

# European Productivity Growth Since 2000 and Future Prospects

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## ABSTRACT

This article revisits the issue of Europe's growth slowdown, taking into account the latest experiences from the recession and the debt crisis since 2008. There are few, if any, signs of even the beginnings of a reversal in the slowing growth trend, which is primarily driven by the weak productivity performance in most European countries. Recently, slow productivity growth has broadened from the services sector to the goods sector for most European economies. Output growth projections out to 2025 show a deceleration in Europe's growth trend compared to the pre-recession period, and even compared to the latest period, 2006-2012, there are no signs of significant acceleration in the growth trend. Demographic structures and continued slow total factor productivity growth are both dampening trend output growth, although there will be large variation between different EU economies.

## RÉSUMÉ

Le présent article revient sur la question du ralentissement de la croissance de la productivité en Europe et tient compte des dernières expériences de la récession et de la crise de l'endettement depuis 2008. Il y a peu ou pas de signe d'un renversement de la vapeur pour ce qui est du ralentissement de la croissance, causé principalement par la faible productivité dans la plupart des pays européens. Le faible taux de croissance de la productivité s'est récemment répandu, du secteur des services au secteur des biens, dans la plupart des pays européens. Les prévisions concernant la croissance de la production jusqu'en 2025 ne démontrent aucun signe d'accélération importante par rapport à la tendance actuelle. Les structures démographiques et la faible croissance de la productivité totale des facteurs entravent la croissance de la production, quoique l'écart sera vaste entre les différents pays de l'UE.

LIKE ELSEWHERE IN THE ADVANCED world, growth performance of European economies. the financial crisis and recession in 2008-09 and To understand how the recovery will evolve, its aftermath have significantly affected the who will benefit and what the timing will be, it

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is important to distinguish between cyclical recession and recovery effects, and the structural impact of the crisis. It is therefore important to not only look at the most recent changes and detect the green shoots of recovery, but also to take a comparative view at the pre- and post-crisis trends in productivity growth.

Thanks to two datasets that are now being updated and extended on a regular basis, we have recent data series on the latest productivity developments in a comparative perspective. On the basis of the most recent update of *The Conference Board Total Economy Database* (January 2013) and the *EUKLEMS Growth and Productivity Accounts* (November 2012), we can review the impact of the crisis by looking at Europe's growth and productivity performance during the last decade

In this article we first review the latest macro-economic output, input and productivity estimates for 2011 and 2012. We then take a closer look at two sub-periods, 2001-2005 and 2006-2012. This latter sub-period is of course strongly affected by the 2008-09 recession, but by including the peak year 2007 and the recovery years 2010 and 2011, it provides a good comparison with the first sub-period. In addition to estimates of labour productivity, we decompose output growth into the contributions of growth in hours worked, labour composition, capital (both IT and non-IT) and total factor productivity (TFP). TFP growth, in turn, can also be broken down to the sector level, using updated EUKLEMS data, to look at shifts in productiv-

ity dynamics between the goods sector, market services and non-market services. Finally, we provide productivity growth projections for 2013, as well as for 2014-2018 and 2019-2025.

## **Productivity Growth Estimates for 2011 and 2012**

Following a rapid recovery in 2010 during the immediate aftermath of the 2008-09 recession, productivity growth slowed down significantly in 2011 and 2012 as seen in Table 1 (all tables can be found at the end of the article; for earlier year estimates, see <http://www.conference-board.org/data/economydatabase/>).<sup>2</sup> Our estimates include both labour productivity growth, measured as the change in real (i.e. inflation-adjusted) aggregate GDP per hour worked, and TFP growth, which represents the change in real GDP not explained by the change in an index of combined labour and capital input.<sup>3</sup>

At the time of writing, the estimates for 2012 are preliminary, and partially still based on projections of output and employment growth awaiting more comprehensive GDP and labour input data which are fully integrated in a national accounts framework. Still, it is clear that, on average, the productivity slowdown in 2012 in mature economies was entirely due to slower output growth.

For example, in the Euro Area,<sup>4</sup> labour productivity growth fell off from 1.2 per cent in 2011 to 0.6 per cent in 2012. Output actually declined 0.5 per cent in 2012, after increasing 1.4 per cent in 2011, signaling that the Euro

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2 The aggregate productivity estimates in this article are for the total economy, including the non-business sector. Later in this article we distinguish between the market sector (both goods and services) and the non-market sector (primarily government, educational services, and health care industries). For an international comparison of productivity trends, the total economy is the appropriate aggregate measure as the size of the business sector relative to the total economy and its composition varies across countries.

3 Both labour productivity and TFP are value-added measures, and therefore do not take into account intermediate inputs, such as energy, materials and service inputs, as required in a full-fledged KLEMS (capital-labour-energy-materials-services) framework.

4 The Euro Area currently includes the following 17 countries: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain.

Area was heavily affected by the intensification of the financial and fiscal crisis during late 2011 and early 2012. At -1.1 per cent, total hours worked contracted much more sharply than output, resulting in the 0.6 per cent increase in output per hour. However, the efficiency of production factor use, as measured by TFP, declined by 0.8 per cent, meaning that labour and capital in the Euro Area were allocated less efficiently in 2012 compared to previous years. This decline in efficiency probably resulted from less productive companies clinging to resources, especially labour, together with failing to bring new innovations to market given the lack of demand.

For comparison, in the United States, the growth of labour productivity experienced a comparable fall, but to an even lower growth rate than in Europe, down from 0.8 per cent in 2011 to only 0.2 per cent in 2012. However, the underlying dynamics of output and hours growth in the United States were the opposite of the Euro Area. There was a slight improvement in U.S. GDP growth from 1.8 per cent in 2011 to 2.2 per cent in 2012, but total hours growth gained more traction as it doubled from 1.0 per cent to 2.0 per cent. This labour market improvement was thus accompanied by dismal productivity performance. The 2012 productivity growth performance is one of the slowest observed during the post-World War II period in the United States — output per hour only grew slower than 0.2 per cent in 1974 (-1.0 per cent) and 1982 (-0.8 per cent). The slowdown in U.S. labour productivity growth is due to a combination of weak investment growth, held back by low levels of business confidence (in part related to the fiscal crisis), and few efficiency gains (as measured by TFP growth at 0.2 per cent).

Within the Euro Area, there was an unusually large variation in productivity growth rates between economies, reflecting the different impacts of the debt crisis in 2012. Spain, for

example, registered the highest growth rate in labour productivity, at 2.3 per cent in 2012. This resulted from a sharp contraction in total hours worked (-3.7 per cent), much greater than the fall in GDP (-1.4 per cent). This is a very different outcome from, for example, Greece where labour productivity fell 1.3 per cent, one of the biggest declines in the Euro Area in 2012. The difference in how the two economies are adjusting to the crisis is also clearly reflected in TFP, which is estimated to have declined 4.3 per cent in Greece compared to a 0.2 per cent decrease for Spain.

