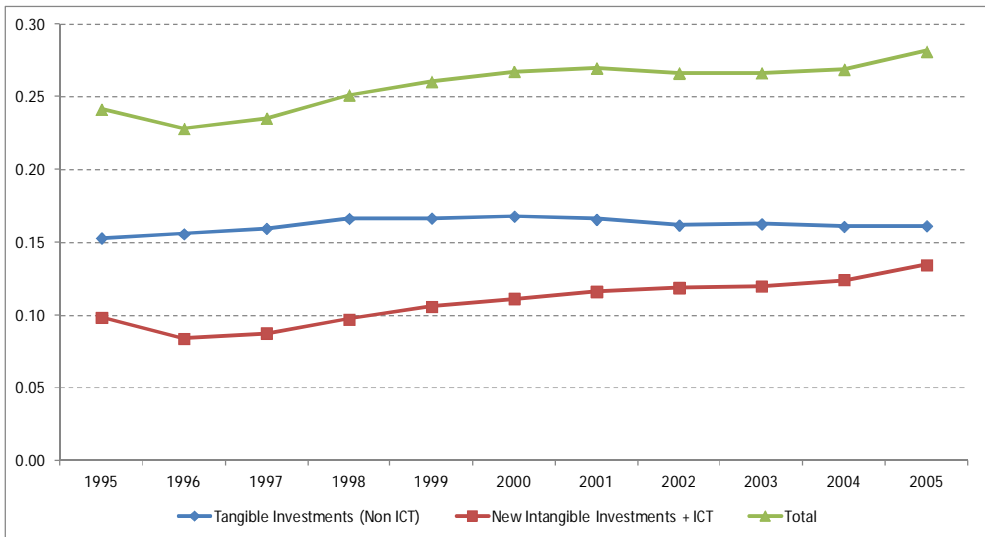
Source: Own estimations based on INNODRIVE data.

2.2 Intangible capital investment

The national accounting system developed in the West today seems to be flawed in several respects. In general it lacks the inclusion of environmental, human, health and social capital (Sen et al., 2009). Moreover, it seems unable to measure the ongoing shift from economies based on traditional, industrial manufacturing towards economies that are far more based upon services and knowledge – in general a shift towards knowledge economies (Roth, 2010). Van Ark et al. (2009) frame this argument another way, stressing that manufacturing goods are becoming more and more knowledge-intensive. As already pointed out by Roth (2010), if one considers new intangible capital as gross fixed capital formation and adds it on top of ICT capital, the investment rate (investment as a share of value added) will nearly double in an EU-11 country sample.

Furthermore, one would also then not observe a steady decline in investment rates. Once one takes new intangible capital and ICT capital into account, the investment rate steadily increases in the European economies (Figure 2.7).

Figure 2.7 Comparison of business investment in traditional tangible capital, ICT and new intangible capital in the EU-13, 1995-2005



Notes: Tangible capital investment excluded residential capital and intangible capital excluded product development in the financial services industry. All investments are expressed as a percentage of GVA expanded by intangible capital investment for the non-farm business sector (c-k+o) excluding real estate activities.

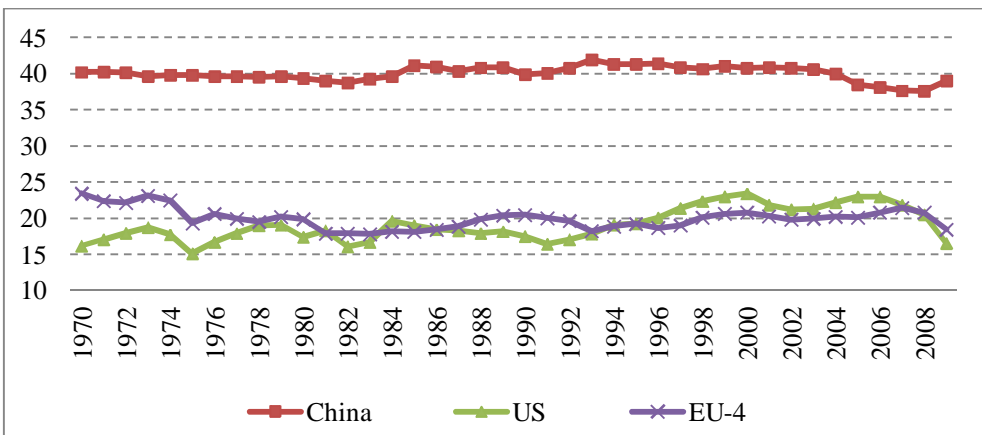
Source: Own estimations based on data from the INNODRIVE Project and EUKLEMS database (EUKLEMS: EU KLEMS Growth and Productivity Accounts, March 2008 Release, <http://www.euklems.net/>). The authors would like to thank Mary O'Mahony for providing the tangible capital input for France and Ireland to the authors.

The conclusion of Figure 2.7 is clear. The European business sector seems to be far better prepared for global competitiveness than is suggested by official, national account statistics. If one compares China's massive investments in traditional brick, mortar and machinery capital with the investment rate of European businesses, one might strongly conclude that European business sectors are falling far behind. But the fact that China is investing heavily in traditional capital is just a sign of the phenomenon of deeper interconnectedness in global production, with China having taken

over a huge part of the world's manufacturing. Thus, a policy conclusion for the most advanced European economies must be to invest more heavily in intangible capital, as it is there that they will have to establish the lead if they want to be able to increase their living standards and therefore their GDP per capita in the coming decades.

To clarify the argument, Figure 2.8 shows the investment trend in traditional capital investment for the EU-4 (Germany, France, Italy and the UK) in comparison with the US and China. The figure shows well-known facts. China's capital investment remains constant at an approximate rate of 40%, whereas the EU-4's capital investment rate has somewhat declined (from 23.4% in 1970 to 18.5% in 2009). Did the investment gap between China and the EU-4, which was 16.8% in 1970, widen to 20.5% in 2009? As we expect that the EU-4 is investing more greatly in intangible capital, most likely the old gap can be evened out significantly once intangible capital investment is viewed as gross fixed capital formation. In particular, investment rates in the US (which were around 16% in 1970 and 2009) should be significantly higher. In fact, they should be twice as high (see Nakamura, 2010).

Figure 2.8 Comparison of investment trends in China, the US and the EU-4 (France, Germany, the UK and Italy) (%)

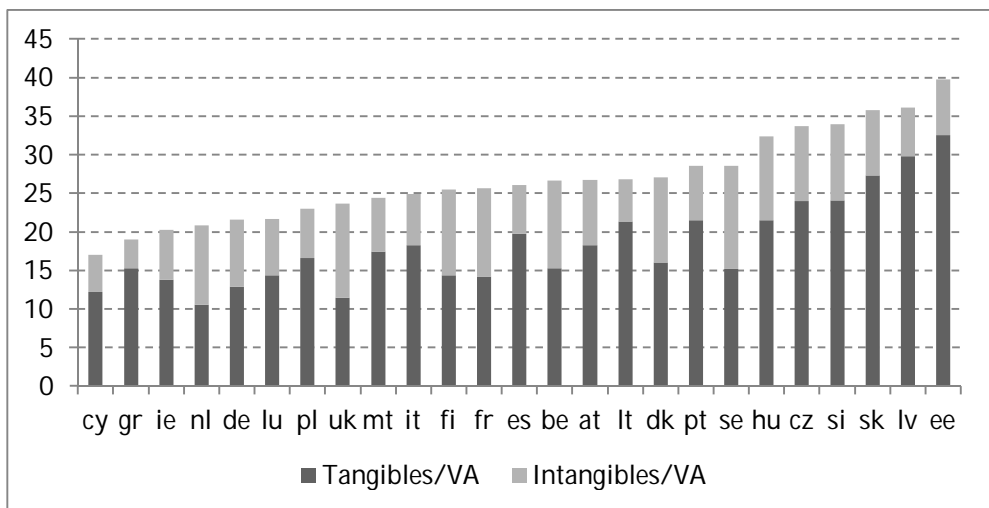


Source: Own calculations using data from the PENN WORLD, Tables 6.3.

2.3 The relationship between tangible and intangible capital investment

Figure 2.9 depicts the capital investment flows for an EU-25 country sample in the year 2005, after adding intangible capital investment on top of tangible capital. The average EU-25 investment rate is 28%. Whereas in Luxembourg the investment rate in intangibles is already higher than investment in tangible capital, in countries like Sweden, the Netherlands and the UK, the investment share is approximately the same. Denmark, Finland, France and Belgium invest a significant proportion in intangibles, while transition, Baltic and Mediterranean countries put the largest share into tangible investment.

Figure 2.9 Tangible vs. intangible capital investment in the EU-25, 2005 (%)

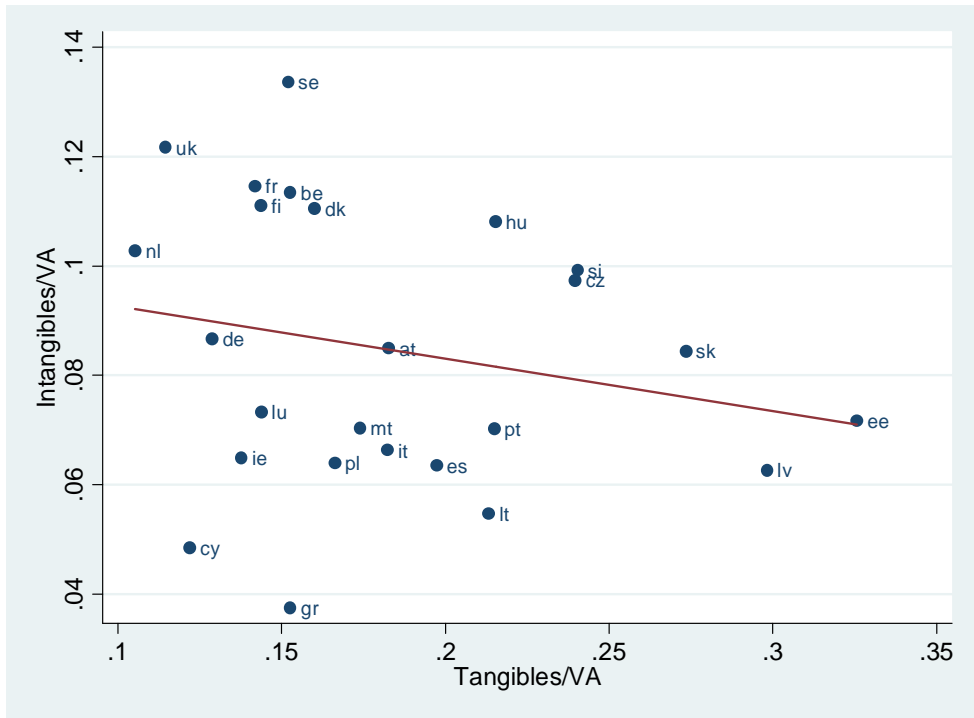


Note: New intangible capital investment excludes investment in product development in the financial services industry. VA represents GVA expanded by intangible capital investment for the non-farm business sector (c-k+o) excluding real estate activities.

Source: Own estimations based on INNODRIVE data.

Figure 2.10 shows the relationship between tangible and intangible investment in an EU-25 country sample for the year 2005. The scatter plot already indicates a negative association between tangible and intangible capital investment.

Figure 2.10 Relationship between tangible and intangible investment in an EU-25 sample, 2005

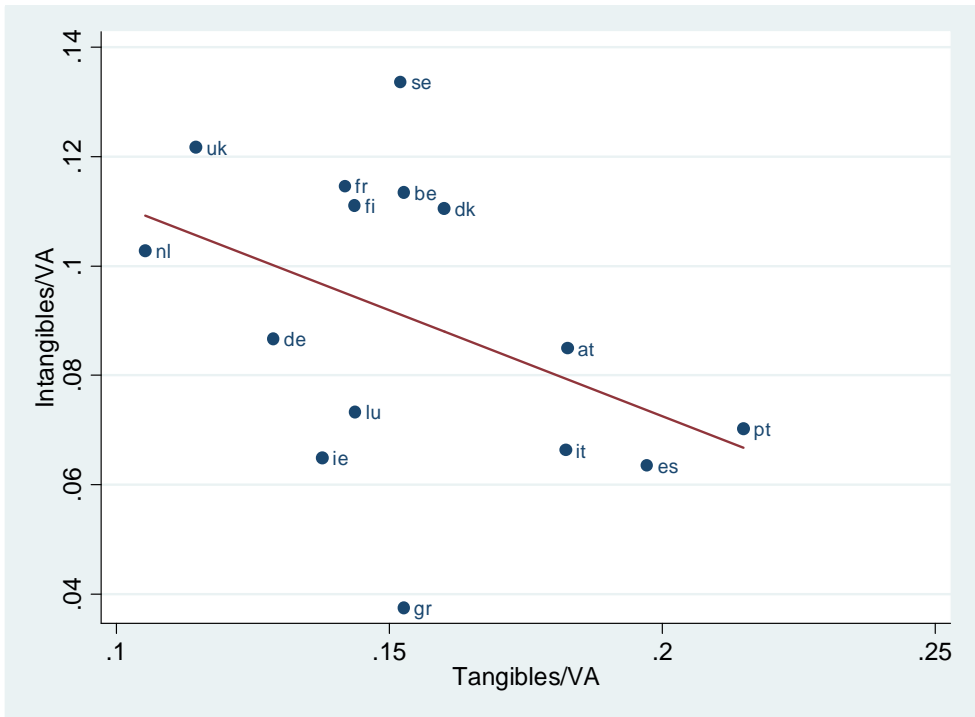


Note: New intangible capital investment excludes investment in product development in the financial services industry. VA represents GVA expanded by intangible capital investment for the non-farm business sector (c-k+o) excluding real estate activities.

Source: Own estimations based on INNODRIVE data.

This picture grows more pronounced in an EU-15 country sample (Figure 2.11). The significantly negative association between tangible and intangible capital highlights that those countries with low levels of intangible capital investment tend to have higher levels of tangible capital investment (such as Spain and Portugal). Those countries with a low investment rate in tangible capital seem to have a higher investment rate in intangible capital (such as the UK and the Netherlands).

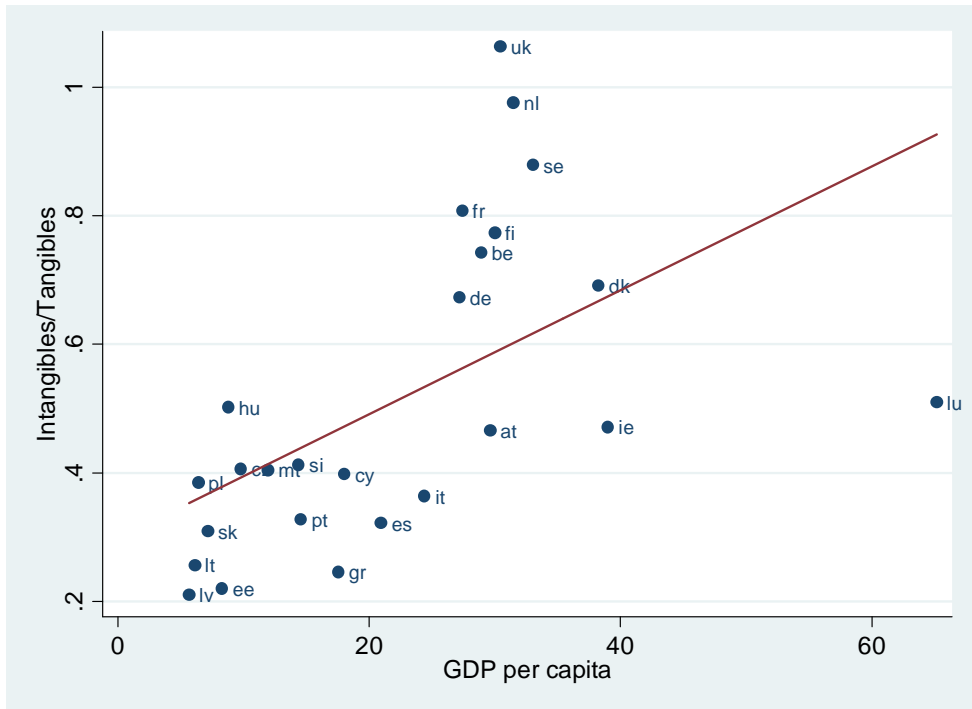
Figure 2.11 Scatter plot of tangible and intangible investment in an EU-15 sample, 2005



Note: New intangible capital investment excludes investment in product development in the financial services industry. VA represents GVA expanded by intangible capital investment for the non-farm business sector (c-k+o) excluding real estate activities.

As we have seen up to now, it seems that there is a transformation taking place in the more advanced and wealthy economies from tangible to intangible capital investment. Figure 2.12 shows a scatter plot of the wealth of a nation (GDP per capita) and the ratio between the investment levels in intangible and tangible capital. It appears that richer countries have a higher ratio of investment in intangible to tangible capital. The causality could clearly run the other way around, however, such that countries that have invested sufficiently in intangible capital have grown faster and become richer (for the positive impact on the investment of intangible capital on labour productivity growth, see Roth & Thum, 2010b).

Figure 2.12 Scatter plot of GDP per capita and the ratio of intangible and tangible investment in EU-25, 2005



Note: New intangible capital investment excludes investment in product development in the financial services industry.

Source: Own estimations based on INNODRIVE data and Eurostat data.

