

ALLIANZ DRESDNER ECONOMIC RESEARCH



# European Growth and Jobs Monitor 2008

Indicators for Success in the Knowledge Economy

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Allianz Dresdner Economic Research  
60301 Frankfurt/Main

### **Chief Economist**

Dr. Michael Heise

The Lisbon Council  
1040 Brussels

### **President, Co-Founder**

Paul Hofheinz

### **Research support**

Claudia Broyer  
Werner Hess  
Dr. Harald Jörg  
Jutta Kayser-Tilosen  
Wolfgang Leim  
Ann Mettler

### **Editing**

Alexander Maisner OBE

### **Design**

Marc Schmitt

### **Contact**

makro@dresdner-bank.com  
Tel: +49.69.2 63-19 862  
Fax: +49.69.2 63-1 87 91  
[www.group-economics.allianz.com](http://www.group-economics.allianz.com)

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# I. Lisbon – and beyond

2008 marks a watershed for Europe – the start of the fourth and final phase of the Lisbon Agenda, laid down by EU heads of state and government in Portugal in 2000, and the moment when that agenda – once maligned by a High-Level Working Group as “a synonym for missed objectives and failed promises” – starts to look oddly prescient and well within reach. Since the original Lisbon Agenda was signed in Portugal in 2000, Europe has created 17 million new jobs. At the time of writing, Europe outpaces the United States in economic growth. And, for the first time in more than ten years, productivity is growing faster on a quarterly average basis than in the US – an intriguing trend which, if it proves sustainable, could signal a very real turning point in Europe’s decade-long effort to establish itself as truly “the most competitive and dynamic knowledge-based economy” in the world, as the original Lisbon Agenda proposed. In other words – despite the decade-long defeatism of the cynics – Lisbon is working.

Still, this is hardly a time to relax. For all of the positive news on the home front, Europe finds itself in the midst of dramatic global developments which threaten to undermine the improved economic performance of recent times. From the subprime meltdown in the United States and subsequent financial turmoil, to high oil prices and inflationary risks, clouds are gathering on the horizon. That is why the unequivocal message of The 2008 European Growth and Jobs Monitor is that **this is no time to change priorities or abandon a strategy that is working**. To the contrary, in the face of global uncertainty, Europe must redouble its effort to reform and modernise, and continue to lay the groundwork for a prosperous future. A relapse into the failed policies of the past – policies which produced slow growth, rising unemployment and unsustainable budget deficits – would be the worst possible policy choice for Europe at this important moment of transition. Above all, **we must use the next cycle of the Lisbon Agenda to strengthen our lead and consolidate our advances**. We must take advantage of these times of turbulence to re-enforce and strengthen the positive trends of the last decade, and to demonstrate to the world that a holistic agenda, built on reinforcing economic, social and environmental pillars, is possible and desirable.

This means – first and foremost – that Europe must focus on strengthening the drivers of growth which make our advanced social system possible. Future editions of the European Growth and Jobs Monitor will focus on these drivers – the key policy areas on which Europe’s prosperity and social cohesion depends. And, in light of the Spring 2008 European Council meeting, which – as a key part of the Lisbon Agenda – will focus on energy and the environment, this edition of the European Growth and Jobs Monitor contains a special section on **energy efficiency** – and the economic role that Europe’s leadership in this area plays in driving forward our social and economic advancement (the special report begins on page 29).

Drawing on the analysis laid out in the coming pages, we recommend that Europe redouble its focus on the key drivers of growth as a way of consolidating our gains and immunizing ourselves from further global turmoil. Among the key recommendations are:

- 1) **Strengthen the Internal Market and Competition.** Access to open markets and a strong competition policy is the best industrial policy Europe can have. These policies will lead to the creation of true national – or preferably European – champions, which will be capable of competing successfully in global markets. Europe should do more to complete the internal market, particularly in the services sector, which accounts for 70% of Europe’s GDP. It should also take the lead in pursuing a successful conclusion to the Doha Development Round of World Trade Organisation talks.
- 2) **Reform the Labour Market to Create Jobs and Provide Security through Employment:** Europe needs to continue reforming its labour markets, looking for novel ways to provide the security people want with the flexibility that companies need. Efforts to promote and develop a model of “flexicurity” represent a step in the right direction.