In Germany and France, the growth rates in output per hour have also fallen considerably in 2012, that is, to 0.4 per cent (down from 1.6 per cent in 2011) for Germany and to -0.2 per cent (down from 1.4 per cent in 2011) for France. In Germany, even though employment expanded significantly at 1.0 per cent in 2012, total working hours increased by only 0.3 per cent, due to less overtime and more vacation days. Still, Germany's employment growth seemed beyond what could be supported by the growth in output. Its strong export performance outside the EU was balanced by increased weakness among its major Euro Area trading partners, including France, Italy and Spain. Also domestic consumption and investment in Germany, which are the components of aggregate demand that generate the most jobs, did not grow as rapidly as the export sector. In France, job growth was much slower than in Germany but total working hours still increased by 0.4 per cent, which was faster than France's output growth at 0.2 per cent. Of greater concern is that TFP declined 0.4 per cent in Germany and 1.0 per cent in France. The widespread weakness of TFP growth among major European countries, points to ongoing structural rigidities in labour, capital, and product markets, as reflected in the incomplete single market in Europe (especially for services) and the lack of

true mobility of labour within and between European economies.

The developments in the EU-27 are similar to those in the Euro Area (which includes only 17 of the 27 EU member states), although several Central and Eastern European (CEE) economies, which are somewhat less exposed to the fallout from the Euro Area crisis, showed less of a decline in output and hours. The largest economy in the region, Poland, saw a slowdown in output and total hours growth, but still performed solidly in 2012 with a 2.2 per cent increase in labour productivity. However, at only 38.7 per cent of the U.S. output per hour level, there is still much scope for improvement in Poland's productivity performance, as there is in the other CEE economies.

In contrast to Central and Eastern Europe, the United Kingdom showed a much weaker economic growth performance than anticipated in 2012, with GDP falling 0.3 per cent. Growth in total hours remained fairly stable at 1.0 per cent, indicating significant labour hoarding in times of serious austerity. As a result, labour productivity growth in the UK declined dramatically by 1.3 per cent. Also, the UK's level of output per hour remains at 80.4 per cent of the U.S. level, well below that of its main continental counterparts, France and Germany.

On average, the level of productivity in the Euro Area, measured as output per hour in U.S. dollars (after adjustment for differences in relative price levels using purchasing power parities) is much lower than in the United States — just 80.9 per cent of the U.S. level in 2012. But this average hides a very large variation reflecting the different levels of development and economic structure (such as the share of manufacturing in the economy) among Euro Area countries.

Major European economies such as Germany and France have higher labour productivity levels than the Euro Area average at 89.9 per cent and 93.1 per cent, respectively, of the U.S. level, whereas economies like Spain and Italy are at 76.3 per cent and 71.8 per cent, respectively. The productivity level of Greece and Portugal is much lower still at just 50.3 per cent and 42.0 per cent of the U.S. level. As these Mediterranean economies showed much larger employment losses than the northern economies in Europe, the share of labour in Euro Area countries with high productivity levels increased significantly. This boosted the average productivity growth rate of the Euro Area by 40 per cent, resulting in a growth rate of 0.6 per cent in 2012.<sup>5</sup>

### **Changing Dynamics of Productivity Growth before and after the Great Recession**

When looking at the impact of the Great Recession on Europe's growth, it is useful to look at aggregate GDP, GDP per capita and labour productivity together to better capture and understand the effects of changes in the labour market. We find that GDP and per capita growth about halved in the aggregate EU-27 between 2001-2005 and 2006-2011 (Table 2).<sup>6</sup> In the "old" EU-15, representing the member states before 2004, both GDP growth and GDP per capita growth fell between periods in all economies, except Germany and the Netherlands. For the new member states (EU-12), only Poland (and Malta) saw an increase in GDP growth and GDP per capita growth. Certain Central and Eastern European countries were severely hurt because of their export dependence on the rest of Europe.

5 For 2012, 0.25 percentage points (42 percent of the 0.6 percent increase in output per hour) resulted from a reallocation effect, given more weight to productivity growth in Euro Area economies with higher productivity levels. The remaining 0.33 percentage points resulted from within-country growth in labour productivity.

6 Here we have chosen to take the data up to 2011 only, as the comparison between the two periods could be affected by the preliminary nature of the 2012 estimates.

The slowdown in labour productivity growth after 2005 was more moderate than for per capita income, especially in the Euro Area economies, pointing at a drop in the employment/population rate, which has resulted from a combination of higher unemployment and lower labour force participation.

Underlying the slowdown in labour productivity growth are stark differences between countries. The biggest declines in labour productivity growth in EU-15 countries between periods were seen in Sweden, Luxembourg, and, not surprisingly, Greece. These productivity declines were related to their large decline in GDP growth beyond the decline in employment growth. In Germany, despite a rise in GDP and per capita income growth between 2001-2005 and 2006-2011, labour productivity growth fell by 0.4 percentage points, suggesting strong labour hoarding effects as a result of short-time working programs. In contrast, labour productivity growth increased in Poland between the 2001-2005 and the 2006-2010 periods, which resulted from an expansionary growth process. Spain also saw an acceleration in labour productivity growth, but, in contrast to Poland, it cut hours even more than GDP.

Using a growth accounting framework, Tables 3a and 3b decompose the growth of aggregate GDP into the contributions of labour, capital and TFP for both sub-periods. On average, hours worked in the "old" EU-15 contributed less to growth from 2006 to 2011 than from 2001 to 2005, although the picture is very mixed between economies. Germany, Sweden and Luxembourg showed the largest gains in hours worked between periods while, not surprisingly, the "troubled" economies (Greece, Spain, Portugal, Italy and Ireland) showed the weakest labour market performance.

On average, hours in the "new" EU-12 countries contributed more to growth in

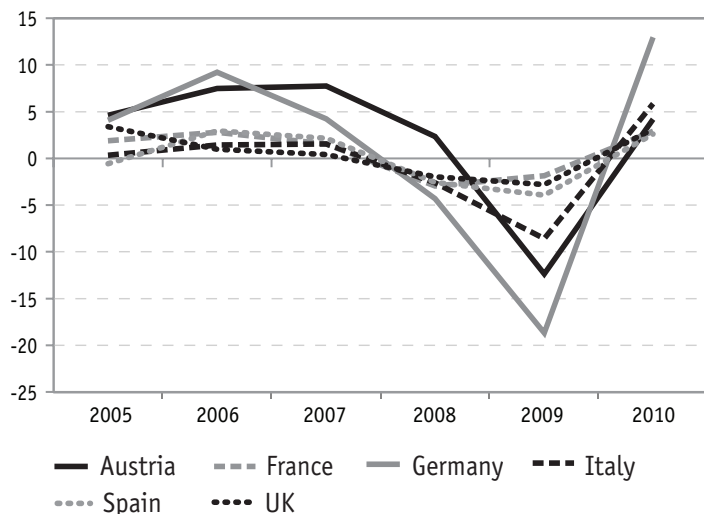
2006-2011, especially because of a better labour market outcome in Poland and the Slovak Republic. Labour markets in the Baltic States and Hungary were much more severely affected by the crisis.