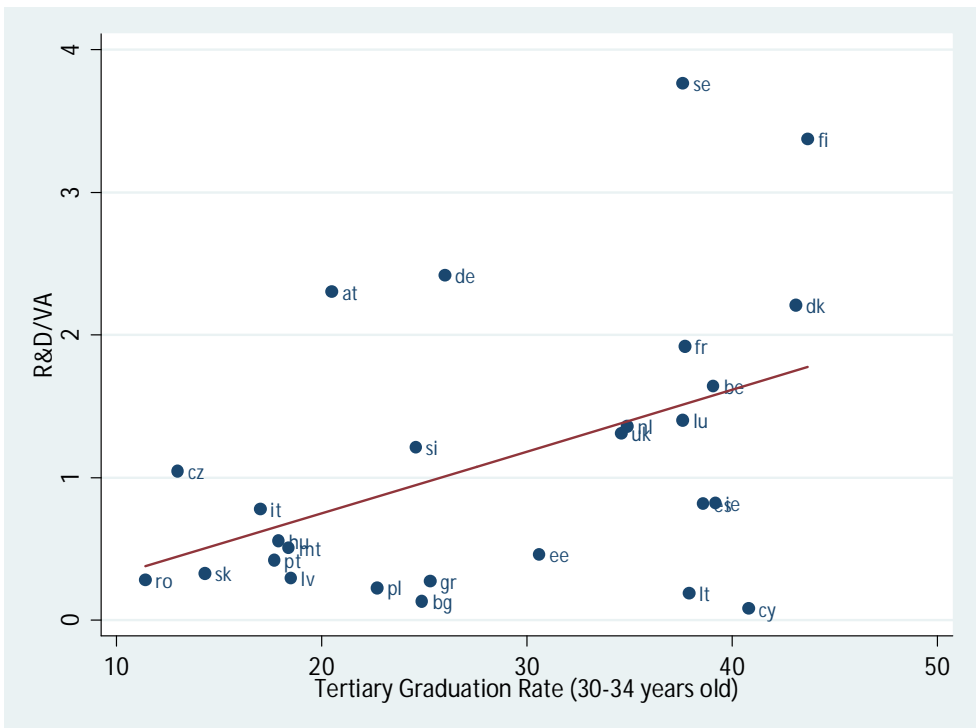
2.4 R&D, intangible capital investment and tertiary education

The goal of tertiary education and the goal of R&D investment are treated quite separately within the EU 2020 strategy. Yet this does not make sense if one thinks about how the R&D target is to be achieved: more R&D expenditure requires more highly qualified personnel, particularly engineers for R&D in the usual, narrow sense and other highly qualified personnel if one thinks about intangible capital. Indeed, the target of innovation cannot be treated separately from the target of education. Figure 2.13 clarifies that for a country with a low rate of tertiary graduation, it makes no sense to invest 3% of its GDP in R&D, because it will not have the capacity to employ the necessary researchers for its R&D investment.

The case of Italy can be used to illustrate this proposition. With a 20% rate of tertiary graduation and 1% spending of R&D over GDP, the policy

goal to increase R&D by 2% (from 1 to 3%) for Italy makes no sense as Italy plainly lacks an adequate number of academics who would be able to absorb the additional spending. Taking the current rate of tertiary graduation into account, in Italy an additional increase in R&D spending would most likely only result in higher salaries for the existing researchers but would not create any benefits/welfare for the total economy.

Figure 2.13 Relationship between the share of the population having graduated from tertiary education (aged 30-34) and business R&D investment over gross value added (2005)



Note: VA represents GVA expanded by intangible capital investment for the non-farm business sector (c-k+o) excluding real estate activities.

Source: Own estimations based on INNODRIVE data and Eurostat data.

At the same time, it seems that other institutional variables are associated with R&D investment. We would emphasise in particular the importance of the general framework that is constituted by the public administration. Investment in R&D will be undertaken only if there is an efficient government apparatus that protects this investment. That is why

we also put among the explanatory variables an indicator of the effectiveness of government (from the World Bank Governance Indicators dataset). Moreover, we added two additional variables, which might be important in explaining where R&D takes place:

- 1) The share of manufacturing in GDP (since R&D is mainly done in the manufacturing sector), and,
- 2) A dummy for Germany and Austria, which is justified by the dual education system in these countries.

The result of the regression analysis is reported in Table 2.1. We find that this regression explains over two-thirds of the cross-country variability in R&D investment. The share of manufacturing in GDP is highly significant and implies that a country whose manufacturing sector is larger by, say, four percentage points of GDP also spends 0.2 percentage points more of its GDP on R&D. The dummy variable for Germany and Austria is also highly significant and implies that both countries spend about half a percent of their GDP more on R&D than would otherwise be expected. Notably, however, the tertiary graduation rate is not significant in this regression, which might be explained by the fact that tertiary graduation rates are linked with government effectiveness.

Table 2.1 Other institutional variables that are associated with R&D investment

R&D	Coefficient	Standard Error
Tertiary graduation rate (15-64 yrs.)	0.01	0.02
Government effectiveness	1.24***	0.24
Manufacturing value added	0.05**	0.02
Dummy for Austria and Germany	0.54**	0.23
Constant	-1.25*	0.65
R-square	0.75	
Observations	27	

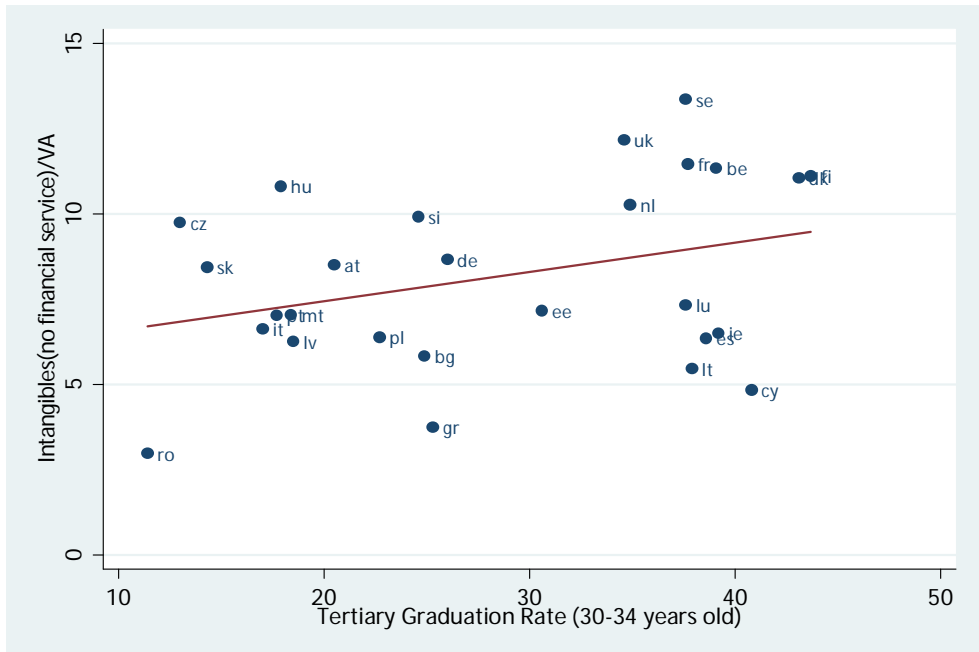
Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, robust standard errors.

Sources: Own calculations based on INNODRIVE data and Governance Indicators (Kaufmann et al., 2010).

The same picture shown in Figure 2.13 can be detected when analysing the relationship between the tertiary graduation rates (at age 30-34) and the investment in intangible capital in Figure 2.14. Increasing

investment in intangible capital should be associated with a higher level of tertiary graduates.

Figure 2.14 Scatter plot of the share of the population having graduated from tertiary education (aged 30-34) and investment in intangible capital, 2005



Note: VA represents GVA expanded by intangible capital investment for the non-farm business sector (c-k+o) excluding real estate activities.

Source: Own estimations based on INNODRIVE data and Eurostat data.

Determinants of investment in intangible capital

It might be useful to explore other cross-country determinants of investment in intangible capital. Preliminary results indicate that the same variables that influence R&D also influence intangible capital investment, i.e. the strongest influence on intangible investment is the efficiency of the government. This makes sense because the return on intangible investment is determined largely by the extent to which the regulatory and legal environment protects the value of intellectual property, patents, trademarks, etc. This suggests that efforts to foster investment in intangible capital should not be based on incentives for specific activities, but rather aim broadly to improve the efficiency of administration, the judiciary, etc.

Preliminary investigations (see, for example, the simple OLS regression results below in Table 2.2) have not yet allowed us to solve the puzzle, nor clarified the causality between government effectiveness and intangible capital investment empirically. It could for instance be that richer countries have more efficient governments and a higher investment in intangible capital. To shed light on these and other questions, more research needs to be conducted on this issue.

Table 2.2 Other institutional variables that have an impact on intangible capital investment

Intangible capital (no financial service) /VA	Coefficient	Standard error
Government effectiveness	4.42***	0.84
Tertiary graduation rate (15-64 yrs.)	-0.08	0.07
Manufacturing value added	0.15*	0.09
Dummy for Austria and Germany	-1.93***	0.67
Constant	1.73	2.31
R-square	0.59	
Observations	27	

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Robust standard errors. VA represents GVA expanded by intangible capital investment for the non-farm business sector (c-k+o) excluding real estate activities.

Sources: Own calculations based on INNODRIVE data and Governance Indicators (Kaufmann et al., 2010).

2.5 Conclusions

A number of conclusions can be drawn. First, the Europe 2020 innovation benchmark of 3% investment in R&D seems insufficient, as R&D is too centred on the manufacturing sector. As the main bulk of activities in European economies concern the services sector, one should utilise a broader concept of innovation, namely the concept of intangible capital. Second, using an index of intangible capital changes the innovation ranking among European economies. Countries such as the UK, the Netherlands and Belgium, which ranked among the average innovators, are now located in the top rankings of innovation. Third, the Mediterranean countries do not invest enough in intangible capital. This will pose a serious threat to the economies of Italy and Spain in the coming decades. Fourth, after accounting for intangible capital as gross fixed capital formation, the

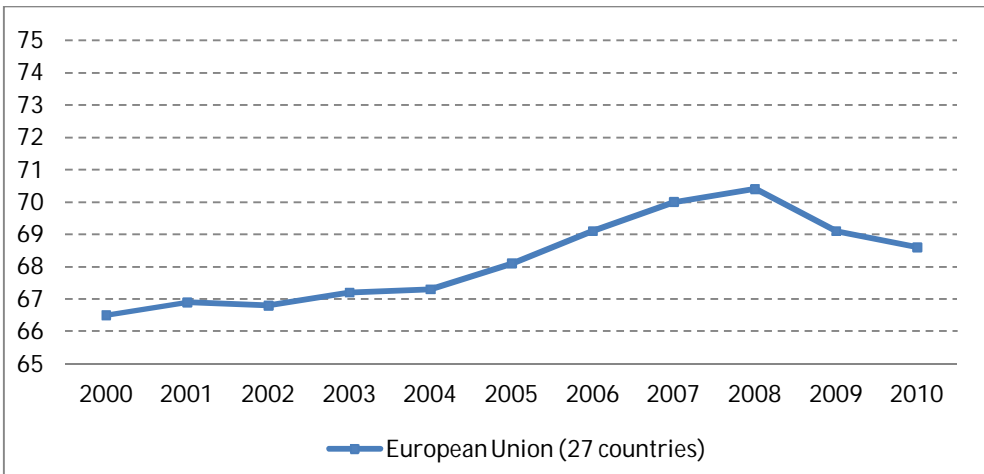
investment rates of European economies increase significantly. Overall business investment is much higher in those countries that are already richer. Fifth, it seems that the existing national accounting framework is not capable of measuring the transformation of traditional manufacturing economies to service- and knowledge-based economies. Finally, investment in R&D and intangible capital requires not only an educated population, but also efficient government institutions.

3. THE TARGET OF EMPLOYMENT

3.1 Recent developments

One of the goals of the Europe 2020 strategy is to increase the employment rate of the population aged 20-64 from 69% to 75% by the year 2020. As can be inferred from Figure 3.1, the threshold of 70% was reached in 2008 for the EU-27. But the recession, owing to the financial crisis in the aftermath of the collapse of Lehmann Brothers in mid-September 2008, brought the employment rate down to 68.6% in 2010. The fall in employment was fairly widespread, but was of course strongest in countries like Spain and Ireland, due to the bursting of their extraordinary housing bubbles.

Figure 3.1 Employment rate of the population aged 20-64 in the EU-27, 2000–10 (%)



Sources: Own calculations based on Eurostat data, Europe 2020 indicators.

Given the depth of the recession, the fall in the employment rate was actually moderate (and smaller than in the US). There has been much

discussion about the extent to which this is due to the ‘shock absorbers’ in the social security systems of the EU member countries. Yet the fact that employment fell by less than GDP also implies that one should not expect too much of a rebound in employment even if the European economies were to recover fully from the recession (something that is not yet in sight).

Figure 3.2 clarifies that the goal of 75% of employment will only be achieved after enormous efforts of the European member states, as an actual increase of 2.3 percentage points from 2000 to 2010 would now have to be followed by an increase of 6.4 percentage points from 2011 to 2020.

Figure 3.2 Employment rate of the population aged 20-64 in the EU-27, 2000-20 (%)—Projection to reach the EU2020 target

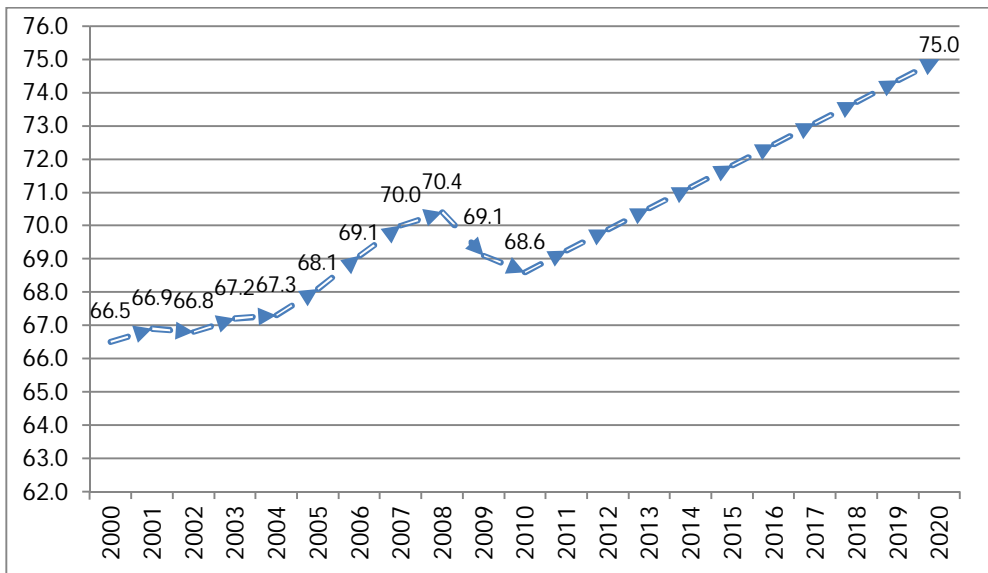
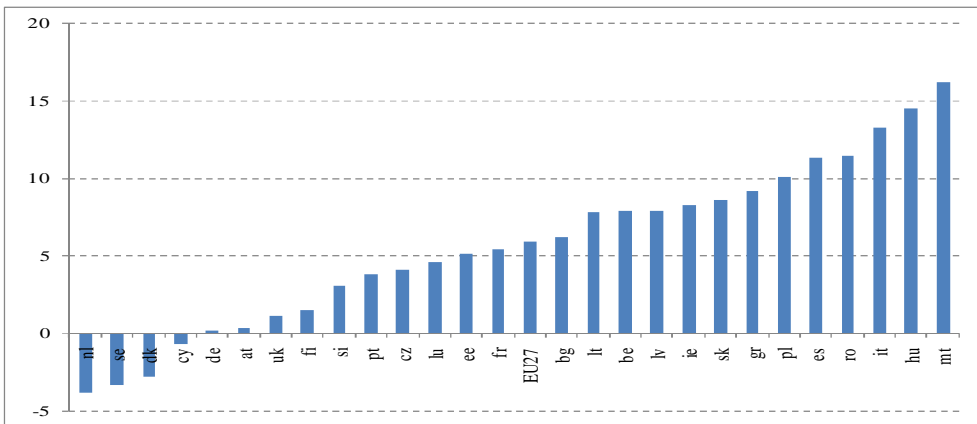


Figure 3.3 highlights the progress needed to reach the 75% employment benchmark for each EU-27 country. Interestingly, the largest European economy in the EU, Germany, almost reached the goal of 75% already in 2009 and has set itself only the goal of increasing this rate by 2 percentage points to 77%.²⁰ Since little further progress can be expected from this country, one has to look more closely at those countries that have

²⁰ There has been some discussion in the literature about the quality of the jobs created in Germany. One view is that many of the new German jobs are part-time jobs and constitute temporary employment (see also Pochet, 2010).

the largest 'reserves' in terms of underutilised labour potential. This is the case for the two biggest Mediterranean economies, Italy and Spain. For both of them, much more effort is required for these two countries to succeed in reaching the Europe 2020 goal of a 75% employment rate. In Italy, the employment rate of the population aged 20-64 was 61.1% in 2010 and would need to rise by 13.9%; in Spain it was 62.5% in 2010 and would need to increase by 12.5% to reach the 75% benchmark (or its own target of 74 %) in 2020. However, Italy does not even have the ambition to reach 75%, but has set itself the much lower target of 67-69%.

Figure 3.3 Progress needed to reach the Europe 2020 goal: Distance to the 75% employment benchmark for those aged 20-64, 2009



Sources: Own calculations based on Eurostat data, Europe 2020 indicators.

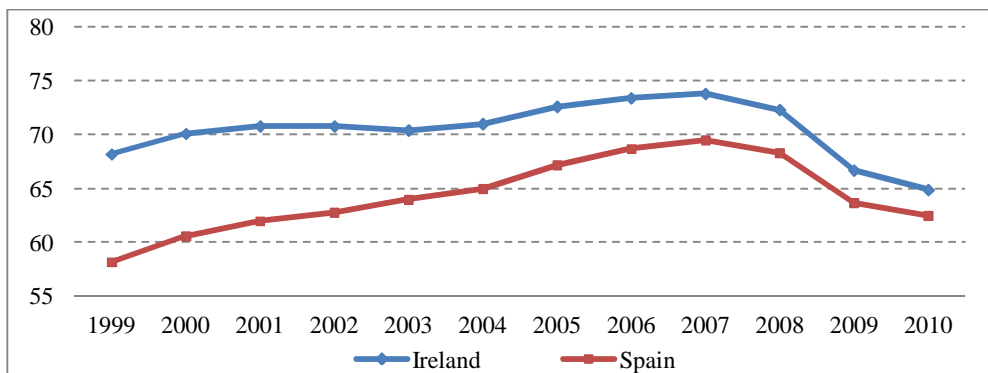
Why are the employment rates in Italy and Spain so low? A look at the participation rates disaggregated by gender reveals that the participation of women in the labour force increased substantially in Germany, while it has continued to lag behind in Spain and Italy. In detail, the participation rate of women is as high as 69.6% in Germany but only 55.8% in Spain and below 50% (49.5%) in Italy. The difference between the German and Italian shares of women in the labour force is thus a staggering 20.1%.²¹ In contrast, the difference between the employment rates for men in Germany and Italy is only 7.3%. Moreover, the difference is

²¹ Although it is most likely in the Italian case that there are more activities hidden in black/grey markets (Dell'Anno & Schneider, 2003), on its own this would not be able to explain the stark difference between Germany and Italy.

strongest for those Italian women who have low skills (less than upper-secondary education). Only 32.5% of Italian women with below upper-secondary education are employed. From an economic growth perspective, it would be highly important for Italy and Spain to increase both the share and skills base of women in the labour force.²²

Although the aggregated trend for the EU-27 in Figure 3.1 above shows that there have been slight losses in employment in the aftermath of the financial crisis, these losses vary significantly across the individual European countries, particularly between the periphery and core European economies. Figure 3.4 shows the 11-year trend for the two periphery countries Ireland and Spain, which have been hit hardest by the real economic decline (due to the bursting of their property bubbles) in rising unemployment rates (in Spain increasing from 7.8% in 2007 to 19.5% in 2010, and in Ireland from 4.3% in 2007 to 13.2% in 2010).