- 3) **Link Wage Raises to Productivity Improvements.** Much of the success of the past decade comes from successful control of unit-labour costs. This trend must continue, if Europe is to preserve and build on the prosperity these policies have brought. Wage increases should not exceed productivity gains – an important part of the formula that has made so much recent growth and job creation possible. And, while it is important that good work goes well rewarded, senior managers should set an example of wage moderation for the entire workforce.
- 4) **Invest for the Future.** We must put more money into developing the science and innovation of tomorrow, and less into subsidising the industries of yesterday. A successful reform of the European Union’s budget – with more money allocated towards support for research and education, and away from subsidies for agriculture and smoke-stack industries – would send a crucial signal.
- 5) **Strengthen Human Capital, or Education, Education, Education.** Europe will never compete in the world economy based on cheap wages; it can only compete by developing and delivering ever higher value-added products. This, in turn, puts a huge requirement on our human capital to produce better goods and services in a cheaper and more efficient way (through ongoing process innovation). Put simply, we need the smartest, most well-trained and creative workforce on the planet. Our education system must be the best in the world. Workers of all types should take it upon themselves to constantly upgrade their skills. Governments, companies and individuals should all invest in life-long learning and ongoing skills development.
- 6) **Promote Energy Efficiency and Demonstrate Environmental Leadership.** Partly to highlight the opportunities that current challenges present – and to pay tribute to the imperative importance of solving the climate crisis and global warming – we have devoted a special section in The 2008 European Growth and Jobs Monitor to energy and resource productivity. The section, which begins on page 29, explores the link between environmental sustainability and economic development. Our data suggests that far from harming a country’s prospects, the drive towards a resource-efficient economy and the application of innovative environmental technologies will lead over time to greater total factor productivity and economic growth.

To be sure, the imperative to build a “competitive and dynamic knowledge-based economy, capable of sustainable economic growth with more and better jobs and greater social cohesion” as the original Lisbon Agenda proposed, is as valid today as it was eight years ago. And while the goal remains the same, we are – partly thanks to the benefit of hindsight, partly due to a heightened understanding of future challenges – in a position to make the last cycle of the Lisbon Agenda a success, thereby laying the grounds for an even better reform programme to follow in 2010.

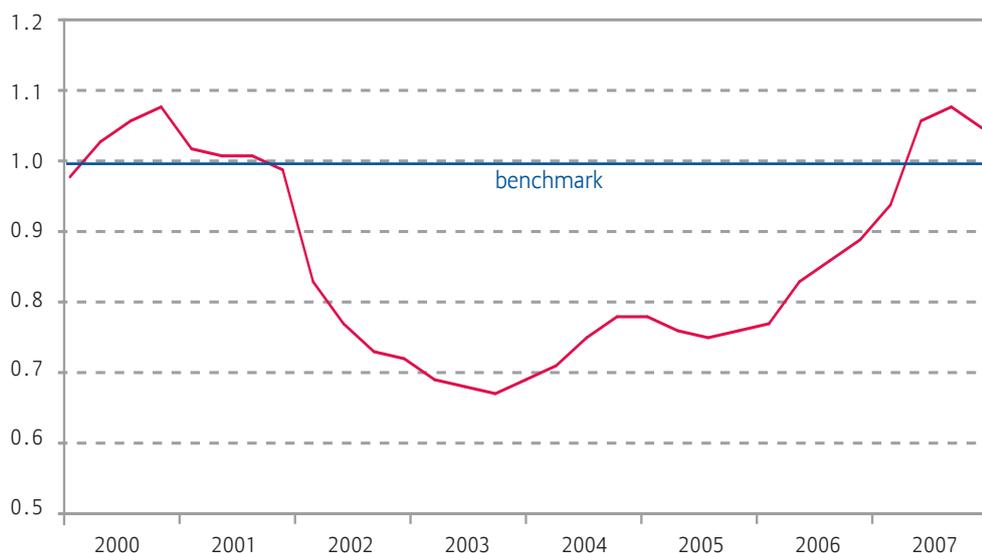
As we enter the last cycle of the Lisbon Agenda, it is fair to say that the oft-criticised programme has in no way been a failure. It has focused the policy debate on key issues, such as innovation and skills; it has provided a compelling and holistic vision for the 21st century, based on economic competitiveness, social cohesion and environmental sustainability; it has helped shift the EU budget in ways that benefit innovation and long-term prosperity; it has created a European platform for constructive exchange, where best practices can be highlighted and mutual learning be facilitated; it has made sustainable development and environmental protection a hallmark of European policy within, and outside, the EU. And most of all – it has focused our attention on a strong, compelling vision of the future, one based on European values, drawing on what is best in our past as we look to devise an even more attractive tomorrow.