Capital growth was the main driver of labour productivity growth in the aggregate EU estimates in both sub-periods, split between ICT and non-ICT capital. In the EU-15, the growth contribution of ICT capital has stayed relatively high in most countries, especially in the Nordic countries but also in the "troubled" economies (including Ireland). Non-ICT capital growth accounted for the largest part of capital growth in the new EU-12 countries in the 2006-2011 period. Ireland maintained a relatively rapid growth in non-ICT capital, probably as a result of the construction boom.

TFP has emerged as the Achilles' heel of Europe's growth performance. In the "old" EU-15, all countries had negative TFP growth in 2006-2011, except for Germany, Austria and the Netherlands. In the "new" EU-12, TFP growth remained positive, except in Bulgaria, Hungary and Slovenia, but it was very weak in the Baltic States.

Overall, TFP growth has been the main source behind the slowdown in Europe's growth for all of the past decade, but the problem has become worse during the second half of the 2000s. The continuation of the slowing trend in TFP growth points at a range of possible explanations. Beyond the temporary impact from the recession, it can be a sign of weakening innovation and technological change. But for the TFP growth rate to turn negative, as turned out to be the case for most "old" EU-15 economies, additional explanations are needed. First, it could signal increasing rigidities in labour, product and capital markets, causing increased misallocation of resources to low-productive firms. Second, and related to the first, there might be a negative reallocation effect, with more

**Chart 1**  
**TFP Growth in the Goods Sector in Select European Countries, 2005-2010**  
(per cent)



Source: EU KLEMS Database, update November 2012..

resources going to the less productive sectors in the economy.<sup>7</sup>

### A Sectoral Perspective on the Productivity Slowdown in Europe

To test the hypothesis of negative reallocation effects as a source of the slowdown in aggregate productivity growth in Europe between 2001-2005 and 2006-2010, we look at a breakdown for TFP growth between three major sectors of the economy: 1) goods production, including agriculture, mining and manufacturing; 2) market services, including wholesale and retail trade, transportation and warehousing; among other services; and 3) non-market services, which include community, personal and social services

(including education, health care and public administration).<sup>8</sup> So far, industry-level growth accounting results extend to 2010, and could be obtained for the five largest European economies (France, Germany, Italy, Spain and the United Kingdom) as well as Austria, using the updated EU KLEMS database (November 2012), with additional updates for 2010 by the authors.

Tables 4a and 4b show that most differences in growth performance across sectors come from TFP. In the goods sector, TFP growth was positive (except for Italy) during the 2001-2005 period, but weakened during the 2006-2010 period. The biggest decline in goods sector TFP growth occurred in the United Kingdom and, perhaps surprisingly, in Germany. The dynamics, however, were quite different between the two countries. In the UK, most of the decline was due to a decline in output growth since 2006, which was already negative in the earlier half of the decade. In Germany the slowdown in output was much more moderate, and it was primarily the retaining of labour and postponement of investment which created a temporary setback for TFP growth. In 2010, TFP growth in the goods sector in Germany rebounded 13.0 per cent after plummeting 18.7 per cent in 2009. In the UK, TFP fell by only 2.8 per cent in 2009 and showed a moderate recovery of 3.1 per cent in 2010 (Chart 1).

TFP growth was weaker in market services than in goods production in 2001-2005, and the situation worsened in 2006-2010. France and the United Kingdom suffered the largest declines, as inputs did not adjust as much for the rapid decline in market services output. The latter results align with recent evidence in the United Kingdom of slow productivity

7 For a brief review of the literature on the relationship between productivity, resource allocation and competition, see Timmer *et al.* (2010:265-267).

8 Measurement problems with regard to output in non-market services are large and the productivity estimates should therefore be interpreted with caution. Real estate activities are also included with non-market services, as the output measure includes imputed rents on owner-occupied dwellings, making the interpretation of the productivity measure problematic.

growth, despite decent employment growth. However, Germany's TFP growth rate in market services increased from 0.8 per cent per year in 2001-2005 to 1.2 per cent in 2006-2010, recovering from a very weak output growth rate, from 0.3 per cent per year in 2001-2005 to 2.0 per cent in 2006-2010.

In non-market services, TFP growth was zero or negative in all six European economies for both the 2001-2005 and the 2006-2010 periods. While the measurement of real output in non-market services is fraught with problems, which are only slowly being resolved, it is important to understand the dynamics of change in the sector, which accounts for up to 30 per cent of employment in most European economies. Output growth in non-market services remained relatively stable in most countries between 2001-2005 and 2006-2010, except for Italy and the United Kingdom where it dropped by 1.1 percentage points and 2.1 percentage points per year, respectively. Spain and the UK saw the largest downward adjustments in total hours growth in non-market services, but for all six economies the growth rate remained positive. The fall-off in TFP growth between periods was strongest in the UK. In fact, Spain and Austria saw significant improvements in TFP growth, though the TFP growth rate remained negative in both cases. Non-market services typically show weak productivity growth, as the Baumol "cost-disease" hypothesis in services applies mostly to non-market services. However, the potential for technology applications, as attested by the relatively strong continued increases in ICT capital, and presumed cost savings in non-market services remains strong.

Overall, the sectoral growth accounts show considerable declines in TFP growth across the board between 2001-05 and 2006-10, so that labour

input shifts to less productive activities do not materialize as the main explanation for the slowing trend at the aggregate level. Services — and especially non-market services — posted most of the negative TFP growth rates throughout the period. Slow productivity growth in services partly results from slower adjustments and misallocations of inputs, which may point to the need for continued structural reforms in labour and product markets. However, ongoing investments in capital, especially in ICT capital, may also signal a drive towards better innovation performance with potential productivity gains in the services sector. One hypothesis may be that stronger intra-European competitiveness is beginning to emerge as a positive source for growth in Europe's market services.

## Productivity Growth Projections

Even though projections of productivity growth are complex, because of the need to forecast several variables, including labour, capital and TFP, we have undertaken an effort to do this in order to provide a perspective on the timing of a growth rebound. For 2013, we rely largely on forecasts for GDP and employment, including assumptions on the growth in hours per person employed, whereas we developed a growth accounting projection model for the medium-term.