Figure 3.4 Employment rates of the population aged 20-64 in the peripheral countries Spain and Ireland, 1999-2010 (%)



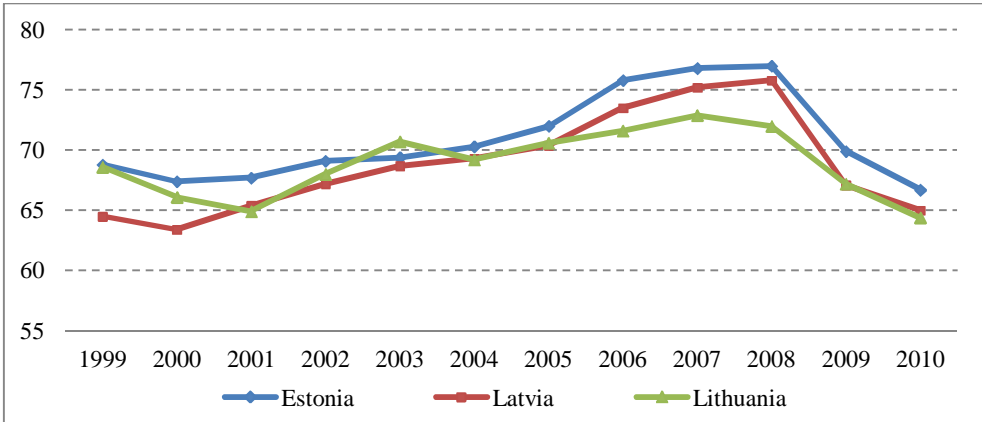
Sources: Own calculations based on Eurostat data, Europe 2020 indicators.

Because of its construction bubble at the time, Spain managed to increase its employment share from 57% in 1999 to nearly 70% in 2007. The employment rate then fell back to 62.5% when the bubble burst. In Ireland, which had a similar construction boom and bust, the employment rate among the population aged 20-64 increased from 68% in 1999 to 74% in 2007 and then declined in the wake of the financial crisis to 65%.

²² This argument is discussed in more detail in the later section on skills upgrading.

The same trend identified for Spain and Ireland holds for the three Baltic countries Estonia, Latvia and Lithuania (Figure 3.5). Employment ratios reached levels of higher than 75% in Estonia and Latvia in 2008, only to shrink by nearly 10% in the aftermath of the financial crisis in 2010. As in Spain and Ireland, this development was driven by an asset price bubble.

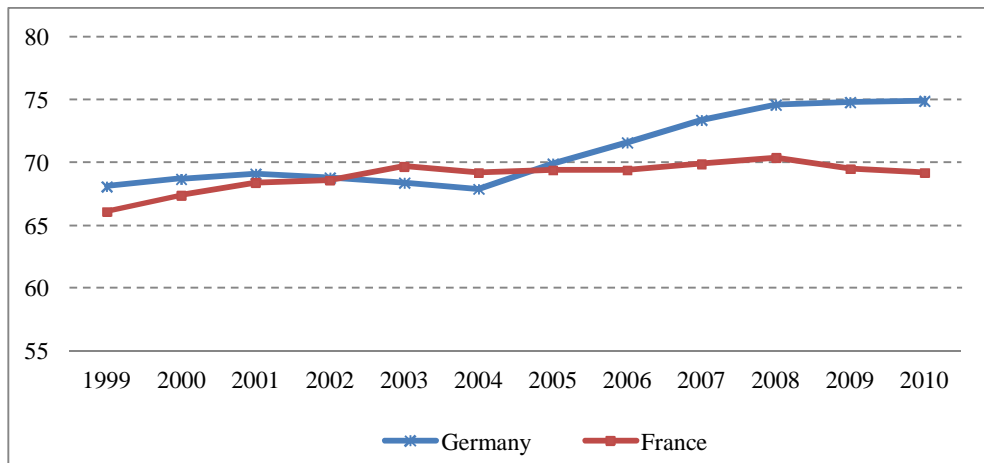
Figure 3.5 Employment rates of the population aged 20-64 in the Baltic countries, 1999-2010 (%)



Sources: Own calculations based on Eurostat data, Europe 2020 indicators.

In comparison, the trends for the two large European economies France and Germany have behaved differently. Whereas France modestly increased its employment rate among the population aged 20-64 from 66% to 70%, Germany managed to increase it by 8% from 67% in 2004 to 75% in 2010. Moreover, the employment rate in Germany actually rose in the aftermath of the financial crisis (Figure 3.6). This has largely to do with the fact that the country has managed to expand its female labour force to nearly 70%. Furthermore, a combination of an upgrade in skill levels and active labour market reforms (as can be inferred from the tables in the next subsection) seems to have been the main reason for the increased employment rate in Germany.

Figure 3.6 Employment rates of the population aged 20-64 in Germany and France, 1999-2010 (%)



Sources: Own calculations based on Eurostat data, Europe 2020 indicators.

3.2 Achieving a 75% employment rate by upgrading skill levels – A thought experiment

As briefly mentioned above, the best way to increase the employment rate in the EU seems to be to raise skill levels. To demonstrate how much could be achieved this way, we start by presenting some results for the entire EU-27 population and then discuss the disaggregation by gender. We later turn to specific country cases and end up comparing the European economies with the US.

To illustrate our method, we first analyse what happened during the last decade. Table 3.1 shows the changing composition of the EU-27 labour force aged 20-64 from 2001 to 2010, during the Lisbon process period. Overall, there was an increase in the employment rate of 1.7 percentage points from 66.9% to 68.6% from 2001 to 2010. How did this come about? If one looks at the employment rates by skill class reported on the right-hand side of the table, one sees that they did not change much and in two out of three cases they actually fell from 2001 to 2010 (with changes of -1.8%, 0.2% and -0.5% respectively for the three segments 'below upper-secondary', 'upper-secondary' and 'tertiary' education). This suggests that labour market reforms had no significant impact on the employment rate on average for the EU-27. In contrast to the employment rates, which remained relatively stable from 2001 to 2010, a real change can be observed in the distribution of skills. The share of the population with below upper-

secondary education decreased by 7.2%, whereas the population share with upper-secondary education increased by 1.2% and the population with tertiary education grew by 6.0%. Hence, Table 3.1 reveals that a skills upgrade rather than labour market reforms were responsible for the very small progress the EU made over the last decade (an increase of only 1.7% in the employment rate over ten years).²³

Table 3.1 Education and employment: What has improved since Lisbon in the EU-27?

	Share of population (%)*			Employment rates (%)*		
	2001	2010	Change	2001	2010	Change
Below upper-secondary	33.9	26.7	-7.2	55.2	53.4	-1.8
Upper-secondary	47.4	48.6	1.2	69.7	69.9	0.2
Tertiary	18.7	24.7	6.0	82.9	82.4	-0.5
Overall	na	na	na	66.9	68.6	1.7

*Aged 20-64.

Sources: Own calculations based on Eurostat data, Europe 2020 indicators.

Based on these observations, a simple thought experiment can demonstrate how large a skills upgrade would be necessary to achieve a 75% employment rate merely by upgrading the education level of the working-age population in the EU-27.

To make some educated guesses about the employment rate that could be reached by 2020, we consider two scenarios for the employment rates by skill class:

- i) A desirable scenario is that growth returns and that over time the EU reaches the same situation in terms of employment rates by skill class it had achieved during the peak of the previous boom, namely 2007. We call this scenario 'return to the boom years'.
- ii) A more realistic scenario might be that the unemployment rates by skill class of 2010 actually reflect a permanent situation, given that the euro crisis is putting pressure on a number of member states and given that the experience from other large financial crises suggests

²³ This increase is no indication of the quality of work, which, in fact, has decreased steadily (see Pochet, 2010).

that the recovery is usually slow and incomplete. We label this scenario 'this time is no different'.

The next ingredient is an educated guess about the speed of the upgrading of skill levels of the working-age population. Given that tertiary enrolment rates have considerably increased over the last ten years, it is already certain that the skill composition of the EU's working-age population will continue to improve until 2020. By exactly how much is difficult to predict, but one useful assumption would be that of 'business as usual', i.e. that the upgrading observed between 2000 and 2010 will be replicated between 2010 and 2020. This looks like a probable outcome.

Bearing in mind that the 2020 strategy has targets for tertiary education and early school leavers, one might also ask what employment rate could be achieved if these two targets were to be reached and maintained long enough to characterise the entire working-age population. That is, 40% would have attained tertiary education with only 10% below the upper-secondary level. It would probably take until 2050 to achieve this result.

Table 3.2 How to achieve the Europe 2020 goal of 75% employment – A thought experiment

		Employment rates by education level	
		Return to boom	This time is not different
Composition of working-age population by education level by 2020	Business as usual	72.5 %	70.5 %
	2020 targets achieved	75.1 %	73.3 %

Source: Own calculations based on Eurostat data.

The four entries in Table 3.2 show what could be expected under the four possible combinations of these scenarios. It is apparent that the 2020 target of an employment rate of 75% could be reached only if overall employment conditions return to those of the boom year 2007 and enough time has passed so that the higher graduation rates of the 2020 strategy characterise the entire working-age population. Under a 'business as usual' scenario under which the upgrading of the working-age population proceeds over the next ten years, as it has done over the last decade, the employment rate would improve somewhat if the boom year conditions of 2007 return, but this would lift the employment rate only to 72.5%. Should the business cycle not improve significantly, the employment rate would still somewhat improve from its present level (68.6%) to 70.5%, but the

Europe 2020 target would clearly be missed. This already suggests that the 2020 target on employment can be reached only if significant reforms of labour markets are undertaken.

3.3 Disaggregation by gender – Does it make a difference?

The calculations so far, however, were based on aggregated numbers. As mentioned above, undereducated women have the lowest employment rates. This suggests that it might be useful to disaggregate our calculations by gender. The results in Table 3.3 confirm our assumption.

Table 3.3 Education and employment of women in the workforce: What has improved since the Lisbon process the EU-27?

	Share of population (%)*			Employment rates (%)*		
	2001	2010	Change	2001	2010	Change
Below upper-secondary	36.3/31.5	27.3/26.1	-9.0/-5.4	43.1/69.2	43.2/64.1	0.1/-5.1
Upper-secondary	45.6/49.1	47.0/50.3	1.4/1.2	62.6/76.3	63.8/75.6	1.2/-0.7
Tertiary	18.1/19.4	25.7/23.6	7.6/4.2	78.6/86.9	79.2/85.9	0.6/-1.0
Overall	na	na	na	58.0/76.0	62.1/75.1	4.1/-0.9

*Aged 20-64.

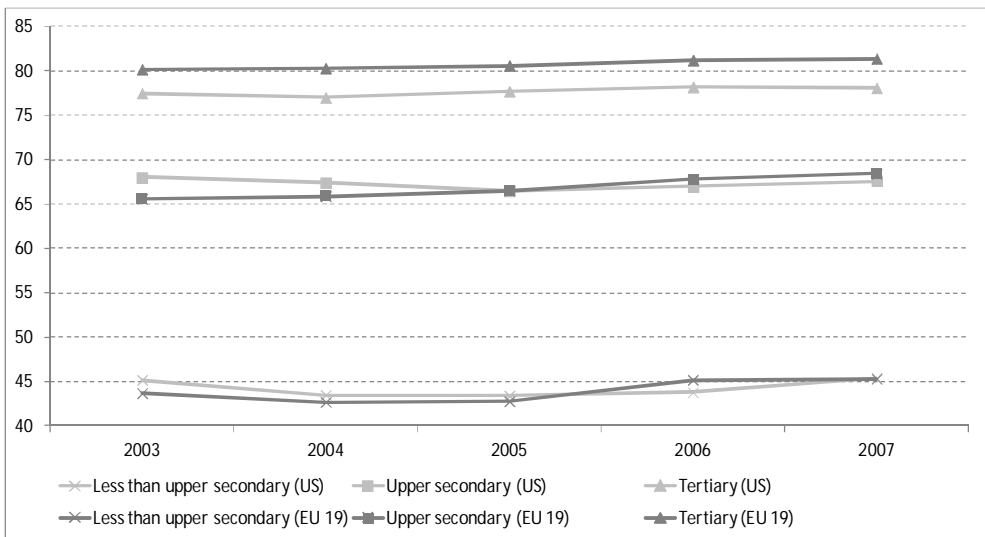
Sources: Own calculations based on Eurostat data, Europe 2020 indicators.

A skills upgrade among the female population in the European labour force turns out to be more effective than among the male population. Whereas in 2010, women with an educational attainment of below upper-secondary education had a typical employment rate of approximately 43% (thus less than the total value of 53% in Table 3.1 and the value of 64% for men), the employment rate increases substantially by 20.6% (from 43.2 to 63.8%) once women have attained upper-secondary education. It rises further by 15.4% (from 63.8% to 79.2%) once they have received tertiary education. The increase of 15.4% is still significantly higher than the values of 12.5% and 10.3% for the male population. Overall the largest increase in the employment rate would be achieved by a skills upgrade among women in the population from below upper-secondary to upper-secondary education. This is exactly what has occurred between 2001 and 2010. Table 3.3 clarifies that the 9 percentage points of skills upgrade from below upper-secondary education was responsible for the

overall increase in the employment of women of 4.1 percentage points over this period (compared with a fall of almost 1 percentage point for men).

One might now wonder whether this argument also holds for the US. As can be inferred from Figure 3.7, the same large gap between below upper-secondary and upper-secondary education can be detected in the US. The similarity between the EU and the US, both across skill classes and over time, is actually quite astonishing. In many cases the dark grey curve, which indicates the values for the EU, is above the US curve, depicted in light grey.

Figure 3.7 Comparison of typical employment rates of women* in the US and EU



*Aged 20-64.

Note: EU-19 countries include: Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Portugal, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Poland, Slovakia, Spain, Sweden and the UK.

Source: OECD Unemployment Outlook 2005–2009.

3.4 The US and the EU – Where do the differences lie?

Table 3.4 compares the shares of the population (aged 25-64) in the EU with that of the US in terms of education and employment. It is quite clear how the US manages to maintain a higher employment rate than the EU-27. The main difference can be found in the skills composition of the labour force. Whereas the US has managed to reduce the share of the population with below upper-secondary education to 5.5% and 6.9% for women and men

respectively, the EU still has shares of 30.8% and 27.9%. While the US has achieved tertiary graduation rates of 41.7% and 38.7% respectively, the EU has only achieved tertiary graduation rates of 23.8% and 23.3%. Thus the difference between the employment rates in the US and EU is patently due to the difference in the skills composition of their labour forces.

Table 3.4 Comparison of education and employment between the EU and US, 2007

	Share of population (%) Women/men*		Employment rates (%) Women/men*	
	EU-27	US	EU-19	US
Below upper-secondary	30.8/27.9	5.5/6.9	45.4/70.4	45.4/69.2
Upper-secondary	45.4/48.8	52.8/54.4	67.6/81.2	67.6/79.7
Tertiary	23.8/23.3	41.7/38.7	81.9/88.8	78.1/89.1
Overall	na	na	63.6/79.9	69.2/83.5

*Aged 25-64.

Note: EU-19 countries include: Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Portugal, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Poland, Slovakia, Spain, Sweden and the UK.

Sources: Own calculations based on Eurostat data, Europe 2020 indicators, OECD Employment Outlook and US Census Bureau.

We have argued that a skills upgrade rather than labour market reforms will increase the EU's employment rate and we have confirmed our hypothesis using an aggregated EU-27 country sample. Does this now imply that labour market reforms are not achieving higher employment rates? It certainly does not imply this for the individual countries within the EU. A simple comparison between the two countries Spain and Germany in Table 3.5 exemplifies the underlying differences among the various economies in the EU. Whereas in Spain 46.6% of the population had below upper-secondary education in 2010, in Germany only 15.3% were left with that level. Spain also had a notably smaller share of citizens with upper-secondary education (23.6%) compared with Germany (60.2%). What is even more important concerning the argument about a skills upgrade and labour market reforms is the fact that Germany's overall gain of 5.8% in employment largely stems from successful labour market reforms. While in Spain the typical employment rate of the population share with below upper-secondary education fell by 3.8% (owing to the

burst of the Spanish property bubble in the midst of the financial crisis), in Germany it grew by 2.8%. Furthermore, in Germany the typical employment rates for upper-secondary and tertiary education increased.

Table 3.5 Education and employment in Spain and Germany: What has improved in the EU-27?

	Share of population (%) Spain/Germany*			Employment rates (%) Spain/Germany*		
	2001	2010	Change	2001	2010	Change
Below upper-secondary	56.7/18.3	46.6/15.3	-10.1/-3.0	56.1/53.2	52.3/56.0	-3.8/2.8
Upper-secondary	19.8/59.9	23.6/60.2	3.8/0.3	61.3/70.0	63.7/74.9	2.4/4.9
Tertiary	23.5/21.8	29.8/24.5	6.3/2.7	77.0/83.2	77.6/86.7	0.6/3.5
Overall	na	na	na	62.0/69.1	62.5/74.9	0.5/5.8

*Aged 20-64.

Sources: Own calculations based on Eurostat data, Europe 2020 indicators.

3.5 Conclusions

Several conclusions can be drawn. First, a skills upgrade in the EU seems key to fostering higher employment rates. Labour market reforms might be successful, as in the case of Germany, but in an aggregated analysis they do not seem to have had a significant impact in terms of increasing employment on average for the EU-27. Second, the (small) employment increase achieved from 2001 to 2010 seems to have been driven to a large extent by a skills upgrade of women in the labour force from below upper-secondary to upper-secondary education. The difference in employment rates for women between those with below upper-secondary and upper-secondary education is particularly large. This suggests that Europe's main employment potential appears to be in the (so far underemployed) female labour force of the two large Mediterranean economies Spain and Italy. These economies and Europe per se would profit greatly if they were to achieve a substantial skills upgrade of the women in their labour forces. Third, before the big recession, the US employment rate was higher than that of the EU because the US had already largely achieved the 2020 targets on education.

4. THE TARGET OF EDUCATION

As discussed earlier, education seems a crucial prerequisite not only for innovation but also for the employment rate, here in particular a skills upgrade of women in the workforce with lower educational qualifications. But what makes skilled workers so special? The basic idea is that technology is biased in favour of skilled workers and against the less skilled ones in as much as it complements the former and substitutes the latter. In other words, technological progress tends to increase the demand for skilled labour and decrease the demand for less-skilled tasks. This is called “skill-biased technological change”.²⁴ And it is even truer for young educated persons who absorb new technologies easier and more quickly.