## II. The 2008 European Growth and Jobs Monitor: Ranking and results

In this, the second edition, of The European Growth and Jobs Monitor, an annual survey of Europe's economic and social progress, we have extended the group of countries analysed to include the 14 largest European economies, up from the nine countries we covered in the 2007 edition. In order to provide comparable performance rankings on a year-on-year basis, some countries' scores and relative rankings have been re-calculated and in some cases retroactively calculated to take account of the expanded list. The 14 countries covered in The 2008 European Growth and Jobs Monitor are Austria, Belgium, Denmark, Finland, France, Greece, Germany, Ireland, Italy, Netherlands, Poland, Spain, Sweden and the United Kingdom. The EU-15 average has also been included as a point of comparison.<sup>1</sup>

One point emerges clearly from the results: Most countries are doing better with respect to the Lisbon targets as measured by this survey than they were a year ago – a sign that economic progress continued throughout the year despite global turmoil and the consequent downside risk (the exceptions are Denmark, Netherlands and Sweden, which backtracked in the course of the year). The EU-15 as a whole did quite well, rising to a score of 1.08 in the second quarter of 2007 before edging back to 1.05 in the third quarter, the best third quarter result since the year 2000. The high score means that – as a whole – economic progress has been so strong and confident that the EU-15 is actually ahead of schedule and could even exceed the Lisbon targets as measured in this study by 2010, if the positive trend continues. However, the indicator also shows a distinct slowdown in the pace of growth in the third quarter, indicating that growth will probably not be as strong or solid in the uncertain period to come (see the box on page 9 for an explanation of how the overall Lisbon Indicator is calculated).

European Growth and Jobs Monitor  
overall score (EU15)



current rank  
one year ago

1	Finland	3
2	Ireland	4
3	Denmark	1
4	Sweden	2
5	Poland	6
6	United Kingdom	9
7	Greece	7
8	Germany	11
9	Netherlands	5
10	Spain	10
11	Belgium	8
	EU15	
12	France	12
13	Austria	13
14	Italy	14

<sup>1</sup> The EU-15 constitutes the 15 countries that made up the European Union until May 2004, when the EU began enlarging to the 27 members it has today. The 15 countries of the EU-15 are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom.

The outright winner is Finland, a newcomer to the list this year, with Ireland weighing in at No. 2. Both countries saw substantial improvements in their score – allowing them to overtake last year’s winners (Denmark and Sweden) once the results had been recalibrated to include the larger field. Both countries also scored well on five of the six sub-indicators which make up the overall Lisbon Indicator (the exception being their investment ratios, where both Finland and Ireland could do relatively better.). By contrast, Denmark, another newcomer, debuts on the list at No. 3, though the country would have been No. 1 in 2007 had it been included in that year (Sweden was No. 1 last year, before Denmark joined the list). Denmark lost its lead due chiefly to the slower pace of economic growth, which fell to an estimated 1.9% percent in 2007, down from 3.6% in 2006. Sweden came in at No. 4 – a disappointment after its second place finish last year. What tipped the scales there was Sweden’s relatively modest performance in the economic growth and productivity growth categories, although the country continued to perform well on maintaining sound public finances and investing in machinery and equipment. Poland, another newcomer, came in at No. 5 despite a very mixed performance in the sub-indicators that make up the overall index. In terms of GDP and productivity growth, Poland is one of the top three scorers, but its employment rate and the educational qualification of its workforce consign it to the bottom three in those sub-indicator categories. The results reflect the enormous human capital challenges that Poland faces as it seeks to shift from transition-led growth to an innovation economy.<sup>2</sup>