Using *The Conference Global Economic Outlook* (Chen *et al.*, 2012). The projections cover the period 2013-2025, with separate projections for the medium term (2013-2018) and for the long term (2019-2025).<sup>9</sup> Projections for labour and capital inputs use the framework developed in Jorgenson, Ho and Stiroh (2005) and Jorgenson and Vu (2008), but with several improvements, especially for the estimation of capital services and TFP.

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<sup>9</sup> The November 2012 version of the outlook covers 55 major economies across 11 global regions, including 33 advanced economies (the United States, Europe, Japan and other advanced economies) and 22 emerging and developing economies.

For labour quantity, the measures are primarily based on projections for the working age population (age of 15-64) from the *International Data Base of the U.S. Census Bureau*. Labour composition estimates are based on projections of population by level of education attainment, age and sex (Bonthuis, 2011). Capital and TFP growth are estimated by a system of equations for which we utilize standard statistical measures and economic variables. We estimate three endogenous variables: TFP growth, the savings rate, and capital services growth. The savings rate is an important addition, because it is closely related to investment capital that determines the growth of capital services. All other variables are either exogenous or predetermined. The regression approach to measure capital services and TFP growth also makes it possible to include the link to several demand-side related variables, such as trade openness, and the share of the manufacturing and services sectors in the economy.

The trend growth rates that are obtained from this exercise are adjusted for possible deviations between actual and potential output for the 2013-2018 period (Chen *et al.*, 2012).

In 2013, Euro Area output growth is projected to contract at a slower pace than in 2012 (-0.1 per cent versus -0.3 per cent), but as the labour market recovery typically lags, the growth in output per hour may drop to 0.2 per cent in 2013 compared to 0.6 per cent in 2012 (Table 5). If total hours growth in 2013 falls at more than 0.3 per cent, there could be a slightly more positive effect on productivity, making the picture look more like 2012. By comparison, in the United States labour productivity growth is expected to see a moderate improvement to 0.6 per cent in 2013 compared with 0.2 per cent in 2012. However, a slower recovery of the U.S. labour market, beyond the currently projected 1.1 per cent employment growth (and 1.2 per cent growth in total hours) in 2013, may have only a limited impact on GDP growth because it might be off-

set by slower productivity growth, as happened in 2012.

As both Germany and France are expected to see no growth in terms of total working hours in 2013, all output growth for 2013 will be the result of productivity growth. Germany is expected to have GDP and productivity growth at 0.8 per cent and France at 0.2 per cent. Productivity growth in Spain is expected to advance only 0.4 per cent (compared to 2.3 per cent in 2012) as the contraction continues even though the labour market may have its largest shakeouts behind it.

In Central and Eastern Europe, the biggest productivity gains in 2013 are foreseen for the Baltic States — Estonia (1.9 per cent), Latvia (2.4 per cent) and Lithuania (2.6 per cent) — as these economies are still benefiting from fairly solid growth in their largest trading partner, Russia.

In 2013, the United Kingdom is expected to return to positive growth territory with 0.9 per cent GDP growth, a growth rate that is considerably faster than the Euro Area average (-0.1 per cent). Assuming that total hours growth remains positive at around 1 per cent, labour productivity growth is likely to remain flat. A weakening labour market, however, may push productivity growth back into positive territory. However, TFP growth, which measures the rise in the productivity of combined labour and capital inputs, may remain negative until demand for products and services accelerates, allowing for a bigger contribution from TFP growth.

The largest positive productivity effects in Europe need to come from an acceleration in investment and a more efficient allocation and use of resources. Many of those potential gains will arise from the finalization of a single market in Europe, where labour, capital, products and services can flow freely through trade, harmonized banking rules, greater migration, and cross-border investment. Such



sustainable productivity gains will likely take longer to achieve along Europe's path to recovery from the crisis.

A full breakdown by major growth source for all European countries included in the Global Economic Outlook for 2013-2018 and 2019-2025 is given in Tables 6a and 6b, respectively. The growth performance in EU-27 shows a deceleration relative to the pre-recession trend. Even compared to the 2006-2011 period the projections show virtually no acceleration (1.1 percent GDP for the EU-27 from 2006-2011 in Table 2b as well from 2013-2018 and 1.2 percent from 2019-2025). A breakdown into the old EU-15 and the new EU-12 shows that the difference in the long term growth trend for the two regions will remain more or less the same at 1.1-1.2 percent for the "old" EU15 compared to 1.8 percent for the "new" EU-12.

Among the large "old" EU economies various key differences emerge. As described above, Germany has picked up on growth since the mid-2000s, as result of major reforms in labour and product markets that supported a better performance in market services. In addition, the strong performance of Germany's manufacturing sector helped the country to accelerate the trend since the mid-2000s, and effective cyclical policies during the recession helped to sustain the advantage. Despite offsetting effects from weaker growth rates of working age population (when compared to, for example, France), Germany shows the strongest performance based on faster TFP growth, which allows for more productive investment. However, in the long term, Germany will ultimately converge to the trend growth rate of the Euro Area as a whole at 1.3 per cent from 2019-2025.

During the late 1990s, Spain and the UK enjoyed trend growth advantages over the other large EU-15 economies, related to convergence (in Spain) and economic restructuring (in the UK). During the 2000s both countries gradually

began to return to the "old" EU-15 growth average. However, Spain already saw large productivity declines especially in services, providing early signs of the unsustainability of its growth model. In addition, the country was hit much harder by the crisis than the other major European economies. Eventually, however, Spain is expected to recover its trend growth to 1.7 per cent for the period 2019-2025, helped by slightly more positive population growth effects — in contrast to most other Mediterranean economies including France — and potential for investment in ICT. However, Spain's projections do not show a rebound in TFP growth, similar to other Mediterranean economies including France. Strikingly, the United Kingdom also fails to rebound in terms of TFP growth.

The smaller economies in the "old" EU-15 also show large differences in growth trends. For example, the Irish economy has shown most growth volatility, as it benefited during the 1990s from the accession to the EU, its specialization in producing high-tech IT equipment, and reforming the domestic labour and product markets. Despite the recession, Ireland is likely to retain many of those growth strengths in the coming decade, returning the economy to a trend growth of about 3 per cent. In contrast the economies of the Netherlands and Sweden will recover to long term growth trends of 1.5-1.7 per cent, while Austria settles at a lower growth trend of only 0.7 per cent due to a greater decline in its working age population and slower projected TFP growth.