Therefore, the Europe 2020 strategy has rightly put the topic of education in a very prominent place. That education is vital for economic growth has been empirically proven by extensive studies.²⁵ In more detail, the Europe 2020 strategy has envisaged a tertiary graduation rate of 40% among the population aged 30-34 in the EU-27. As already pointed out by Roth & Thum (2010a) and as can be inferred from Figure 4.1, the two large

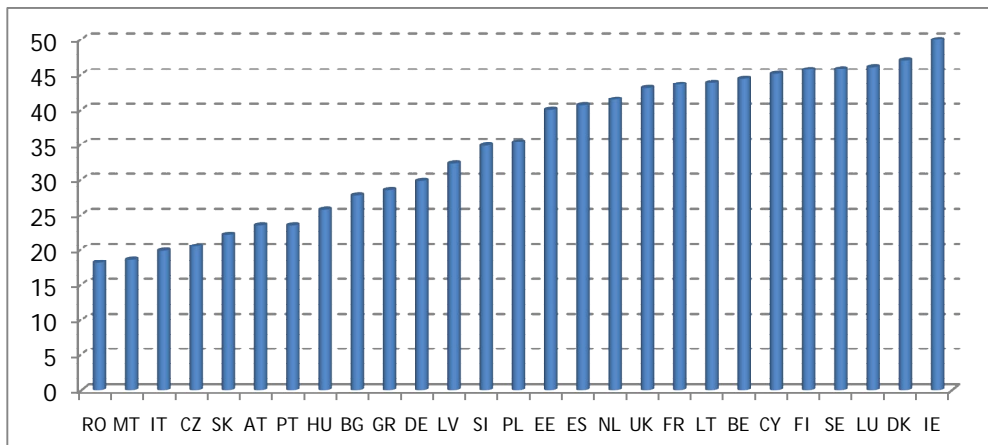
²⁴ The literature is vast. See for example Golding & Katz (2007, 2008), Acemoglu (1998), and Autor et al. (1998).

²⁵ Although some studies question the significantly positive relationship between human capital and economic growth (e.g. Pritchett, 2001), a majority of the empirical results support a positive relationship between the levels of education and economic growth (Barro, 1991; Barro & Sala-i-Martin, 2004; Krueger & Lindhal, 2001; Bassanini & Scarpetta, 2001). Recent research argues for example that the findings of non-positive relationships between education and economic growth are mostly due to poor data quality (De la Fuente & Doménech, 2006); thus, when utilising high-quality data, a robust, positive relationship between education and growth can be established. The positive relationship can be replicated not only using quantitative data like average years of schooling, but also using qualitative data from the PISA tests (Hanushek & Wößmann, 2007).

economies Germany and Italy will most likely not be able to achieve the goal of a 40% tertiary graduation rate, at least not without a massive drop in quality among the new tertiary graduates. More specifically, Italy would need to double its graduation rate to meet the target of 40%. It is thus not surprising that its own national target is only 26-27%, which could require only an improvement of about 25-30% in the graduation rate. Germany would have to increase its graduation rate by 10.2 percentage points, or by about one-third (comparable to the Italian national target). Other countries, e.g. Austria and Greece, would require a similar increase. For further details on national targets, see Table A.1 in the Annex.

But how easily will the EU-27 reach the goal of an overall tertiary graduation rate? As clarified in Figure 4.2, on current trends the target should be within reach by the year 2020. Since the EU-27 has managed to increase its graduation rate from 2000 to 2010 by 11.2%, it should manage to increase it further by 6.4% in the same ten-year period from 2011 to 2020.

Figure 4.1 Percentage of tertiary educational attainment by those aged 30-34 in the EU-27 (2010)



Sources: Own calculations based on Eurostat data, Europe 2020 indicators.

While correctly putting emphasis on a quantitative educational benchmark (as done by the European Commission with its 40% target), putting the stress solely on the quantitative side of education seems too narrow. That is why Gros & Roth (2008) have proposed to construct a composite indicator that incorporates the quantity and the quality of

education. Figure 4.3 shows such an updated composite indicator with data from the latest PISA study.²⁶

Figure 4.2 Percentage of tertiary educational attainment by those aged 30-34 in the EU-27, 2000-20(%)—Projection to reach the EU 2020 target

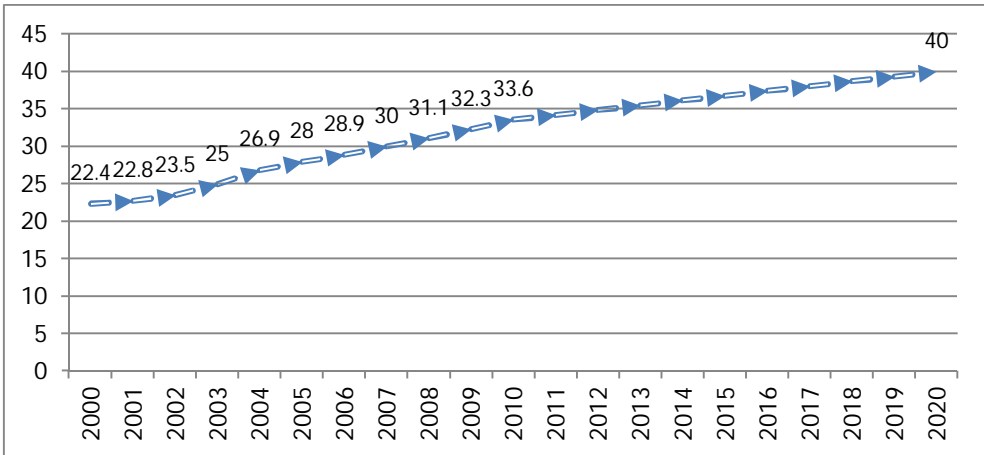
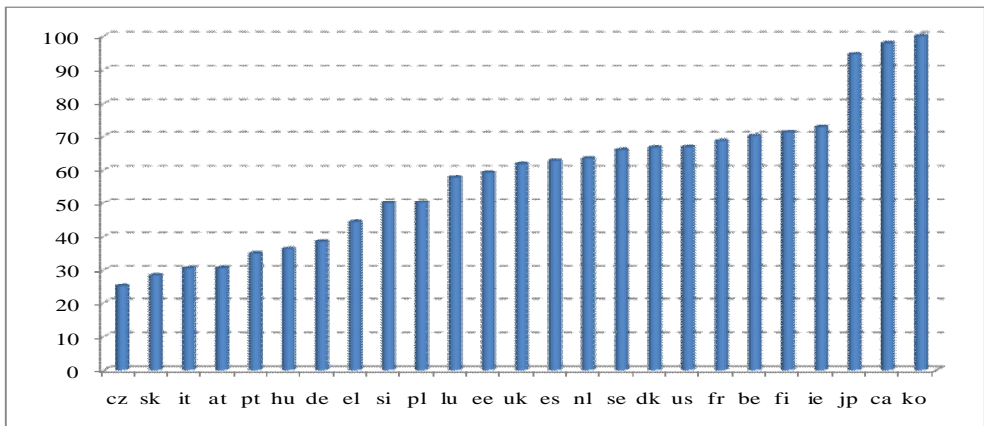


Figure 4.3 Composite indicator incorporating quantitative and qualitative educational indicators



Source: OECD (2009) and PISA 2010 – Data on the quantitative indicator from 2007 and the qualitative indicator from 2009.

²⁶ See for instance, “OECD Programme for International Student Assessment”, on the OECD’s website (http://www.oecd.org/document/61/0,3746,en_32252351_32235731_46567613_1_1_1_1,00.html).

As highlighted earlier by Gros & Roth (2008) European economies rank behind the three OECD countries South Korea, Canada and Japan. Within the EU-15 countries, Germany, Austria, Portugal and Italy are all situated in the lower third of the distribution. The tertiary graduation rates are low and the PISA test results are average or worse. One has to point out once more that Italy's poor educational performance²⁷ is especially worrisome. As shown by Roth & Thum (2010a), a similar picture appears when observing just the engineering students and PISA results in science.

Two criticisms about such a composite indicator come to mind.

First, one might question whether the OECD statistics are comparing apples with oranges, if in certain countries a tertiary degree is required for qualifications that in other countries are covered by vocational training (as is done, for example, under the 'dual system' in Germany and Austria). Would not the inclusion of vocational training fill the gap between Germany and Austria on the one hand, and the rest of the European and OECD countries, on the other? Would it not fill the gap towards achieving the 40% benchmark of tertiary graduation among the population aged 30-34?

Opinions on this issue are sharply divided. For example, the report by Zimmerli (2009) argues that classical manufacturing is likely to become more strongly dominated by scientific and knowledge-based applications, with science concentrating more on practicability. The primary argument is against a bright future for the dual system in Germany and Austria; however, it should take into account the links to the global chain of labour specialisation. Manufacturing and incremental innovation will clearly be overtaken by the emerging countries China, India, Brazil and others. These countries offer plenty of cheap labour and an increase of salaries towards Western levels will probably take some decades. From this time onwards most manufacturing (specialised and non-specialised) will still be a lot cheaper in those countries than in the highly developed economies. To secure the current European social model with its significant redistribution through the welfare-state mechanisms, European economies have to slowly modify their societies and economies towards more knowledge-driven production and services. The knowledge-driven production of the future will be much more dependent on the intellectual abilities of the workforce.

²⁷ In Italy one has to clearly differentiate between the northern and southern regions. In contrast to the northern regions, in Italy's southern regions, low levels of social capital are associated with low levels of educational performance.

Investment in longer-term training of the workforce and building up higher intellectual capabilities within the framework of university education (hence stronger theoretical capabilities are needed) seems one of the best ways to secure future economic wealth.

This view of Europe's future wealth being largely dependent on further significant investments in intangible capital and in particular the intellectual abilities of the workforce is only adopted half-heartedly by national and European policy-makers. Being occupied with the daily tasks of managing the existing societal and economic structures, policy-makers and their advisers continually underestimate and underinvest in intangible capital. One fine example of the above is the manner in which the German and Austrian governments have reacted to their inability to meet the 40% graduation rate among the population aged 30-34. Although rightly pointing out that their vocational training does not appear to be included in the statistics on tertiary education (see also De La Fuente & Doménech, 2006, who attribute the highest stock of human capital to Germany once accounting for its vocational training), the very practical solution put forward by the German and Austrian governments to meet the 40% benchmark seems dubious at best. As both governments anticipated that they would not be able to meet the 40% benchmark, they simply changed the statistical classifications to reflect that they have already met the target. In an annex to an official publication (see European Commission, 2011a), both governments have added the ISCED classification 4a on top of the ISCED classification 5 and with the result that both countries have now already reached the educational benchmark of 40%.

Austria and Germany of course have a point in highlighting the importance of the dual system. But it seems questionable whether it is wise to just change a key indicator. This risks undermining the entire Europe 2020 benchmarking exercise in the sense that such an exercise requires a common statistical framework and set of indicators. Although the ISCED classifications will most likely be altered in the coming years,²⁸ it would seem preferable for Germany and Austria to stick to comparable indicators. This would then force these two countries to argue their case (namely that the dual system is equivalent to tertiary education). Having to argue their

²⁸ See article on the UNESCO Institute for Statistics website, "ISCED: International Standard Classification of Education", UNESCO, Montreal (<http://www.uis.unesco.org/Education/Pages/international-standard-classification-of-education.aspx>).

case might actually be useful for them because it would force them to look closely at the performance of their education systems and to properly analyse their deficiencies, for example in terms of the performance of secondary students and the relatively low levels of tertiary graduate students. In particular one should ask whether the specific human capital created by the dual system is equivalent to the more general set of knowledge imparted by tertiary education. The latter might become more important, given the rapid changes occurring in the global economy.

The second criticism about our composite indicator is that it does not take into account the issue of the quality of tertiary education, but simply the quality of secondary education (as it uses PISA test results). A composite indicator that takes into consideration not only tertiary graduation rates but also the quality of universities would have been preferable. Some indicators of the quality of education exist, but not for tertiary education, e.g. in the PISA study for secondary education. For this reason, Roth & Thum (2010a) have started to construct a composite indicator based on the tertiary education rate and the Academic Ranking of World Universities.²⁹ Something along these lines could usefully be incorporated in the 2020 strategy.

4.1 Demand and supply of the highly skilled

We have shown that the employment rates for individuals with higher levels of education are higher than for those with lower skills. Yet is there not a danger that in the future there might simply be too many university graduates around who might have to accept jobs for which their qualifications are not useful or for which they are overqualified?

Recent work suggests that this should not be the case as the demand for highly skilled workers seems to be increasing all the time. Table 4.1 shows the results of a projection of labour demand by skill levels by the European Centre for the Development of Vocational Training, as reported in a special CEPS study on medium-term employment challenges for the Metempris project (Begg et al., 2010).

²⁹ Refer to website on Academic Ranking of World Universities 2011, ShanghaiRanking.com (<http://www.arwu.org/ARWU2009.jsp>).

Table 4.1 Labour demand by skill level (as a % of total)

	1996	2001	2006	2010	2015	2020 est.
Low	32.9	27.0	26.2	23.6	20.8	18.2
Medium	46.2	49.9	48.6	49.5	49.9	50.1
High	20.9	23.0	25.3	27.0	29.3	31.7

Source: Begg et al. (2010).

This study arrived at the conclusion that the demand for the highly skilled is increasing trendwise (between 1996 and 2010, it grew from 21% to 27% of the workforce) and is projected to rise even further to 2020, as shown in Table 4.1. It is interesting that the demand for medium-skill levels is projected to be constant at about 50% of the total. Meanwhile, the demand for low skills and for high skills trade places between 1996 and 2020: whereas the demand for low skills made up about 32% of the total in 1996, its share is projected to fall to about 18% by 2020; during the same period the demand for high skills should increase from about 21% to 32% of the total. This alone suggests that there is little danger of an oversupply of university graduates resulting from the 2020 target in this area.

This view is confirmed in the study, which compares labour supply and demand. It concludes that there was an excess supply of low-skilled and an under-supply of highly skilled labour at the time the Lisbon strategy was formulated. Still, the degree of mismatch was considerably reduced from 2000 to 2007. As a result of the projected further increase in needs and the limited number of inflows into the labour force of more highly educated, new generations, an approximate overall balance between need and supply should be maintained. Table 4.2 (also drawn from the Metempris project) suggests that a small remaining oversupply of low-skilled workers will remain coupled with a potentially continuing, small shortage of medium-skilled workers and an approximate balance for the highly skilled.

Table 4.2 Supply of labour by skill level (as % of projected and estimated needs)

	2000	2007	2013	2020
Low	120.7	117.1	111.3	106.8
Medium	100.7	105.3	102.8	96.6
High	91.8	98.8	104.2	100.8
All	104.3	106.7	105.1	99.8

Source: Begg et al. (2010).

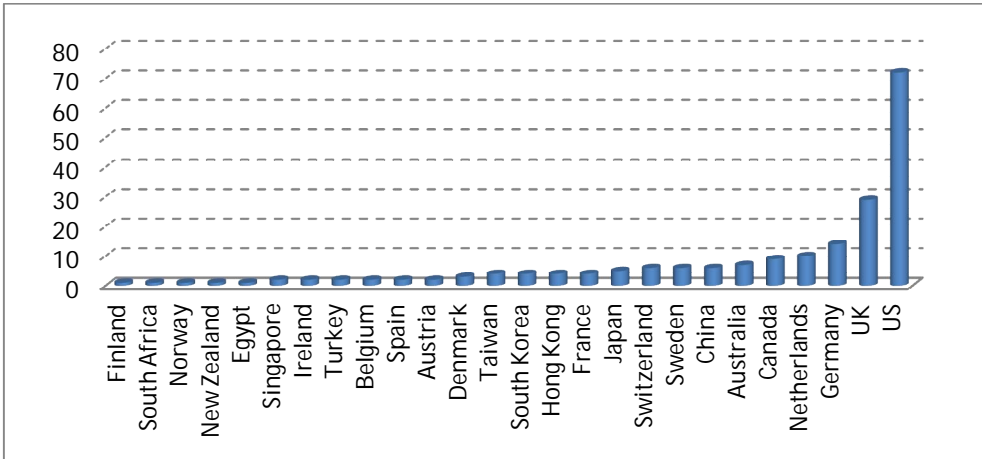
As an aside, it should be noted that even if the overall degree of mismatch of skills is considerably reduced over the coming decade, the total gross, labour market movements from 2006 to 2020 would not only represent a strong shift towards a more knowledge-intensive economy, but also a total gross, labour market transition concerning some 100 million jobs – or more than 8 million per year. It should also be noted that this latter figure does not include the transitions from one job to another within a given category of workers and occupations. Consequently, the total volume of movements in the labour market during this period can be assumed to be significantly higher than the gross transition of 8 million per year, amounting to an annual transition of about 10% of the total labour force.

Furthermore, whereas according to these very tentative estimates the overall shortage of skilled qualifications seems likely to be absorbed, this in no way excludes the possibility that there will remain a lack of scientists and engineers.

4.2 Quantity and quality of education revisited

Figure 4.4 shows data from the latest Times Higher Education World University Rankings of 2010–2011. The ranking utilises 13 separate indicators, ranging from teaching and research to knowledge transfer. The ranking clarifies the outstanding role of the US when it comes to its higher education facilities: 15 US universities rank among the ‘top 20’ and 72 US universities rank among the ‘top 200’ world universities. The US is followed by the UK, which has 29 universities in the top 200. The UK is then followed by Germany, with 14 universities in the top 200; Germany’s best university, the University of Göttingen, is ranked in 43rd place. Quite astonishingly, in fourth place is the Netherlands, with 10 universities. Also to our surprise, although it is the fourth largest economy in Europe, Italy does not even appear in the ranking, lacking a single university in the top 200 universities of the world. The world’s second largest economy, China, ranks in seventh place, with 6 universities among the top 200; its best university, Peking University is ranked in 37th place.