In Central and Eastern Europe, most economies will be able to generate higher TFP growth than the EU-15, despite sizeable negative effects from slower population growth on the economies' labour forces. Competitive advantages in the foreign sector of the economy and structural changes in the domestic sector will continue to generate higher productivity growth. The three

large countries in the new EU-12 (Czech Republic, Hungary and Poland) have all seen a significant acceleration in growth trend during the 1990s and 2000s, following the collapse of the socialist planned economies and the accession to the European Union. However, Poland, which is the largest economy in the new EU-12, has shown a different timing and level in its growth path than the Czech Republic and Hungary. Poland has benefited more from catching-up effects given its low starting level and it has benefited from a strong increase in its integration of the value chain with Germany, both in manufacturing as well as in services (transportation). In the longer term, however, Poland is likely to settle at a slower growth trend (at 1.5 percent from 2019-2025) than the Czech Republic and Hungary (both at 2.4 percent), because of the smaller size of the foreign sector and the lower level of education.

## Conclusion

In this article, we find that the 2008-09 recession has hit European economies across the board, but the impact on productivity has differed significantly between countries, over time and across sectors. Policy makers in individual European countries have reacted differently to the immediate impact of the crisis, ranging from temporary labour hoarding to avoid a rise in unemployment (as in the Germany) to more or less deep cuts in government spending (as in the "troubled" economies and the UK), with vastly different effects on productivity. The goods sector in most economies was particularly strongly hit by the crisis, but also has seen the largest recovery effects. In contrast, the long term slowing trend in productivity in the services sector, which has been extensively documented before the Great Recession hit, has continued during the crisis. Some countries, however, including Germany, show the beginning of recovery in

market services growth, driven by TFP. In non-market services, the trend of slowing productivity growth is worrying, given the increased share of the sector, which includes government, education and healthcare, in the economy.

The growth projections generally show continued weak TFP growth for the medium- and long-term among European countries. However, investment remains a key driver and differentiator of growth between European economies. If such investment goes together with better functioning labour, product and capital markets, capital and other sources of growth will more easily flow to the most productive industries, thus providing an upside scenario for Europe's future growth performance. One key factor in this respect is the completion of a single market in Europe, which will especially benefit productivity growth in the services sector.

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**Table 1****Total Economy GDP, Hours Worked, Total Input, GDP per Hour and Total Factor Productivity in Europe, 2011 and 2012**

(per cent change)

	2012	2011					2012				
	GDP/hour as a % of US	GDP	Hours	All Inputs	GDP/Hour	TFP	GDP	Hours	All Inputs	GDP/Hour	TFP
<i>EU-27</i>	71.4	1.5	0.3	1.1	1.2	0.4	-0.3	-0.6	0.5	0.3	-0.7
<i>Euro Area</i>	80.9	1.4	0.2	1.0	1.2	0.4	-0.5	-1.1	0.3	0.6	-0.8
<i>EU-15</i>	81.8	1.3	0.3	1.0	1.0	0.3	-0.4	-0.7	0.3	0.3	-0.8
Luxembourg	118.5	1.7	2.7	3.3	-1.0	-1.6	0.4	1.9	3.3	-1.6	-2.8
Belgium	97.8	1.8	1.4	1.8	0.4	0.0	-0.2	0.2	1.1	-0.4	-1.3
Netherlands	96.0	1.0	0.8	0.9	0.2	0.1	-0.3	0.4	0.8	-0.7	-1.1
France	93.1	1.7	0.3	1.2	1.4	0.5	0.2	0.4	1.2	-0.2	-1.0
Ireland	90.2	1.4	-2.2	-0.1	3.7	1.6	0.4	-0.1	0.9	0.5	-0.4
Germany	89.9	3.0	1.4	1.6	1.6	1.4	0.7	0.3	1.1	0.4	-0.4
Sweden	86.1	3.7	2.3	2.7	1.4	1.0	1.1	-0.2	1.2	1.4	0.0
Austria	85.9	2.7	2.2	2.1	0.4	0.6	0.8	0.3	1.1	0.5	-0.3
Denmark	81.3	1.1	-0.2	0.4	1.3	0.7	0.6	0.0	0.7	0.5	-0.1
United Kingdom	80.4	0.8	0.5	0.8	0.3	-0.1	-0.3	1.0	1.2	-1.3	-1.5
Finland	76.9	2.7	1.3	2.0	1.4	0.7	0.1	-0.1	1.4	0.1	-1.3
Spain	76.3	0.4	-0.9	0.4	1.4	0.0	-1.4	-3.7	-1.2	2.3	-0.2
Italy	71.8	0.4	0.3	0.5	0.2	0.0	-2.3	-2.4	-1.3	0.1	-1.0
Greece	50.3	-7.1	-4.6	-2.1	-2.6	-5.1	-6.0	-4.8	-1.8	-1.3	-4.3
Portugal	42.0	-1.6	-2.1	-0.2	0.5	-1.4	-3.0	-3.5	-1.3	0.6	-1.7
<i>EU-12</i>	36.4	3.2	0.4	2.1	2.8	1.1	1.1	-0.1	2.0	1.2	-0.9
Slovenia	58.6	0.6	-1.6	-0.4	2.2	1.0	-2.3	-1.7	-0.3	-0.6	-1.9
Malta	54.2	1.6	2.5	1.3	-0.9	0.3	1.0	0.6	0.1	0.4	0.9
Cyprus	52.4	0.5	0.3	1.0	0.2	-0.5	-2.3	-1.6	-0.2	-0.8	-2.1
Slovak Republic	51.7	3.2	1.0	2.2	2.2	1.0	2.6	0.8	3.1	1.8	-0.4
Czech Republic	47.8	1.9	1.3	2.2	0.6	-0.3	-1.3	-0.4	1.0	-0.8	-2.3
Lithuania	39.0	5.9	0.7	1.0	5.2	4.8	2.9	0.6	0.9	2.3	2.0
Poland	38.7	4.3	0.9	3.0	3.4	1.3	2.4	0.2	3.0	2.2	-0.6
Hungary	38.3	1.6	1.2	2.3	0.4	-0.6	-1.2	-1.3	1.2	0.2	-2.4
Estonia	36.2	8.3	9.5	5.8	-1.1	2.3	2.5	0.6	1.6	2.0	0.9
Latvia	32.4	5.5	-7.3	-3.8	13.8	9.6	4.3	0.7	0.2	3.6	4.2
Bulgaria	26.5	1.7	-4.3	0.7	6.2	1.0	0.8	-1.9	2.2	2.7	-1.4
Romania	21.8	2.2	0.4	1.0	1.7	1.1	0.8	0.4	1.3	0.3	-0.5
United States	100.0	1.8	1.0	1.2	0.8	0.6	2.2	2.0	2.0	0.2	0.2

Source: The Conference Board, Total Economy Database, January 2013.

**Table 2****GDP, Per Capita Income and Labour Productivity in Europe, 2001-2005 and 2006-2011**  
(average annual rate of change)

	GDP		GDP per Capita		GDP per Hour	
	2001-2005	2006-2011	2001-2005	2006-2011	2001-2005	2006-2011
<i>EU-27</i>	2.0	1.1	1.7	0.8	1.7	0.9
<i>Euro Area</i>	1.6	0.9	1.1	0.6	1.1	0.9
<i>EU-15</i>	1.8	0.8	1.3	0.5	1.3	0.8
Sweden	2.7	2.0	2.5	1.9	2.9	0.6
Luxembourg	3.6	1.9	2.2	0.7	1.7	-0.8
Germany	0.6	1.7	0.5	1.9	1.4	1.0
Austria	1.7	1.6	1.5	1.6	1.5	1.4
Netherlands	1.3	1.3	0.9	1.0	1.6	0.6
Belgium	1.6	1.3	1.4	1.2	0.6	0.4
Finland	2.6	1.3	2.4	1.1	2.2	0.7
France	1.6	0.8	1.0	0.2	1.4	0.7
Spain	3.3	0.8	1.7	-0.3	0.5	1.5
Ireland	5.0	0.7	3.1	-1.1	2.5	2.7
United Kingdom	3.0	0.6	2.5	0.0	2.5	0.7
Portugal	0.8	0.2	0.4	-0.1	0.9	1.1
Denmark	1.3	0.2	0.9	-0.1	1.2	0.3
Italy	1.0	-0.1	0.6	-0.6	0.2	0.1
Greece	4.0	-1.1	3.8	-1.2	2.5	0.1
<i>EU-12</i>	4.2	3.1	4.4	3.3	4.5	2.5
Poland	3.1	4.7	3.1	4.7	2.1	2.6
Slovak Republic	4.9	4.5	4.8	4.4	4.8	3.3
Romania	5.7	2.7	6.0	2.9	9.0	2.7
Bulgaria	5.5	2.6	6.5	3.5	3.7	3.1
Czech Republic	4.1	2.6	4.2	2.7	4.7	2.0
Lithuania	7.8	2.2	8.1	2.5	6.6	3.2
Cyprus	3.2	2.1	1.3	0.4	1.0	1.0
Malta	1.3	2.0	0.8	1.6	1.16	0.6
Estonia	7.2	1.8	7.9	2.5	5.7	2.7
Slovenia	3.6	1.7	3.6	1.8	3.4	1.6
Latvia	8.2	0.7	9.0	1.4	7.0	5.1
Hungary	4.2	0.2	4.4	0.3	4.9	0.8

Notes: 1) Countries are ranked on the basis of their GDP growth in 2006-2011 (see Table 3b); 2) The base year for the 2001-2005 period is 2000, while the base year for the 2006-2011 period is 2005.

Source: The Conference Board, Total Economy Database, January 2013.

**Table 3a****Growth Contributions by Supply-Side Sources of Growth in Europe, 2001-2005**

(average annual rate of change and percentage point contributions)

	Labour productivity contributions from						
	Growth Rate of GDP	Hours Worked	Labour Productivity	Labour composition	ICT capital per hour	Non-ICT capital per hour	TFP growth
	1=2+3	2	3=4+5+6+7	4	5	6	7
	(average annual rate of change)			(percentage points)			
<i>EU-27</i>	2.0	0.4	1.6	0.3	0.4	0.6	0.3
<i>Euro Area</i>	1.6	0.4	1.1	0.3	0.4	0.6	-0.1
<i>EU-15</i>	1.8	0.4	1.3	0.3	0.4	0.6	0.1
Sweden	2.7	-0.2	2.9	0.3	0.3	0.7	1.6
Luxembourg	3.5	1.8	1.7	0.2	0.0	1.4	0.2
Germany	0.6	-0.8	1.4	0.1	0.4	0.3	0.5
Austria	1.7	0.2	1.5	0.3	0.3	0.4	0.5
Netherlands	1.3	-0.3	1.6	0.5	0.4	0.4	0.2
Belgium	1.6	1.0	0.6	0.2	0.3	0.4	-0.4
Finland	2.6	0.3	2.3	0.2	0.7	0.3	1.0
France	1.6	0.2	1.4	0.2	0.4	0.9	-0.1
Spain	3.2	2.8	0.5	0.6	0.2	0.5	-0.8
United Kingdom	2.9	0.5	2.4	0.5	0.6	0.5	0.9
Portugal	0.8	0.0	0.9	1.0	0.6	0.9	-1.7
Ireland	4.8	2.4	2.4	0.5	0.6	1.5	-0.1
Denmark	1.2	0.0	1.2	0.2	0.6	0.4	0.1
Italy	1.0	0.8	0.2	0.2	0.1	0.6	-0.7
Greece	4.0	1.5	2.4	0.8	0.5	1.4	-0.2
<i>EU-12</i>	4.1	0.0	4.1	0.4	1.1	0.8	1.8
Poland	3.0	1.0	2.1	0.3	0.6	0.5	0.7
Slovak Republic	4.8	0.1	4.7	0.2	0.9	0.7	2.9
Bulgaria	5.3	1.7	3.6	0.3	1.3	3.2	-1.3
Czech Republic	4.0	-0.6	4.6	0.4	0.6	1.7	1.9
Romania	5.6	-3.0	8.6	0.3	2.6	-0.8	6.5
Malta	0.9	0.2	0.7	0.3	0.0	0.2	0.3
Cyprus	3.2	2.2	1.0	0.4	0.0	-0.3	0.9
Lithuania	7.5	1.1	6.4	0.1	0.0	1.9	4.3
Slovenia	3.6	0.2	3.4	0.8	0.6	1.4	0.6
Estonia	6.9	1.3	5.6	0.1	0.0	2.1	3.4
Latvia	7.9	1.2	6.8	0.1	0.0	3.6	3.0
Hungary	4.1	-0.7	4.8	0.7	1.6	1.2	1.2

Notes: 1) Countries are ranked on the basis of their GDP growth in 2006-2011 (see Table 3b); 2) The base year for the 2001-2005 period is 2000.; 3) All rates of change are expressed in log terms.

Source: The Conference Board, Total Economy Database, September 2012 update.