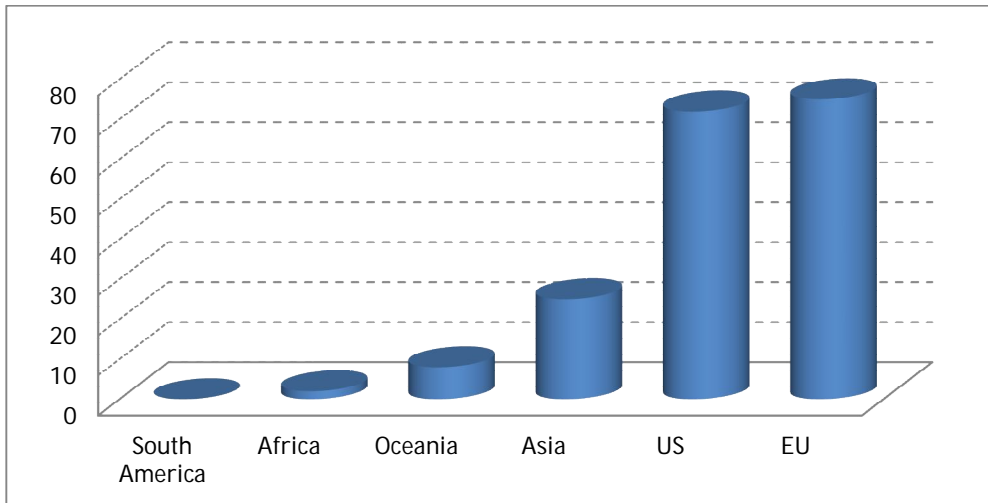
Figure 4.4 Number of institutions in the top 200



Source: The Times Higher Education World University Rankings 2010–2011, Times Higher Education, London.

Figure 4.5 compares the number of universities ranking among the top 200 in the US with the countries of the EU, Asia, Oceania (Australia and New Zealand), Africa and South America. It becomes apparent that the EU is now leading the ranking with 75 universities in the top 200. The EU is followed by the US and the Asian countries. A small group is located in Oceania, and almost none in Africa and South America. The chart illustrates that there will be a new axis of innovation between the EU, US and Asia. The EU's lead in the ranking has to be interpreted with care, however, as the European economies have not yet been able to truly establish a European research area (ERA) (see Van Pottelsberghe, 2008 and Paasi, 2010). The US has successfully established a research area and the degree of cooperation and specialisation is far higher than in the ERA. Thus it is most likely that the US will continue to be the most successful economy in future decades owing to the excellence of its research facilities. The innovative power of US research facilities will not only be used to maintain the country's inventiveness in the military sector but also in information technology. As such, the US economy will be able to continue to write economic success stories like those of Microsoft, Apple, Google and Facebook. To a great extent this is attributable to the clearly outstanding performance of the higher education facilities in the US. Without an adequate consolidation of the European research area, European economies will not be able to increase productivity in the way the US has through its higher education/research facilities.

Figure 4.5 Number of institutions in the top 200 by region



Source: The Times Higher Education World University Rankings 2010–2011, Times Higher Education, London.

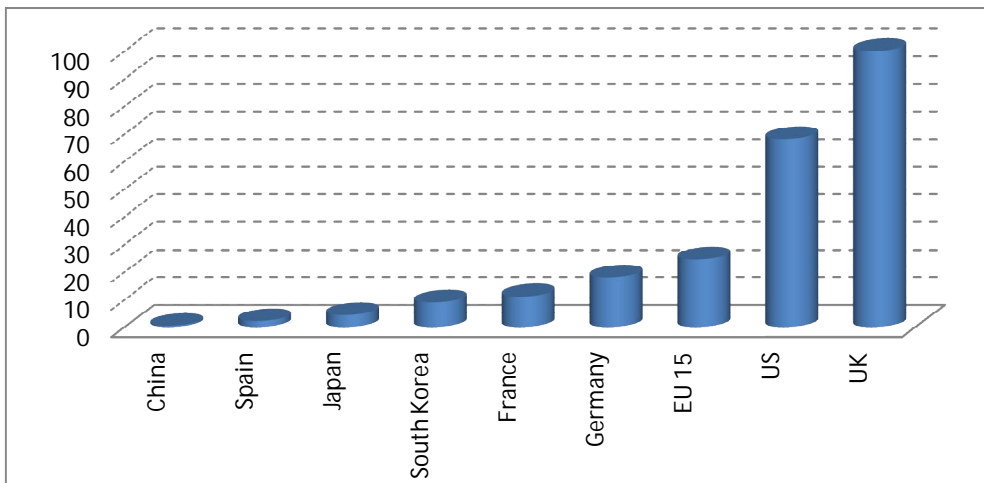
We turn now to construct a composite indicator incorporating the quantity and quality of educational performance among the world economies in the EU, US and emerging countries. As there is no possibility for comparing the US, the EU and China with data from either the OECD or Eurostat, we use the newly updated dataset from two scholars, Barro & Lee (2010). Although the data differ significantly from Eurostat and OECD data, we decided to use this dataset because it is, to our knowledge, the only one that allows such an international comparison.

Figure 4.6 shows a composite index of the population aged 30–34 in terms of the attainment of tertiary education. The raw data is from the Barro-Lee dataset, which provides full data on educational attainment for the population aged 15 and over age 25. Combining the Times Higher Education World University Rankings 2010–2011 and the Barro-Lee dataset, our analysis tries to obtain a composite indicator consisting of a quantitative and a qualitative indicator.³⁰ In contrast to the number of

³⁰ We constructed weights by the percentage in the Top 20, Top 100 and Top 200 rankings. Each weight was multiplied by the percentage of the population aged 30–34 who completed a tertiary degree. Each value was then divided by the weight of the population of each selected country or region to proxy for the total number of universities in a country. This measure was then scaled to 100.

institutions in the top 200, where the US plays a leading role in the world, our analysis leads to a different result. When weighting for the overall population to proxy for the total number of universities within a country and taking into account the tertiary graduation rate among the population aged 30-34, the UK has the best performance among all countries. The US ranks in second place. The reason the EU-15 performs worse than the US or the UK stems from the fact that the EU-15 has relatively fewer institutions in the top 20 and top 100 compared with the US. Moreover, although it is the best-performing eurozone country in the rankings, Germany lags far behind the US and the UK, because of its low rate of tertiary graduation and low university ranking. It is not hard to understand why China ranks in the bottom position in our analysis.³¹ China has the largest population of in the world, but more importantly, it is the small number of excellent universities that puts China in last place, which can be concluded from the small number of institutions in the rankings.

Figure 4.6 Composite index of tertiary educational attainment by those aged 30-34



Sources: The Times Higher Education (THE) World University Rankings 2010–2011, Times Higher Education, London; Barro & Lee (2010).

³¹ This is somehow different in the case of Shanghai, which performed best in the newest PISA test – see Figure A.2 in the annex of this report.

4.3 Conclusions

In drawing conclusions, it is first clear that the Mediterranean countries, notably Italy, have to invest more in improving their tertiary graduation rates. Second, Germany and Austria have to become aware of the fact that the dual system might have to be substituted with a more scientifically-led system for knowledge creation, best embedded within the framework of today's tertiary education. To be able to achieve this large increase of tertiary training, the German and Austrian governments should radically increase their spending on the university systems to enable them to maintain the future wealth of their economies. Without a fast and radical reformation of their university systems, both nations will suffer significant losses in welfare in the upcoming decades. Third, the ERA has to be made into a reality. Without a functioning ERA, the bulk of excellent universities throughout Europe will never be able to create the same synergy effect as has been done in the US. Without a functioning ERA, Europe as a whole will suffer significant welfare losses in the future. Fourth, European universities have to become excellent. The fact that the best German university ranks 43rd among the top 200 and that 15 out of the 20 best universities are located in the US illustrates the great threat posed by Europe's ignorance of the much-needed reforms of higher education. Fifth, China still seems to play a minor role when it comes to the quality of its universities. But as China – unlike many other countries (notably in Latin America and Africa) – has understood the key role of education, it can be presumed that it will not take long for it to achieve a higher quality. If China succeeds in attaining excellence in its university system, it will be possible for the country to shift from the mastery it has achieved in incremental innovation towards radical innovation.

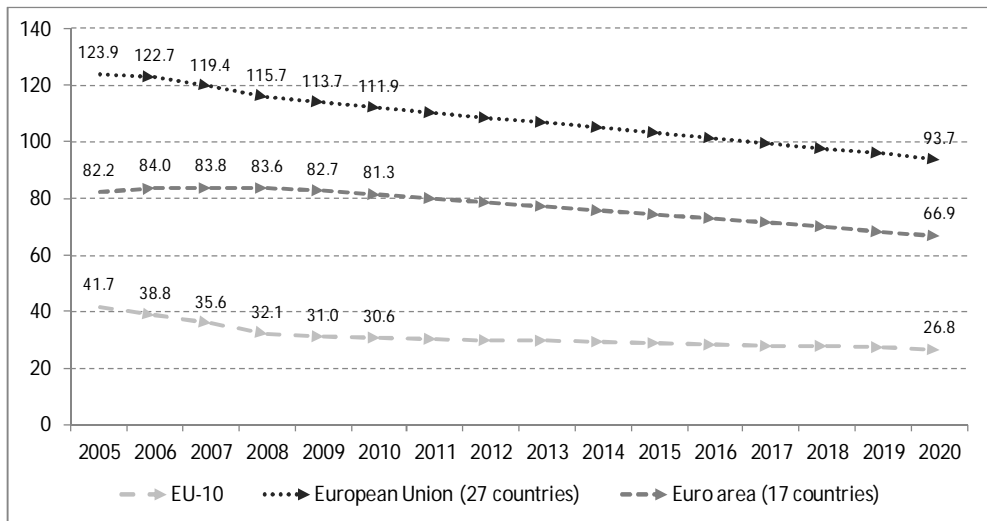
5. THE TARGET OF SOCIAL COHESION

A first observation is that the 2020 indicator of social cohesion – namely the population at risk of poverty or exclusion (defined below in Box 5.1) – actually improved somewhat in 2009. This is surprising given that the EU has experienced an unprecedented recession and a sharp increase in unemployment. Figure 5.1 shows the steady improvement in the 2020 indicator for social cohesion. The official statistics imply that over 10 million citizens have been lifted out of poverty or exclusion between 2005 and 2009. The reason for this steady improvement is due to the rapid decline of persons in poverty or exclusion within the ten transition countries, in particular within Poland (6.6 million people less in poverty or exclusion). One reason must surely be that Poland was little affected by the financial and economic crisis (it kept growing in 2009, compared to massive drops in GDP in the large EU-15 economies of Germany, France, Italy, UK and Spain).

Furthermore, according to the individual country goals depicted in the progress report on Europe 2020 (see Table A.1) and as depicted in the projections in Figure 5.1 for the sum of the 10 transition countries, the overall goal of the transition countries is a further reduction of approximately 3.5 million of its citizens who face either poverty or exclusion. The remaining improvement of 16.6 million citizens (to reach the target of 20 million) would then have to be achieved within the old member countries (plus Malta and Cyprus). The official target for this group is (up to now) only a reduction in poverty of approximately 7.2 million (see Table A.1). However, between 2005 and 2009, this group has recorded slightly increasing poverty and exclusion. Even this target might thus be difficult to reach. Moreover, the sum of all the identifiable national targets amounts to only 10.7 million, little more than one-half of the target for the entire EU.

It thus seems very difficult to reach the overall 2020 target.

Figure 5.1 The 2020 target: Persons at risk of poverty or exclusion in the EU-27, 2005-20 (projection according to EU 2020 and national targets)



Source: Eurostat.

A few specific cases can illustrate the challenges ahead. Table 5.1 shows the evolution of poverty or exclusion reduction/improvement in four countries – Italy, Poland, Germany and Austria – in comparison to the EU-27. Whereas Italy, Austria and Germany actually were facing increasing poverty or exclusion rates, Poland successfully lifted out 6.6 million citizens from poverty or exclusion (according to the data provided by Eurostat). The case of Italy most strongly clarifies the discrepancy between the 2020 target of a reduction of 2.2 million and the actual result over the last years in which there was an actual increase in poverty or exclusion.

Table 5.1 Evolution of persons at risk of poverty or exclusion in selected countries and EU-27, 2005-09 (thousands of persons)

Country	Diff. 2005-09	Per year	EU 2020 target
EU-27	10,173	2,543.25	20,000
Germany	-1,185	-296.25	330
Ireland	-112	-28.00	186
Spain	-607	-151.75	1,400-1,500
France	-28	-7.00	1,600
Italy	-214	-53.50	2,200
Austria	-37	-9.25	235
Poland	6,626	1,656.50	1,500

One has to keep in mind, however, that the last few years might not be typical because of the unprecedented recession in 2008-09. It remains to be seen to what extent a sustained recovery will on its own lead to a significant improvement. Unfortunately, it is not possible to check how much past recessions have affected the number of persons at risk of poverty or exclusion because this indicator is not available for most countries prior to 2005.

Observing the rapid reduction of poverty or exclusion in Poland, one might be tempted to ask whether a continued reduction of poverty in the 10 new member countries would be sufficient to reach the target of 20 million. Table 5.2 assumes that EU-10 countries will further reduce their poverty or exclusion rates until their average poverty or exclusion rate evens out at the same level as EU-17 (21%) countries. If this were reached, approximately 9.7 million citizens would have escaped poverty or exclusion. However, such a full catching up in one decade is highly unlikely and, as mentioned above, EU-10 countries have actually set themselves much less ambitious targets, affecting a total of only 3.5 million citizens.

How could the overall target of 20 million then be reached? As detailed above, the remainder would have to come from the older member states which would require a strong recovery and unprecedented success in the fight against poverty or exclusion. (We discuss later in this chapter which avenues might be the most efficient.)

Table 5.2 Potential reduction of persons at risk of poverty or exclusion in the EU-10, 2009

Country groups	% at risk	Number at risk	Total population
EU-10	0.30	30,980,000	102,135,757
Euro area (17 countries)	0.21	82,740,000	397,569,739
European Union (27 countries)	0.23	113,720,000	499,705,496
EU-10 (same percentage as EU-17)	0.21	21,255,925	102,135,757

Overall one has to point out that the 2020 strategy has mostly abandoned the aim of reducing disparities among member countries, given that it just adds the number of persons in a situation defined as being at risk of poverty or exclusion and given that one sub-indicator is measured relative to national benchmarks (relative to the national median wage) (see Box 5.1). In this chapter we thus start by discussing the nature of indicators of social cohesion.

Box 5.1 Indicator for the population at risk of poverty or exclusion

As defined by Eurostat, the indicator for the population at risk of poverty or exclusion corresponds to the sum of persons who are either:

- at risk of poverty,
- severely materially deprived or
- living in households with very low work intensity.

In the case of intersections between the three sub-indicators, such a person is counted only once.

The at risk-of-poverty rate after social transfers (total, women and men) is specified as the share of persons with an equivalent disposable income below the risk-of-poverty threshold, which is set at 60% of the national median equivalent disposable income after social transfers.

Severely materially deprived persons are defined as the share of the population experiencing at least four out of nine material deprivation items in the 'economic strain and durables' dimension. The nine items considered are: 1) arrears on mortgage or rent payments, utility bills, hire purchase instalments or other loan payments; 2) incapacity to afford paying for one week's annual holiday away from home; 3) incapacity to afford a meal with meat, chicken, fish (or vegetarian equivalent) every second day; 4) incapacity to face unexpected financial expenses (set amount corresponding to the monthly national at risk-of-poverty threshold of the previous year); 5) household cannot afford a telephone (including a mobile phone); 6) household cannot afford a colour TV; 7) household cannot afford a washing machine; 8) household cannot afford a car; and 9) household unable to pay for keeping its home adequately warm.

The category of people living in households with very low work intensity is described as the share of the population aged 0-59 living in households where the working-age members worked less than 20% of their total work potential during the past year.

The work intensity of the household is defined as the ratio of the number of months that all working-age household members have been working during the income reference year to the total number of months that could theoretically have been worked by the same household members in the same period. When the respondent declares himself as a part-time worker, the number of worked hours per week is taken into account for the months with part-time work, on the basis of the situation for the number of worked hours at the time of interview.

Source: Eurostat.

5.1 How to measure social cohesion?

Concerning social cohesion, the Europe 2020 strategy has clearly shifted its focus. Instead of the overall goal of social cohesion being measured by a multi-dimensional approach, such as the Laeken indicators (see Atkinson et al., 2004; Marlier et al., 2007), in which the poverty rate was one indicator among many, the Europe 2020 strategy has put the rate of those at risk of poverty or exclusion³² in the most prominent place (although additionally citing the importance of employment and education for cohesion).³³ More concretely, the Europe 2020 strategy proposes to reduce the number of persons at risk of poverty or exclusion by 20 million by the year 2020.³⁴ But what is the overall situation in the EU-27 for the rates of being at risk of poverty or exclusion? As can be inferred from Figure 5.2, in 2009 23.1% of EU-27 citizens (or approximately 114 million persons as depicted in Figure 5.1) were at risk of poverty or exclusion. The Europe 2020 goal to reduce this number by 20 million is thus to cut it by 17.5%.

Yet how heterogeneous are the poverty or exclusion rates in the EU-27? Like the heterogeneity in income inequality (Franzini, 2009; Dauderstädt & Keltec, 2011), the percentage of citizens at risk of poverty or exclusion varies significantly from country to country. In most of the coordinated countries³⁵ (the Netherlands, Luxembourg, Austria, France and Germany), the Scandinavian countries (Sweden, Denmark and Finland),

³² The original benchmark of the Europe 2020 strategy – solely concentrating on the poverty rate after social transfers (to approximately 80 million persons in 2009) and on reducing this poverty rate by 25% to 60 million persons by the year 2020 – was revised by using a broader concept of poverty that not only covered the risk of poverty but also the risk of exclusion. The concept of this indicator includes around 114 million citizens. The new poverty benchmark agreed by the European Council on 17 June 2010 is to lift out of risk 20 million among the 114 million. The ratio is thus 17.5% instead of the original 25%.

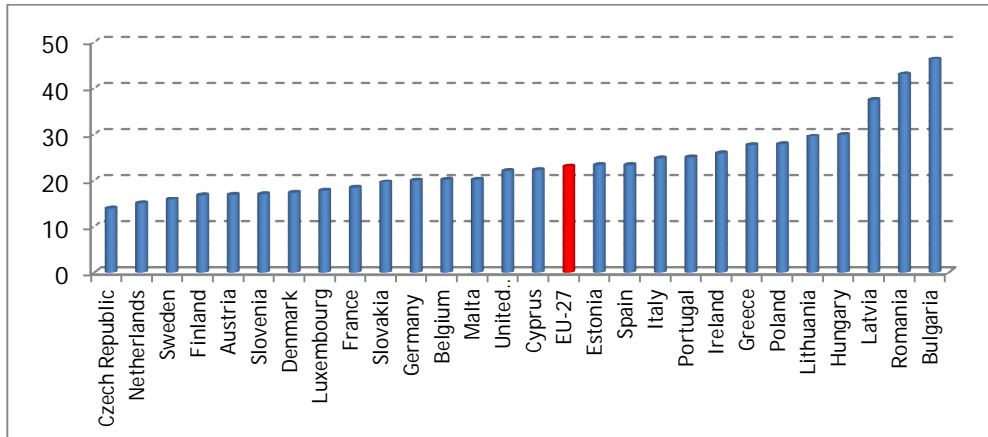
³³ See the critique by Pochet (2010, p. 145), who clarifies that “the social dimension cannot be limited exclusively to the issue of poverty” and that “the solution is much more complex than merely raising educational levels”.

³⁴ The agreed measure for citizens at risk of poverty or exclusion consists of three different indicators: i) persons living in households with very low work intensity, ii) persons at risk of poverty after social transfers and iii) severely materially deprived persons.

³⁵ As noted earlier, for an introduction to the concept of ‘coordinated countries’, please see Hall & Soskice (2001). Contrary to the classification in Hall & Soskice (2001), France is considered in this study as a coordinated country.

the Czech Republic, Slovenia and Malta, the share of people at risk of poverty or exclusion is below 20%.

Figure 5.2 Percentage of citizens at risk of poverty or exclusion (2009)

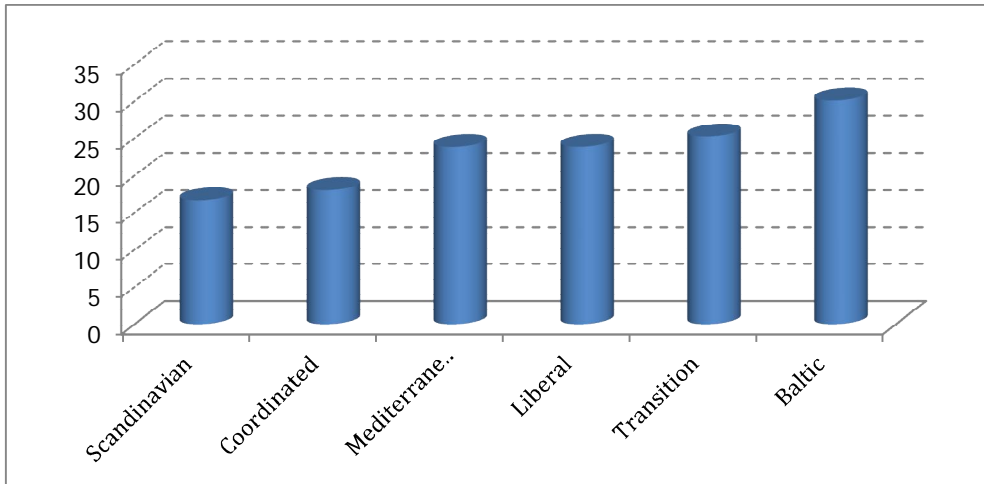


Sources: Own calculations based on Eurostat data, Europe 2020 indicators.

In the liberal (Ireland and the UK), Mediterranean (Cyprus, Spain, Italy, Portugal and Greece) and transition (Slovakia, Estonia, Lithuania, Hungary, Poland, Latvia, Romania and Bulgaria) countries, the share exceeds the 20% threshold, with the four countries Hungary, Latvia, Romania and Bulgaria having the highest poverty rates. In the case of Romania and Bulgaria, the rate of those at risk of poverty or exclusion almost reaches the 50% threshold, with nearly half of their citizens at risk of poverty or exclusion. The spread between Romania and Bulgaria on the one side and the Czech Republic, the Netherlands and Sweden on the other vividly highlights the huge heterogeneity in the current EU-27, as well as the dramatic social conditions in Romania and Bulgaria.

If one groups the data according to a regime typology, a ranking can be observed: the Scandinavian countries clearly lead the ranking, followed by the coordinated countries, the Mediterranean, the liberal and the transition countries (largely due to Romania and Bulgaria), and lastly by the three Baltic countries, which have the highest exposure to poverty and exclusion (Figure 5.3).

Figure 5.3 Percentage of citizens at risk of poverty or exclusion, grouped according to a regime typology (2009)



Sources: Own calculations based on Eurostat data, Europe 2020 indicators.

5.2 What social models for Europe?

According to the literature (for example Sapir, 2006), there is a wide agreement that the European social model (or models, according to many) is (or rather, are) in severe difficulties. The diagnosis is that the combination of an ageing population and increasing competition from low-wage countries is straining the capacity of governments everywhere to deliver the high degree of income distribution and insurance against risk that electorates have come to expect. The discussion about this issue often implicitly assumes that countries can somehow 'choose' what kind of model they want to adopt. Since over the last decade the Nordic countries have had the best economic performance within the EU, it is often argued that other countries have to adopt these 'models' if they want to remain competitive. This approach is misleading, however, as our results suggest that it is not possible to simply copy a different social model. Governments might be able to choose how much to spend on social security benefits, but they cannot guarantee the level of (in-)equality to which this will lead (assuming that the aim of social security benefits is to reduce inequality and poverty). Hence it might be more useful to think about different governments/societies as being more effective than others in alleviating poverty. Enhancing efficiency (thus defined) might be more important than increasing expenditure.

A popular line of thought maintains that there are basically four types of welfare-state models in Europe, which mix to a different degree employment and equity (or the acceptance of inequality) (see again Sapir, 2006, pp. 379-380). These stereotypes are usually represented in a matrix with equity and efficiency as the two axes. Following Sapir,³⁶ in Table 5.3 we replicate his typology for the EU-27 in the year 2009 with the indicator for equity being the rate of the risk of poverty or exclusion and the indicator for efficiency being the employment rate.

Table 5.3 Standard classification of social models in the EU-27 in the aftermath of the financial crisis

		Efficiency (= employment?)	
		Low	High
Equity (=1- poverty)	High	Slovakia, <i>Belgium</i> , Malta	<i>Sweden, Denmark, Finland,</i> <i>Germany, Netherlands, France,</i> <i>Austria, Luxembourg, Slovenia,</i> <i>UK, Cyprus, Czech Republic</i>
	Low	Spain, Italy, Ireland, Greece, Poland, Lithuania, Hungary, Latvia, Romania, Bulgaria	Estonia, Portugal

Note: Countries with higher investment in intangible capital are depicted in italics.

Sources: Own calculations based on Eurostat data, Europe 2020 indicators and INNODRIVE data.

Grouping the EU-27 countries according to their mean value in the low and high classifications, we obtain a somewhat different picture than did Sapir (who analysed an EU-15 country sample). Whereas Sapir (2006) identified the Nordic and Anglo-Saxon countries as those likely to survive the challenges of globalisation, according to our results for the year 2009 (in the aftermath of the financial crisis), alongside the Nordic countries are not the Anglo-Saxon countries per se (as Ireland now ranges in the low/low category) but the coordinated countries Germany, the Netherlands, France, Austria and Luxembourg (grouped in the high/high classification) –

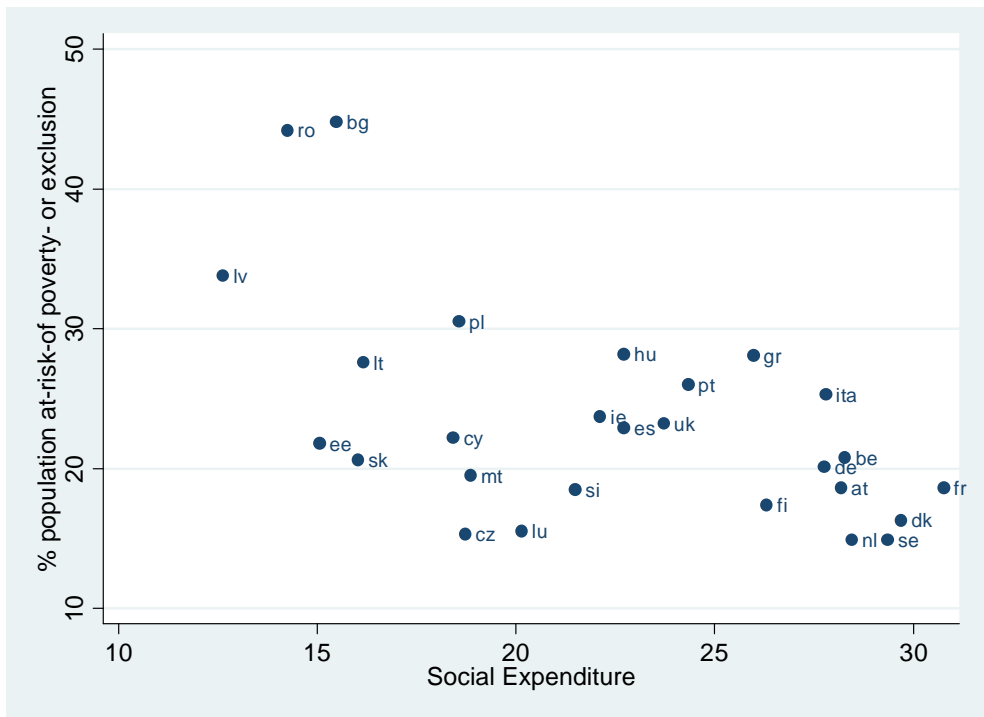
³⁶ Sapir (2006) provides a useful restatement of this classification (based originally on work by Esping-Andersen, 1990; see also Boeri, 2002).

mainly those countries where efficiency is associated with equity. More interestingly, most of the countries that score high on efficiency and equity are highly innovative (in terms of their investment in intangible capital). Among most coordinated countries and the Scandinavian countries, the following countries have to be grouped in the high/high category: Slovenia, the Czech Republic, the Anglo-Saxon country UK and Cyprus. In contrast, the large Mediterranean countries (Spain, Italy and Greece) range in the low/low category along with the transition and Baltic countries.

5.3 Government efficiency vs. social expenditure

The above classification is nonetheless of little use in deriving policy conclusions. Does it imply that the societies of the countries in the 'Club Med' somehow prefer low employment (taken as synonymous with low efficiency by Sapir, 2006)? A more useful explanation of the differences between social models should start with what one can observe directly about political choices. One key variable in this respect is the amount a society is willing to spend on equity. This should also be the key variable for determining inequality. There are wide variations in this respect, ranging from low spending on social security benefits of only 12.6% of GDP in Latvia in 2008 to 27.8% and 28.2% in Austria and Germany, respectively (with the EU-15 average at around 27% of GDP) and maximum spending of 30.8% in France. Figure 5.4 shows a scatter plot of social expenditure as a share of GDP and the percentage of citizens at risk of poverty or exclusion. Although one detects a negative association between social expenditure as a share of GDP and the percentage of those at risk of poverty or exclusion, in cases like Greece and Italy, a large amount of social expenditure is not directly associated with a lower risk. While Italy spends on average more than Finland, the latter achieves a much lower rate of risk.

Figure 5.4 Scatter plot of social expenditure as a share of GDP and the percentage of the population at risk of poverty or exclusion in the EU-27 (2008)

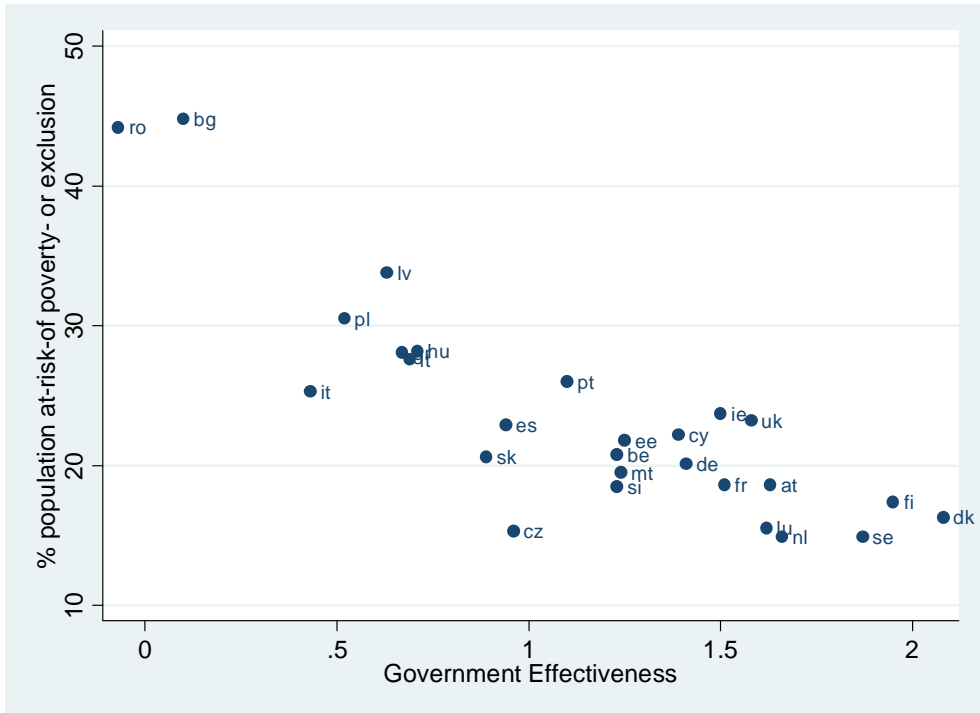


Sources: Own calculations based on Eurostat data, Europe 2020 indicators.

The picture changes significantly when analysing the relationship between government effectiveness and the rate of those at risk of poverty or exclusion in Figure 5.5. The scatter plot of government effectiveness and the percentage of the population at risk illustrates the strong association between the two. For example, countries with low levels of government effectiveness, such as Romania, Bulgaria, Italy, Poland, Latvia, Lithuania and Hungary, tend to have higher levels of citizens at risk of poverty or exclusion. In countries with higher levels of government effectiveness, for instance Finland, Denmark, Sweden, the Netherlands and Luxembourg, such risks are lower. This finding is also very well embedded in the literature. For example, Holmberg et al. (2009) provide empirical evidence that the poverty rate is negatively related to government effectiveness. From the literature they find on the one hand that the quality of government is positively related to economic growth, which obviously reduces poverty, while on the other hand the growth may work to the disadvantage of the poor. Still, it is argued that in countries with a high

quality of government the economic growth outweighs the possible negative distributional effects on poverty.

Figure 5.5 Scatter plot of government effectiveness and the percentage of the population at risk of poverty or exclusion in the EU-27 (2008)



Sources: Own calculations based on Eurostat data and Governance Indicators (Kaufmann et al., 2010).

Table 5.4 shows a cross-section analysis (using the 27 EU countries as units of analysis) of the determinants of the risk of poverty or exclusion. Regression 1 reveals first of all that social expenditure as a % of GDP is not significantly associated with the risk of poverty or exclusion. By contrast, government effectiveness has a significantly negative effect. We also find, not surprisingly a strong negative correlation between the percentage of people at risk of poverty or exclusion and the Gini coefficient which measures inequality in the income distribution. Also not surprisingly we find that a higher national income (GDP per capita) is associated with a lower incidence of people at risk of poverty or exclusion. As expected, a country dummy including the cases Romania and Bulgaria delivers a strong positive coefficient

Table 5.4 Dependent variable: Risk of poverty or exclusion

People at risk of poverty or exclusion	Coefficient	Standard error
Government effectiveness	-4.7***	1.54
Social protection expenditure	-0.04	0.09
Gini coefficient	0.65***	0.18
GDP per capita (PPP adjusted)	-0.09***	0.02
Dummy for Romania and Bulgaria	10.9***	1.46
Constant	11.8	7.28
R-square	0.92	-
Observations	27	-

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Robust standard errors are presented.

Sources: Own calculations based on Eurostat data and Governance Indicators (Kaufmann et al., 2010).

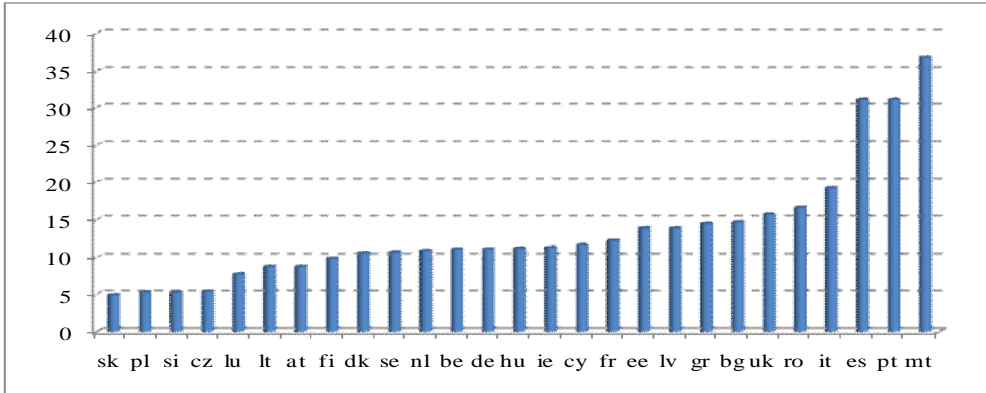
Therefore, those countries with more effective governments, lower inequality and higher income have lower poverty rates (although causality could clearly also run the other way around, such that countries with greater equity are more easily able to construct better institutions and generate higher incomes). We interpret the regression results as a first indication that, again, the quality of the institutions is more important than the quantity of social expenditure. In many countries it should be possible to reduce income inequality and thereby help to lift more citizens from poverty or exclusion without spending more, but just by spending more judiciously.

5.4 Early school leavers and poverty rates

As the indicator 'early school leavers' is closely connected with enabling citizens to find employment and a higher risk of ending up in poverty, this indicator is discussed here rather than in the chapter on the educational goals. Figure 5.6 depicts the rate of school dropouts and identifies which countries have already achieved the benchmark of below 10% and which countries still have to work hard to achieve that target. It becomes immediately apparent that the Mediterranean and transition countries will have the greatest difficulties in tackling the benchmark. Astonishingly, the EU-15 economies Spain and Portugal each have a rate of over 30%. In Italy the rate is close to 20%. As discussed earlier, a skills upgrade in the fourth

and fifth largest European economies Italy and Spain seems of utmost importance for the EU and the eurozone. Large economic gains could be achieved through such an advance.

Figure 5.6 Early school leavers in the EU-27: Percentage of the population aged 18-24 with only lower secondary education and not in education (2009)



Sources: Own calculations based on Eurostat data, Europe 2020 indicators.

5.5 Social cohesion – Adequately addressed?

In drawing conclusions, while the indicator for the risk of poverty or exclusion seems crucial for social cohesion, social cohesion cannot be reduced to this set of indicators alone. Whereas social cohesion had a prominent place in the original Lisbon strategy in 2000, it lost some importance in the revised 2005 strategy. In the Europe 2020 strategy, social cohesion has been further diminished to an index consisting of three indicators. European policy-makers are completely mistaken if they think that social cohesion is a soft indicator, which does not need concentrated attention. Social and political cohesion are among the prerequisites for European economies and trivialising the social dimension in Europe will threaten long-term economic prosperity. Instead of reducing the set of indicators to measure social cohesion, the Europe 2020 strategy should have broadened the set of indicators, for example by including citizens' normative perceptions, i.e. the levels of interpersonal and systemic trust (see Roth, 2009a, b). Another aspect that is missing in the 'inclusive' part of the Europe 2020 strategy is inequality, of which the poverty rate is but one element. It is well documented in fact that income inequality started to increase in the US by the end of the 1970s. Europe was not immune to the affliction: wage differentials widened in Europe as well, although on a

different scale and at varying times in the individual countries. An OECD study (2008), for instance, shows that in developed countries income inequality has increased since the mid-1980s and even more significantly since 2000 in Germany, Italy and Finland. Europe 2020 relies on education and its automatic positive effect on employment to solve the inequality puzzle.