**Table 3b****Growth Contributions by Supply-Side Sources of Growth in Europe, 2006-2011**

(average annual rate of change and percentage point contributions)

	Growth Rate of GDP	Hours Worked	Labour Productivity	Labour productivity contributions from			
				Labour composition	ICT capital per hour	Non-ICT capital per hour	TFP growth
				1=2+3	2	3=4+5+6+7	4
	(average annual rate of change)			(percentage points)			
<i>EU-27</i>	1.1	0.1	1.0	0.1	0.5	0.5	-0.2
<i>Euro Area</i>	0.9	0.1	0.8	0.1	0.5	0.4	-0.2
<i>EU-15</i>	0.8	0.1	0.8	0.1	0.5	0.4	-0.2
Sweden	1.9	1.3	0.6	0.1	0.3	0.4	-0.3
Luxembourg	1.8	2.4	-0.6	0.2	0.0	1.0	-1.7
Germany	1.6	0.6	1.0	0.1	0.1	0.2	0.6
Austria	1.6	0.2	1.4	0.0	0.2	0.3	0.8
Netherlands	1.3	0.7	0.6	0.1	0.2	0.2	0.1
Belgium	1.3	0.9	0.4	0.2	0.3	0.4	-0.5
Finland	1.1	0.8	0.3	0.2	0.7	0.2	-0.7
France	0.8	0.1	0.7	0.2	0.4	0.8	-0.6
Spain	0.8	-0.7	1.5	0.3	0.8	1.1	-0.7
United Kingdom	0.6	-0.3	0.9	0.1	0.4	0.6	-0.2
Portugal	0.1	-0.9	1.0	0.6	0.9	0.4	-0.9
Ireland	0.0	-2.1	2.1	0.2	0.9	2.1	-1.0
Denmark	0.0	-0.1	0.1	0.1	0.8	0.1	-0.8
Italy	-0.1	-0.2	0.1	0.1	0.3	0.3	-0.6
Greece	-1.0	-1.3	0.4	0.3	5.6	-3.5	-2.1
<i>EU-12</i>	3.0	0.6	2.5	0.2	0.6	1.3	0.4
Poland	4.5	1.9	2.6	0.1	0.4	1.1	1.0
Slovak Republic	4.3	1.1	3.2	0.1	1.0	0.3	1.8
Bulgaria	2.5	-0.5	3.0	0.4	1.6	3.9	-2.9
Czech Republic	2.5	0.0	2.5	0.1	0.3	1.4	0.7
Romania	2.5	-0.1	2.5	0.3	0.1	0.7	1.4
Malta	2.2	1.4	0.9	0.2	0.0	-0.3	1.0
Cyprus	2.0	1.1	1.0	0.4	0.0	0.5	0.1
Lithuania	1.8	-1.2	3.0	0.2	0.0	2.8	0.0
Slovenia	1.6	-0.2	1.8	0.3	0.8	0.8	-0.1
Estonia	1.2	-1.2	2.4	0.2	0.0	2.0	0.2
Latvia	0.3	-4.6	4.9	0.1	0.0	4.6	0.1
Hungary	0.1	-0.6	0.7	0.2	1.6	0.4	-1.5

Notes: 1) Countries are ranked on the basis of their GDP growth in 2006-2011; 2) The base year for the 2006-2011 period is 2005; 3) All rates of change are expressed in log terms.

Source: The Conference Board, Total Economy Database, September 2012 update.

**Table 4a****Contributions to GDP Growth in the Goods, Market Services, and Non-Market Services Sectors in Six EU Countries, 2001-2005**

(percentage points contributions)

	<b>GDP</b>	<b>Hours</b>	<b>Labour Composition</b>	<b>Non-ICT Capital</b>	<b>ICT Capital</b>	<b>TFP Growth</b>
	<b>1=2+3+4+5+6</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Austria</b>						
Goods	1.8	-0.8	0.5	0.2	-0.2	2.1
Market Services	1.7	-0.1	0.2	0.4	0.1	1.0
Non-Market Services	2.0	1.1	0.2	0.3	1.1	-0.8
<b>France</b>						
Goods	0.8	-1.7	0.5	0.1	0.1	1.7
Market Services	2.2	0.7	0.2	0.2	0.5	0.6
Non-Market Services	1.3	0.4	0.2	0.3	0.8	-0.4
<b>Germany</b>						
Goods	1.5	-1.6	0.3	0.1	0.0	2.7
Market Services	0.3	-1.2	0.2	0.2	0.2	0.8
Non-Market Services	1.2	0.4	0.2	0.3	0.6	-0.4
<b>Italy</b>						
Goods	-0.4	-0.6	0.3	0.1	0.4	-0.6
Market Services	1.5	0.8	0.2	0.1	1.0	-0.7
Non-Market Services	1.4	0.8	0.2	0.3	0.9	-0.8
<b>Spain</b>						
Goods	0.4	-0.8	0.3	0.2	0.6	0.2
Market Services	4.3	2.1	0.2	0.5	2.1	-0.6
Non-Market Services	3.2	3.1	0.3	0.4	1.5	-2.0
<b>United Kingdom</b>						
Goods	-0.9	-3.2	0.2	0.1	-0.4	2.3
Market Services	3.7	0.5	0.2	0.9	0.8	1.3
Non-Market Services	3.4	2.1	0.1	0.5	0.7	0.0
<b>Aggregate 6 EU Countries</b>						
Goods	0.5	-1.5	0.3	0.1	0.1	1.5
Market Services	2.2	0.5	0.2	0.4	0.6	0.4
Non-Market Services	1.9	1.1	0.2	0.3	0.7	-0.5

Note: 1) Non-market services includes Community, Social and Personal Services; 2) The base year for the 2001-2005 period is 2000; 3) All rates of change are expressed in log terms.

Source: EU KLEMS Database, update November 2012.

**Table 4b****Contributions to GDP Growth in the Goods, Market Services, and Non-Market Services Sectors in Six EU Countries, 2006-2010**

(percentage point contributions)

	<b>GDP</b>	<b>Hours</b>	<b>Labour Composition</b>	<b>Non-ICT Capital</b>	<b>ICT Capital</b>	<b>TFP Growth</b>
	<b>1=2+3+4+5+6</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Austria</b>						
Goods	1.1	-1.1	0.2	0.1	0.0	1.9
Market Services	0.9	0.0	0.2	0.2	0.1	0.2
Non-Market Services	1.8	0.5	0.3	0.2	0.8	-0.1
<b>France</b>						
Goods	-0.8	-2.0	0.5	0.1	0.2	0.5
Market Services	0.6	0.5	0.4	0.1	0.4	-0.9
Non-Market Services	1.1	0.3	0.3	0.1	0.8	-0.5
<b>Germany</b>						
Goods	0.8	-0.7	0.6	0.1	0.1	0.7
Market Services	2.0	0.1	0.2	0.2	0.3	1.2
Non-Market Services	1.0	0.8	0.2	0.2	0.6	-0.8
<b>Italy</b>						
Goods	-1.6	-1.6	0.3	0.0	0.2	-0.5
Market Services	-0.1	0.0	0.2	0.1	0.5	-0.9
Non-Market Services	0.3	0.4	0.2	0.1	0.4	-0.8
<b>Spain</b>						
Goods	-2.0	-3.0	0.2	0.1	0.4	0.2
Market Services	0.7	-1.0	0.2	0.2	1.5	-0.2
Non-Market Services	2.8	1.9	0.1	0.2	1.4	-0.8
<b>United Kingdom</b>						
Goods	-2.6	-2.4	0.0	0.0	-0.2	-0.1
Market Services	0.0	-0.3	0.5	0.2	0.6	-1.1
Non-Market Services	1.3	0.6	0.4	0.2	0.7	-0.6
<b>Aggregate 6 EU Countries</b>						
Goods	-0.7	-1.8	0.3	0.1	0.1	0.6
Market Services	0.7	-0.1	0.4	0.2	0.5	-0.1
Non-Market Services	1.2	0.7	0.3	0.2	0.7	-0.6

Note: 1) Non-market services includes Community, Social and Personal Services; 2) The base year for the 2006-2010 period is 2000; 3) All rates of change are expressed in log terms.