We should carefully consider the remarks of Giddens (2006a, 2006b and 2007), who has pointed out that the EU's future prosperity can only be achieved alongside strengthening Europe's social model. Moreover, it seems that government efficiency plays an important role in tackling the risk of poverty or exclusion. Although our empirical results are preliminary, as we do not address the issue of causality, theoretical assumptions and common sense would suggest that the link would most likely run from effective governmental structures to lowered rates of the population at risk of poverty or exclusion. In this instance, one has to stress that government efficiency is not only crucial for combating poverty and exclusion but also for effectively implementing investment in innovation and human capital. Finally, our categorisation of EU-27 countries in the aftermath of the financial crisis according to the two criteria of efficiency and equity clarifies that the coordinated countries, along with Nordic countries, have succeeded in combining efficiency with equity. This finding underscores the assertion that coordinated countries seem to be better equipped for the challenges of globalisation than originally expected.

6. MEETING THE 20/20/20 CLIMATE AND ENERGY TARGETS

The impact of the crisis and the shifting balance of economic weights in the global economy are particularly important in the field of climate change. Indeed one could argue that the headline goal of the 2020 strategy has become obsolete.

The 2020 strategy has designated three goals in the area of climate change and energy:

- 1) *GHG emissions* (binding) – a reduction of 20% by 2020 compared with 1990 as outlined by the EU's revised Emissions Trading Scheme (ETS) Directive 2009/29/EC (-21% compared with 2005) and an "effort-sharing decision" for non-ETS sectors (-10% compared with 2005). Emissions, including those from international aviation, were estimated to be 16% below the 1990 levels in 2009 (European Commission, 2011f);
- 2) *Renewables* (binding) – an increase in the share of renewable energy in gross final energy consumption to 20% by 2020 (in 2008 this share was at 10.3% (Eurostat, 2011); and
- 3) *Energy efficiency* (non-binding) – a reduction of primary energy consumption by 20% by the year 2020 compared with projections.

In this chapter, we concentrate on the first goal. Concerning the second goal, achieving a share of 20% for renewables seems within reach given that renewables already have a share of over 10%. The third goal, however (which is in any case not binding), is unlikely to be met. The projections in 2007 showed that a reduction of energy consumption of 368 mtoe (million tonnes of energy equivalent) would be needed to attain this goal (European Commission, 2011g). But the sum of the 'pledges' of member states towards this goal amounts to only 207 mtoe, less than 60% of what would be needed. This has been officially acknowledged: "With

current policies, only half of the 20% energy efficiency target would be met by 2020" (European Commission, 2011f).

With respect to achieving a reduction of 20% of GHG emissions by 2020 (relative to 1990 levels), the impact of the crisis is obvious here. The deep recession provoked by the financial crisis has reduced emissions in the EU so much that the first 'green' target (GHG emissions in 2020 that are 20% lower than in 1990) has by some measures already been realised. Moreover, the bursting of the credit bubble that precipitated the crisis has also led to a sharp downwards revision in expected future growth rates of the EU for the remainder of this decade (and the renewed euro crisis of the summer of 2011 has further lowered projections). What seemed ambitious during the years 2005-08 when the environmental targets were formulated seems easy to accomplish today. The level of emissions of 2009 was already 16% below the 1990 benchmark. One should of course expect some growth until 2020, but right now it appears that the recovery of the European economy from the crisis will be rather slow. The revision of growth prospects can be seen from the changes in the official forecasts of the IMF between 2008 and 2011. The difference in the level of GDP predicted by the IMF in its *World Economic Outlook* of early 2011 and that of early 2008 amounts to about 12% (and the subsequent growth rates have also been revised downwards by about 0.62% p.a.) (IMF, 2008, 2011). By contrast the growth prospects of the emerging economies in Asia have not been revised downwards at all. One consequence of this will be that the share of the EU in global energy demand will continue to decline (see Table 6.1).

Table 6.1 Share of world primary energy demand (%)

	2000	2010	2020
EU	16	14	12
US	23	11	16
Non-OECD Asian countries	22	30	35

Source: Own calculations based on IEA (2010).

The observation that the current goal of reducing emissions is not very challenging is not just a theoretical calculation based on growth forecasts. It can also be seen from the key market-based indicator that the EU's emission trading scheme has created, namely the price of emissions allowances, which has fallen to around €12-15 per tonne.

The consequences of the rapid growth of emerging economies, chiefly China, should have been anticipated even earlier in the last decade when the EU's climate goals were formulated. Given the fast growth of the emerging economies, the contribution of the EU to global emissions is declining so swiftly that the impact of the EU's efforts on global emissions will become marginal. Most projections indicate that by 2020 the EU will account for about 10% of total, global GHG emissions. If the EU were to decide to increase its own ambitions by going for a 30% reduction instead of the 20% foreseen in the 2020 strategy, this would reduce global emissions by around 1%. The goal in terms of increasing the share of renewables from 10% to 20% would have an even smaller impact on global emissions: assuming renewables produce only half of the CO₂ emissions of conventional sources, a substitution of another 10 percentage points of EU energy production should lead to a reduction in global emissions of about 0.5%.

In short, one must thus accept that the EU cannot hope to have a noticeable impact on global climate change by just reducing domestic emissions. The key problem instead is the carbon intensity of the high growth in emerging economies, especially China.

6.1 A border tax to protect the global environment?

Greenhouse gas emissions represent a classic case of an external effect. One way to deal with this problem would be through multilateral negotiations with the aim of inducing every country to participate in the solution. This has by now been tried for over 20 years, but to little effect. The latest major effort in Copenhagen failed completely to produce a binding global agreement. As a result the EU is de facto the only major economic actor with a binding target.³⁷

³⁷ The Chinese government has recently announced that it is taking the unilateral commitment "that by 2020 China's carbon dioxide emissions per unit of GDP will be dropped by between 40-45% compared with 2005". At first sight, this appears to constitute a major commitment. It is not clear, however, whether this implies a major departure from the baseline. The emissions intensity of the Chinese economy should fall in any case, as services become relatively more important. It is thus difficult to say whether this target implies a meaningful price for carbon. Moreover, the Chinese plan foresees no carbon pricing in the manufacturing sector. The target is mainly to be reached by massive investments in alternative power generation. This implies that the economic argument for a carbon tariff (that production and hence pollution will move abroad) remains fully valid.

The costs and benefits of carbon border measures have been extensively discussed in the rapidly expanding body of literature on the economics of climate-change mitigation policies, but most studies concentrate on competitiveness (of energy-intensive industries) and carbon leakage. Only a few studies examine the international trade impacts of a so-called 'carbon border tax' and none seems to look at the welfare implications from a global point of view. See Veenendaal & Manders (2008), McKibben & Wilcoxon (2008), Majocchi & Missaglia (2002), and the VoxEU columns by John Whalley (2008, 2009).

The global perspective, however, is the correct one. Climate change policy, even when implemented at the national level, is motivated by a concern for global (as opposed to national) welfare. It is thus important to adopt the same point of view when discussing so-called 'border measures'. An important but often overlooked issue is the distinction between plain import tariffs (on the carbon content of goods imported) and the combination of import tariffs plus export rebates. Box 6.1 looks at the case where there is no export rebate.

Box 6.1. A simple illustration of the welfare gain from the introduction of a carbon tariff

This illustration relies on the most standard case, using a partial equilibrium approach, to show the nature of the impact of a carbon tax (i.e. a tariff on the carbon content of imports) on global welfare.

There is only one good (of which the home country is a net importer). As usual the world is divided into two actors, an importing country (or group of importing countries) and the rest of the world. But the two have identical supply and demand curves and the same carbon intensity of production!

What are the welfare implications of the tariff? The standard welfare loss caused by a tariff is the usual triangle (consumer plus producer loss). As is well known, this welfare loss is of second order for any 'small' tariff because for the first units affected by a tariff the welfare loss per unit is approximately equal to zero.

In this case, however, there is also a gain due to the global externality in production. It is much larger because it is of first order given that for all units that are not produced, the world experiences a welfare gain equal to the difference between the social cost and the private cost of production. It follows that a small carbon tariff must always improve global welfare.

The intuition behind this result is clear. As long as the tariff is small, the reallocation of consumption from consumers at home to consumers abroad causes only a loss of second-order importance. But the gain to global welfare from lower foreign production is of first-order importance. This argument is completely independent of the size of carbon leakage. Thus, those who oppose carbon taxes on the grounds of lost sectoral competitiveness (e.g. Gurria, 2009) miss the key issue.

6.2 Policy implications

The practical policy implications of this analysis are clear: the world would benefit from the imposition of a (small) carbon import tariff by the EU (the only significant region in the world with a cap-and-trade system in operation).³⁸ The justification for the tariff would nevertheless be completely different from the one usually advanced by politicians (and industry). It would not be to ‘level the playing field’ for EU industry, but to protect the global environment. This is a crucial difference since it implies that the tariff would be compatible with the rules of the World Trade Organization, whose Article XX allows for exemptions if the aim is to protect a global natural resource.³⁹

6.3 How high should the tariff be?

In a fully specified model (Gros, 2009a), it is shown that indeed there is a tariff that maximises global welfare (under the assumption that the home country has a cap-and-trade system but the rest of the world does not). The optimal tariff is approximately equal to the externality in production abroad.

³⁸ Institutionally it would be straightforward. The EU has exclusive competence for all matters concerning the customs union. Any decision to impose a carbon border tax would have to start with an initiative by the European Commission, which then needs to be approved by the Council and the European Parliament. Approval in the Council only requires a qualified majority.

³⁹ The economics of a carbon import tariff is clear. The politics is rather messy. A massive increase in EU tariffs against developing-country exports would certainly make them feel disadvantaged. While global welfare would increase, they might lose. There is an easy way out of the political problems, however. The EU could simply promise to use the proceeds from the tariff to help poorer exporting countries reduce the carbon intensity of their economies.

To calculate how high a carbon import tax of the EU might be, one should start from an estimate of the carbon content of imports. Weber et al. (2008) suggest that the total CO₂ embodied in Chinese (2005 data) exports was around 1,670 million tonnes of CO₂, or over 30% of all Chinese emissions (in jargon this is the so-called 'embodied emissions in exports' measure).

This percentage corresponds roughly to the share of exports in the Chinese economy (around 35%). Given total Chinese exports in 2005 of around \$760 billion, this implies an average carbon intensity of a little more than two tonnes of CO₂ per \$1,000 of exports. Table 1 in Gros (2009b) provides further evidence on differences in carbon intensities, showing a similar order of magnitude for other countries, such as India and Russia.

The final piece of information needed is the domestic carbon price. At present the carbon price within the ETS fluctuates at around €12-13 per tonne (or a bit less than \$20 per tonne of CO₂). This would translate into an import tariff of about 3.5-4% (two times \$17-20 per \$1,000 of imports from China) for the average Chinese exports to the EU. This is not negligible – indeed it is close to the average tariffs for most-favoured nations, which are of the same order of magnitude. Even so, it is unlikely to have a strong impact on the carbon intensity of production in China.

Prior to the crisis, the European Commission had estimated that a carbon price of around €40-50 per tonne would be required to reach the EU's 2020 commitments. The reason the actual carbon price is so much lower is probably simply that the crisis has reduced the GDP expected for 2020 by so much, perhaps by about 10%. (The crisis itself led to a loss of GDP of around 5% on impact. Moreover, growth rates might have been reduced by about half a percent going forward. Over ten years these two effects would sum to around 10%.) At current exchange rates, this would translate into about \$50-65 per tonne, and thus a carbon import tariff of slightly over 10%. Still, as China upgrades the sophistication of its exports and thus reduces its carbon intensity, the average rate will come down.

6.4 Summary

The discussion in this chapter implies that the current 2020 climate goals do not require a big effort by the EU, which is reflected in the low carbon price in the ETS. Economic theory shows that it would make sense to complement the internal carbon pricing with pricing at the border. But under the current unambitious targets, it does not make sense for the EU to

incur the political cost of imposing a carbon import tax when it would be so low (3%?).

The EU thus has to choose between two options:

- 1) Confirm the unambitious current 2020 goals. In this case it cannot really claim 'moral leadership' and the impact on global warming will be negligible.
- 2) Increase the level of ambition to minus 30% (compared with the 1990 baseline). This would imply a higher internal carbon price, restore moral leadership and also provide the justification for pricing carbon at the border. Altogether, this would translate into a significant carbon price for imports from high carbon-intensity countries, such as China, India and Russia, and could have a significant effect on the carbon intensity of production outside the EU.

7. THE EUROPE 2020 STRATEGY AND THE EU'S BROADER ECONOMIC GOVERNANCE STRUCTURE

The Europe 2020 strategy has been developed as the successor to the Lisbon strategy as a long-term approach to dealing with structural weaknesses in Europe's economy (Bongardt & Torres, 2010). One aspect that is supposed to differentiate the Europe 2020 strategy from the Lisbon strategy is the concentration on five key specific targets. These five targets are supposed to be representative of the overall goal of smart, sustainable and inclusive growth. The underlying vision of the EU as a social market economy is broader, however, and is outlined in the three priorities and the flagship initiatives (European Commission, 2010a). To achieve the Europe 2020 strategy, the Council has proposed a set of ten guidelines (listed in Table 7.1 and discussed below). This set of guidelines is meant to steer the member states in implementing policies to achieve the targets (European Commission, 2010b).

The Europe 2020 strategy has to be seen in the wider context of economic governance of the Union, and in particular the euro area. We briefly discuss some of the major elements of this structure.

Although the Europe 2020 strategy was initiated after the crisis, it was not designed as a response to the crisis. Yet the debt crisis in the euro area that followed the global economic and financial crisis exposed the need for reinforced European economic governance, in particular in the economic and monetary union (EMU), as a necessary condition for building an appropriate environment in which the Europe 2020 strategy could work. Therefore, new initiatives were set up to better react to current challenges. These initiatives are mainly represented by the economic governance package presented by the Commission, of which the European semester (European Commission, 2011e) is a core part (European

Commission, 2011a, b, c, d) along with the introduction of the Euro-plus Pact (European Council, 2011).

Table 7.1 Overview of all the guidelines and goals in the different strategies

Europe 2020 Integrated Guidelines	Annual Growth Survey	Euro-plus Pact
<ul style="list-style-type: none"> • Ensuring the quality and the sustainability of public finance • Addressing macroeconomic imbalances • Reducing imbalances in the euro area • Optimising support for R&D and innovation, strengthening the knowledge triangle and unleashing the potential of the digital economy • Improving resource efficiency and reducing GHG emissions • Improving the business and consumer environment and modernising the industrial base • Increasing labour market participation and reducing structural unemployment • Developing a skilled workforce responding to labour market needs, promoting job quality and lifelong learning • Improving the performance of education and training systems at all levels and increasing participation in tertiary education • Promoting social inclusion and combating poverty 	<ul style="list-style-type: none"> • Implementing a rigorous fiscal consolidation • Correcting macroeconomic imbalances • Ensuring stability of the financial sector • Making work more attractive • Reforming pension systems • Getting the unemployed back to work • Balancing security and flexibility • Tapping the potential of the single market • Attracting private capital to finance growth • Creating cost-effective access to energy 	<ul style="list-style-type: none"> • Fostering competitiveness • Fostering employment • Enhancing the sustainability of public finances • Reinforcing financial stability

Source: European Council (2011).

Besides the difference in the method followed for strengthening economic governance, namely the *community* method in the first case and the intergovernmental approach in the case of the Euro-plus Pact, both, at least on paper, seek to improve coordination. The package presented by the Commission concentrates on downstream coordination, in the implementation of policy decisions and the surveillance of the results

achieved, while the Euro-plus Pact seeks to facilitate upstream coordination among governments in intentions before specific policies are set and implemented. Again, at least on paper this should reflect the fact that fiscal decisions are still part of the national domain.

Yet, what is sometimes easy to identify on paper is much more complex in reality, and different elements of economic governance can periodically overlap or even conflict in their EU or euro area dimensions.

7.1 The European semester

The European semester is a newly developed strategy to foster a higher degree of coordination in economic policies at the EU level. It aims at ensuring a closer alignment between the member states and the EU. The European semester starts with the Annual Growth Survey, which provides an analysis of the progress towards the Europe 2020 targets (European Commission, 2011c), the macroeconomic situation (European Commission, 2011b) and the employment conditions (European Commission, 2011d), and should thus provide a roadmap towards growth (European Commission, 2011a). The goal of the Annual Growth Survey is mainly to identify all actions necessary in the short term to deal with current problems and to move structurally towards the Europe 2020 objectives (European Commission, 2010a). Unlike the Europe 2020 strategy, the European semester has a stronger and more complete framework to monitor, discuss, evaluate and enforce policy goals set at the European level to achieve growth, competitiveness and stability in the EU. The European semester has thus been established to cover both the Europe 2020 and the overall economic situation in the member states, including the short-term challenges (European Commission, 2011e).

7.2 Macroeconomic surveillance

The Commission proposal introduces a pillar for the prevention and the correction of macroeconomic imbalances, which are broadly seen as the main causes of the economic crisis. The alert mechanism of the pillar is based on the creation of a scoreboard, which aims at identifying member states with potentially problematic macroeconomic imbalances. The scoreboard closely monitors several indicators that are most likely to give an early signal of both internal and external imbalances (European Economic and Social Committee, 2011). The indicators of external imbalances are likely to include the following three: i) the current account balance as a share of GDP, ii) net foreign financial asset position as a share

of GDP and iii) change in the real effective exchange rate. The indicators of internal imbalances will involve four signals: i) change in real house prices or as an alternative, change in the value added in the construction sector, ii) private sector debt-to-GDP ratio, iii) change in private sector credit and iv) public sector debt as a share of GDP.

Although the choice of the scoreboard indicators may look somewhat arbitrary at first glance, the European Commission (European Parliament, 2011) stresses the importance of an economic reading of the scoreboard in contrast to a mechanical reading. The thresholds for the indicators are purely indicative and serve as alert levels. Once a country is expected to be affected (or at risk of being affected) by macroeconomic imbalances, the Commission will conduct an in-depth review of that member state, which will take into account country-specific circumstances. Following the review, the European Council will be informed of possible imbalances for the country and the Council in its turn will issue recommendations to the member state. The country should then submit a corrective action plan based on the Commission's review. Thereafter progress will be observed by the European Commission.