Sources: EU KLEMS Database, update November 2012; with updates by the authors to include 2010.



**Table 5**  
**Projections for GDP, Hours Worked, and GDP per Hour Growth in Europe, 2013**  
(per cent change)

	<b>GDP</b>	<b>Hours</b>	<b>GDP/Hour</b>
<i>EU-27</i>	0.3	0.0	0.3
<i>Euro Area</i>	-0.1	-0.3	0.2
<i>EU-15</i>	0.2	-0.1	0.3
Luxembourg	0.7	1.9	-1.2
Belgium	0.7	0.4	0.4
Netherlands	-0.5	-0.4	-0.1
France	0.2	0.0	0.2
Ireland	1.1	0.8	0.3
Germany	0.8	0.0	0.8
Sweden	1.9	0.3	1.6
Austria	0.9	0.6	0.2
Denmark	1.6	0.7	0.9
United Kingdom	0.9	0.9	0.1
Finland	0.8	-0.4	1.2
Spain	-1.4	-1.9	0.4
Italy	-0.7	0.1	-0.8
Greece	-4.2	-2.9	-1.4
Portugal	-1.0	0.1	-1.1
<i>EU-12</i>	1.5	0.5	1.0
Slovenia	-1.6	-1.0	-0.6
Malta	1.6	1.1	0.5
Cyprus	-1.7	0.6	-2.2
Slovak Republic	2.0	0.6	1.3
Czech Republic	0.8	0.1	0.7
Lithuania	3.1	0.5	2.6
Poland	1.8	0.4	1.4
Hungary	0.3	0.3	0.0
Estonia	3.1	1.2	1.9
Latvia	3.6	1.3	2.4
Bulgaria	1.4	-0.2	1.6
Romania	2.2	1.1	1.0
United States	1.8	1.2	0.6

Source: The Conference Board, Total Economy Database, January 2013.

**Table 6a****Projections for GDP Growth and Sources of GDP Growth in Europe, 2013-2018**

(average annual percentage point contributions)

	GDP Contribution from				
	Rate of GDP Growth	Persons employed	Labour composition	Capital	Total Factor Productivity
	1=2+3+4+5	2	3	4	5
<i>EU-27</i>	1.1	-0.1	0.1	0.9	0.2
<i>Euro Area</i>	1.1	-0.1	0.1	0.9	0.2
<i>EU-15</i>	1.1	-0.1	0.1	0.9	0.1
Sweden	1.9	-0.2	0.1	1.5	0.5
Luxembourg	2.2	0.4	0.1	1.1	0.6
Germany	1.6	-0.3	0.1	1.3	0.6
Austria	1.1	-0.2	0.1	1.1	0.2
Netherlands	1.0	0.0	0.0	0.6	0.3
Belgium	1.4	-0.2	0.2	1.0	0.4
Finland	0.9	-0.5	0.2	1.1	0.2
France	0.9	-0.1	0.1	0.8	0.0
Spain	0.8	0.1	0.1	0.5	0.1
Ireland	2.5	0.4	0.1	1.5	0.5
United Kingdom	0.8	0.1	0.2	0.7	-0.1
Portugal	0.8	0.0	0.3	0.5	0.1
Denmark	1.6	0.0	0.1	1.2	0.3
Italy	0.5	0.0	0.0	0.5	0.0
Greece	-0.4	0.0	-0.1	-0.3	0.0
<i>EU-12, of which</i>	1.8	-0.4	0.1	1.4	0.7
Poland	1.9	-0.4	0.1	1.5	0.6
Czech Republic	1.9	-0.5	0.1	1.3	1.0
Cyprus	0.7	0.3	0.1	0.2	0.2
Malta	1.9	-0.3	0.2	1.1	0.9
Hungary	1.8	-0.3	0.2	1.2	0.8

Note: 1) Countries are ranked on the basis of their GDP growth in 2006-2011 (see Table 2); 2) The base year for the 2013-2018 period is 2012.

Sources: The Conference Board, Global Economic Outlook 2013; Chen *et al.* (2012).

**Table 6b****Projections for GDP Growth and Sources of GDP Growth in Europe, 2019-2025**

(average annual percentage point contributions)

	Growth Rate of GDP, 2019-2025	GDP Contribution from			
		Persons Employed	Labour Composition	Capital	Total Factor Productivity
	1	2	3	4	5
<i>EU-27</i>	1.2	-0.2	0.1	1.1	0.2
<i>Euro Area</i>	1.3	-0.2	0.2	1.1	0.2
<i>EU-15</i>	1.2	-0.1	0.1	1.0	0.2
Sweden	1.7	-0.1	0.1	1.3	0.4
Luxemburg	2.4	0.4	0.1	0.9	1.0
Germany	1.3	-0.6	0.1	1.2	0.5
Austria	0.7	-0.4	0.1	0.9	0.1
Netherlands	1.5	-0.1	0.1	1.0	0.5
Belgium	1.3	-0.4	0.2	1.0	0.4
Finland	0.9	-0.4	0.2	0.9	0.2
France	1.0	0.0	0.2	0.9	0.0
Spain	1.7	0.3	0.3	1.1	0.0
Ireland	3.0	0.5	0.1	1.9	0.5
United Kingdom	0.8	0.2	0.1	0.7	-0.1
Portugal	1.5	-0.1	0.6	0.9	0.1
Denmark	1.3	-0.1	0.1	1.1	0.3
Italy	0.9	-0.1	0.1	1.0	-0.1
Greece	1.5	-0.2	0.3	1.2	0.2
<i>EU-12, of which</i>	1.8	-0.5	0.1	1.5	0.7
Poland	1.5	-0.5	0.1	1.4	0.5
Czech Republic	2.4	-0.4	0.1	1.5	1.2
Cyprus	1.5	0.4	0.2	0.6	0.4
Malta	1.8	-0.3	0.2	1.1	0.8
Hungary	2.4	-0.5	0.2	1.5	1.1

Notes: 1) Countries are ranked on the basis of their GDP growth in 2006-2011 (see Table 2); The base year for the 2019-2025 period is 2018.

Sources: The Conference Board, Global Economic Outlook 2013; Chen *et al.* (2012).