The scoreboard attributes particular importance to external balance variables as potential indicators of a crisis. An implicit assumption behind this approach is that a country experiencing a persistent external imbalance should be called upon to make adjustments. In this context, the key adjustment mechanism works through lower wage costs, which would improve the real exchange rate and hence foster exports, and thereby contribute to absorbing the imbalance. Despite the logic of this reasoning, as shown in Alcidi & Gros (2010), this does not always correspond to reality: data suggest that those countries that have experienced the largest losses of competitiveness over the last decade, for instance Ireland, were also the ones with the highest gains in productivity.

De Grauwe (2011) recently argued that although the proposal for the scoreboard is a step in the right direction, it also has limitations. He points out that countries have only a limited amount of control over the variables monitored by the European Commission – local booms and bubbles were mainly created through excessive credit expansion and it is this combination of bubbles and credit expansion that makes the bubbles dangerous. Therefore, a system to correct for national imbalances also has to deal with local country credit expansion. In this respect, monetary policy could play a role in preventing imbalances. While it is often argued that the ECB mandate includes only price stability and that the ECB lacks

instruments to provide financial stability, De Grauwe maintains that the Eurosystem, by allowing different reserve requirements to be set in the individual countries, can affect money creation and thus credit expansion.

7.3 The Euro-plus Pact

The Euro-plus Pact was concluded in March 2011 as a complement to the important financial support mechanism in the euro area. It seeks to reinforce the economic pillar of the EMU by enhancing economic policy coordination among its members and increasing competitiveness – especially in those countries currently experiencing difficulties – which should lead to more convergence in the eurozone. At present, six non-EMU countries (Bulgaria, Denmark, Latvia, Lithuania, Poland and Romania) have also decided to adhere to the pact. The pact concerns national competences and has put competitiveness at its core. The four main goals of the pact are listed in Table 7.1 (European Council, 2011).

But the current effort of a grand design for competitiveness that aims at reducing divergences among countries by means of procedures and rules is neither likely to help solve the eurozone crisis nor enhance European economic governance for the following reasons. First, the various elements that have been proposed to measure competitiveness tend to be flawed and of limited usefulness (see Gros, 2012). This might appear to be a technical point, but it is crucial because if the elaboration of new mechanisms is of little use to prevent future crises (or to resolve the present one), it will only increase the sense that the EU is unable to cope with its own problems. Second, focusing exclusively on how to reduce divergences as suggested by the competitiveness indicators may risk monopolising attention on the symptoms, more specifically the divergence in competitiveness itself, rather than on the real disease, i.e. why this has happened.⁴⁰ Finally yet importantly, the current crisis is a sovereign and bank debt crisis, but the ongoing debate about governance has actually failed to address the debt issue, and as a consequence, has been unable to resolve the crisis.

7.4 Conclusions

Economic policy coordination takes place in many frameworks and also with different groups of participants. Box 7.1 shows only the most important ones. Variable geometry and coordination among different

⁴⁰ See Alcidi & Gros (2010).

frameworks are key issues for the economic governance of the EU in general.

Box 7.1 Variable geometry in economic policy coordination

All countries participate officially in the Europe 2020, but some countries participate in closer cooperation than others and one member state shows little enthusiasm for the 2020 strategy.

Euro area	17 countries
Euro-plus Pact	23 countries: Euro area-17 plus Bulgaria, Denmark, Latvia, Lithuania, Poland and Romania
Not in Euro-plus Pact but full Europe 2020	Estonia, Hungary, Czech Republic
No national target in Europe 2020 strategy	United Kingdom

The Europe 2020 strategy is a broad growth strategy designed to identify medium and long-term priorities that should help EU member states improve employment, social cohesion and productivity. This goal is independent of whether a specific member country is in the euro area or participates in the Euro-plus Pact. The recession of 2008-09 and the ongoing eurozone debt crisis have created an environment in which the achievement of these objectives is becoming much more difficult. As a response, member states and the European institutions have decided to reinforce economic governance in the euro area in order to achieve greater economic coordination. The underlying assumption is that an improvement of the existing institutions and tougher rules will re-establish favourable conditions for implementing the Europe 2020 strategy. In this sense, despite the Europe 2020 strategy not being part of the new emerging European (or rather euro area) governance architecture, it is strictly related to it. The fundamental question is whether greater economic coordination, at many different levels and in a number of different frameworks, can deliver the conditions for the Europe 2020 strategy to work. As argued above, there is room for scepticism. The crisis is not over yet and governance reforms have been unable to stop its course so far. The main reason is that the roots of the crisis have not been addressed by the large number of governance reforms at the European level.

At present all the attention is engaged on how to deal with the eurozone crisis. The non-euro member countries are receiving much less attention. The challenge for policy-makers, at both the national and the EU level, is thus to ensure that the need to deal with the immediate crisis does not divert attention from longer-term issues that are so important for competitiveness.

One important problem in maintaining the cohesion of the overall framework for economic governance lies in the alternative meanings of 'competitiveness' across different parts of the framework. We have argued that in the context of the Europe 2020 strategy competitiveness essentially means productivity. But in the context of the Euro-plus Pact, competitiveness is more concerned with the relative cost of labour in individual member countries.

The need for some enforcement mechanism within the Europe 2020 has already become apparent in the first year of its existence. As documented in this study, in many cases the bottom-up approach does not seem to be working: the sum of the national commitments or targets does not add up to what member states have agreed to collectively. If the Europe 2020 strategy is to avoid the fate of the Lisbon strategy, this is the key issue to be addressed. However, there is little sign that this is about to happen.

All in all it appears, however, that the best hope for consistent 'delivery' of the reforms that are needed in many countries lies in sustained pressure from financial markets rather than the more elaborate mechanisms of European economic governance that have been enacted so far.

8. CONCLUSIONS

Our final assessment of the Europe 2020 strategy is ambivalent. On the one hand, the strategy correctly emphasises education as a key policy parameter. As our study has shown, education seems to play a significant role in promoting innovation, increasing employment and also potentially reducing poverty by cutting the rate of early school leavers. On the other hand, the Europe 2020 strategy has weaknesses. In the realm of education, the strategy focuses exclusively on quantitative indicators. It should also take into account qualitative indicators like university rankings, which would reveal the weaknesses of most European economies in comparison with the US. Furthermore, its definition of innovation, which focuses solely on R&D, seems flawed. The new concept of intangible capital should be used instead. Concerning social cohesion, the strategy's attention appears to concentrate too narrowly on poverty or exclusion to encompass the full domain of social cohesion, not even including the measure of income inequality. Moreover, it seems the aggregate EU-27 indicator masks deep divergences between old and new member states.

Meanwhile, the ongoing debt crisis in the euro area has revealed deep north–south differences within the EU.

For a start, investment in education has to be strengthened in particular within the Mediterranean countries, in terms of both quantity and quality. For example, Spain and Italy must reduce their school dropout rates, and Italy in particular has to increase its tertiary graduation rate. The foregoing especially applies to women in the labour force in these two countries, whose skill levels have to be upgraded. Mediterranean countries should also invest more in intangible capital (and thus in innovation) to strengthen their long-term competitiveness. All of this is necessary not only to allow the EU to reach its own 2020 targets, but also to allow these countries to overcome the current crisis.

Yet all this might only be possible if the public institutions in these countries are improved. Investments in education and innovation in the Mediterranean countries will increase (and yield large benefits) only once the social capital⁴¹ and institutions in these countries have been enhanced. This argument also holds for the transition countries, whose levels of government effectiveness and systemic trust remain low.⁴² A sufficient level of government effectiveness throughout the EU-27 is a critical condition for making the EU as a whole more competitive.

Our report does not discuss the role of EU financing in the 2020 strategy. But a clear implication would be that the structural funds should be used to build social capital and effective institutions rather than airports and highways. Investment in education is of course useful, but our research suggests that investment in other 'intangible capital', such as firm-specific training, design and IT innovation might be even more important.

Finally, on the 'green front', the recession and the slow recovery have made it rather easy to attain the first headline goal, namely a reduction of GHG emissions by 20%. The conditions seem ripe to move to a more ambitious target, namely a reduction of 30% and to complement the internal pricing of carbon through the European Emissions Trading System with an external dimension, namely a carbon import tax.

⁴¹ See Roth (2009a), who argues that those European countries with lower levels of interpersonal trust should invest in trust-building measures.

⁴² See Roth (2009b).

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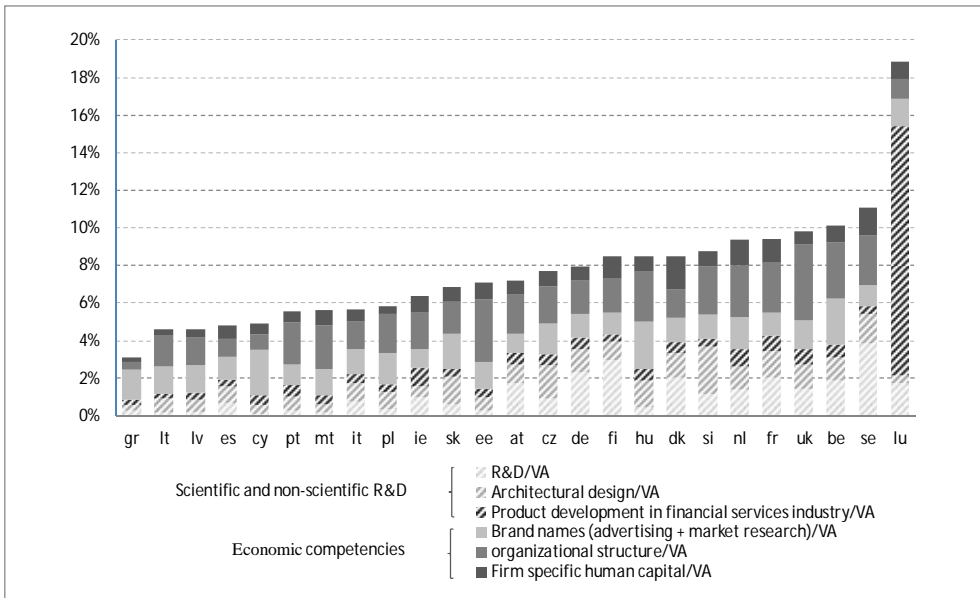
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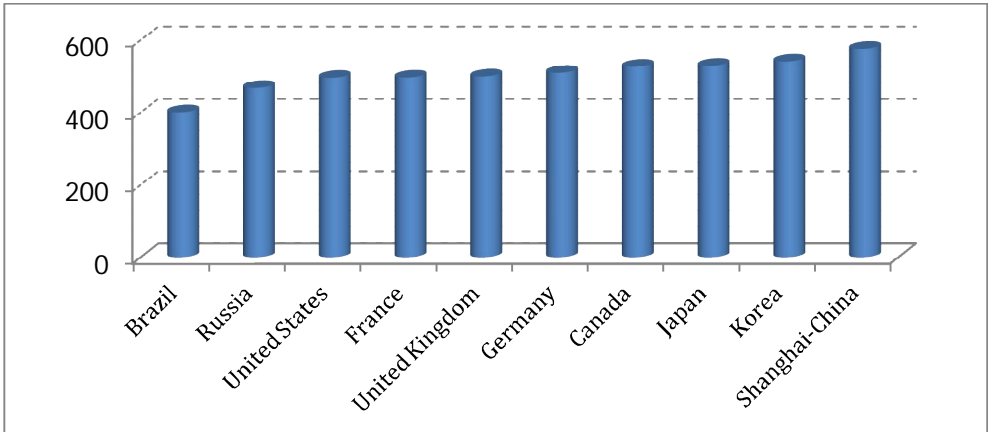
ANNEX

Figure A.1 Investment in new intangible capital by businesses in the EU-27 compared with R&D, 1995-2005



Source: Own estimations based on INNODRIVE data.

Figure A.2 Average PISA* scores, 2009



* Programme for International Student Assessment.

Source: Own estimations based on OECD data.

Figure A.3 Catch-up process of the 10 transition countries

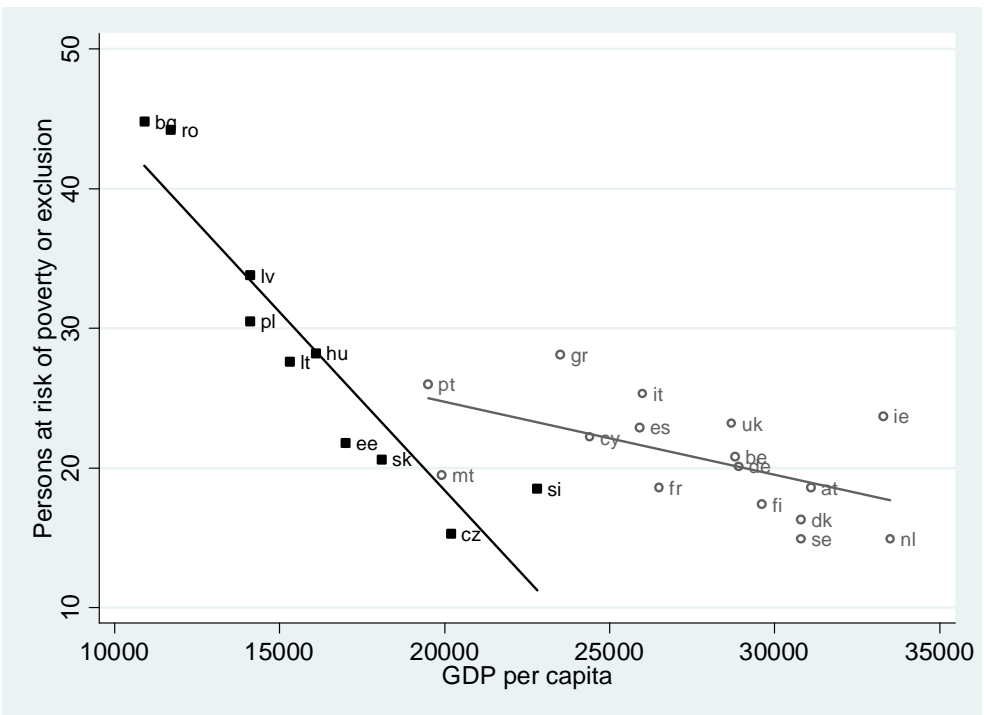


Table A.1 Official Europe 2020 targets¹

EU/Member States targets	Employment rate (in %)	R&D in % of GDP	CO ₂ emission reduction targets ²	Renewable energy	Energy efficiency – reduction of energy consumption in Mtoe	Early school leaving in %	Tertiary education in %	Reduction of population at risk of poverty or social exclusion in number of persons
EU headline target	75%	3%	-20% (compared to 1990 levels)	20%	20% increase in energy efficiency equalling 368 Mtoe	10%	40%	20,000,000
Estimated EU³	73.70-74%	2.65-2.72%	-20% (compared to 1990 levels)	20%	206.9 Mtoe	10.30-10.50%	37.50-38.0%	Result cannot be calculated because of differences in national methodologies
AT	77-78%	3.76%	-16%	34%	7.16	9.5%	38%	235,000
BE	73.2%	3.0%	-15%	13%	9.80	9.5%	47%	380,000
BG	76%	1.5%	20%	16%	3.20	11%	36%	260,000
CY	75-77%	0.5%	-5%	13%	0.46	10%	46%	27,000
CZ	75%	1% (public sector only)	9%	13%	n.a.	5.5%	32%	Maintaining the number of persons at risk of poverty or social exclusion at the level of 2008 (15.3% of total population) with efforts to reduce it by 30,000
DE	77%	3%	-14%	18%	38.30	<10%	42%	330,000 (long-term unemployed)
DK	80%	3%	-20%	30%	0.83	<10%	At least 40%	22,000 (household with low work intensity)
EE	76%	3%	11%	25%	0.71	9.5%	40%	Reduce the at risk of poverty rate (after social transfers) to 15% (from 17.5% in 2010)
EL	70%	to be revised	-4%	18%	2.70	9.7%	32%	450,000
ES	74%	3%	-10%	20%	25.20	15%	44%	1,400,000-1,500,000
FI	78%	4%	-16%	38%	4.21	8%	42% (narrow national definition)	150,000

Table A.1, cont.

Member States targets	Employment rate (in %)	R&D in % of GDP	CO ₂ emission reduction targets	Renewable energy	Energy efficiency – reduction of energy consumption in Mtoe	Early school leaving in %	Tertiary education in %	Reduction of population at risk of poverty or social exclusion in number of persons
FR	75%	3%	-14%	23%	34.00	9.5%	50%	Reduction of the anchored at risk of poverty rate by one third for the period 2007-2012 or by 1,600 000 people
HU	75%	1.0%	10%	14.65%	2.96	10%	30.3%	450,000
IE	69-71%	approx.2% (2.5% GNP)	-20%	16%	2.75	8%	60%	186,000 by 2016
IT	67-69%	1.53%	-13%	17%	27.90	15-16%	26-27%	2,200,000
LT	72.8%	1.9%	15%	23%	1.14	<9%	40%	170,000
LU	73%	2.3-2.6%	-20%	11%	0.20	<10%	40%	No target
LV	73%	1.5%	17%	40%	0.67	13.4%	34-36%	121,000
MT	62.9%	0.67%	5%	10%	0.24	29%	33%	6,560
NL	80 %	2,5 %	-16%	14%	n.a.	<8 %	>40% 45% expected in 2020	100,000
PL	71%	1.7%	14%	15.48%	14.00	4.5%	45%	1,500,000
PT	75%	2.7-3.3%	1%	31%	6.00	10%	40%	200,000
RO	70%	2%	19%	24%	10.00	11.3%	26.7%	580,000
SE	Well over 80%	4%	-17%	49%	12.80	<10%	40-45%	Reduction of the % of women and men who are not in the labour force (except full-time students), the long-term unemployed or those on long-term sick leave to well under 14% by 2020
SI	75%	3%	4%	25%	n.a.	5%	40%	40,000
SK	72%	1%	13%	14%	1.65	6%	40%	170,000
UK	No target in NRP	No target in NRP	-16%	15%	n.a.	No target in NRP	No target in NRP	Existing numerical targets of the 2010 Child Poverty Act

¹As set by member states in their National Reform Programmes in April 2011.

²The national emissions reduction targets defined in Decision 2009/406/EC (or “Effort Sharing Decision”) concerns the emissions not covered by the Emissions Trading System. The emissions covered by the Emissions Trading System will be reduced by 21% compared to 2005 levels. The corresponding overall emissions reduction will be -20% compared to 1990 levels.

³Addition of national targets.

Source: As set by member states in their National Reform Programmes in April 2011 (see http://ec.europa.eu/europe2020/targets/eu-targets/index_en.htm).