### European Growth and Jobs Monitor overall score

Rank	Country	Current Score 2007 Q3	Change in Ranking since then	Rank one year ago 2006 Q3	Score one year ago 2006 Q3
1	Finland	1.69	↑	3	1.45
2	Ireland	1.44	↑	4	1.27
3	Denmark	1.41	↓	1	1.46
4	Sweden	1.40	↓	2	1.45
5	Poland	1.38	↑	6	1.07
6	United Kingdom	1.25	↑ ↑	9	0.97
7	Greece	1.23	←	7	1.07
8	Germany	1.19	↑ ↑	11	0.91
9	Netherlands	1.10	↓ ↓	5	1.11
10	Spain	1.10	←	10	0.93
11	Belgium	1.08	↓ ↓	8	1.04
	EU15	1.05	↑		0.89
12	France	0.94	←	12	0.90
13	Austria	0.88	←	13	0.83
14	Italy	0.66	←	14	0.39

# How the Lisbon Indicator is calculated

The European Growth and Jobs Monitor is an annual ranking which measures the performance of 14 European countries (and the EU-15 average) according to criteria derived from the original Lisbon Agenda. The Lisbon Indicator is the main indicator in the survey. It determines a country's overall performance on the path to reaching the so-called Lisbon objectives. This indicator, in turn, is based on each country's performance in six individual sub-indicators, each looking at a different type of economic and/or social performance. A performance benchmark is set in each area. And, once countries have been measured and ranked against the benchmark in each area, the six sub-indicators are brought together into one overall indicator (each sub-indicator is given equal weighting in compiling the overall indicator). A score of one indicates that a country is on track to fulfil the Lisbon criteria for 2010. Scores of less than one mean that a country will probably miss its targets. Scores of above one signal over-fulfilment.

- 1) The Economic Growth Sub-indicator. In this sub-indicator, we take a 3% increase in gross domestic product as the performance benchmark. This target comes from the original Lisbon Agenda and was taken up again in 2005 when the Lisbon process was revitalised. The sub-indicator looks at a country's actual economic growth rate, taken here as the year-on-year change in quarterly data, against the 3% target. In order to smooth over short-term fluctuations, the data are adjusted using a moving four-quarter average.
- 2) The Productivity Growth Sub-indicator. The Lisbon strategy does not formulate any specific productivity objectives, confining itself to the general vow to make "Europe the most competitive and dynamic knowledge-based economy in the world" by 2010. But, given the United States' acknowledged role as the industrial world's leader in economic dynamism, we use the US as the benchmark against which EU countries and the EU as a whole should be measured in this area. To do this, we compare the annual rates of change in labour productivity per employee on both sides of the Atlantic. Recent sharp fluctuations have prompted us to use a moving eight-quarter average for smoothing in preference to the four-quarter mean in the last edition of The European Growth and Jobs Monitor. An indicator value of 1 signifies that a country has the same productivity growth as the current level in America, while a reading of above 1 indicates that a country (or Europe itself) is performing better than the US. Values below 1 show that the country in question has fallen behind the US in productivity improvements.

- 3) The Employment Sub-Indicator. This important sub-indicator looks at development in employment. We have taken the original Lisbon goal of a 70% employment rate (the share of employed persons aged 15 to 64 in relation to the total population of the same age group) by 2010 as our benchmark, and devised a target path (based on the employment rate in the individual countries at the time when the Lisbon strategy was launched in 2000) for the quarterly increases required to meet the 70% rate on time. The current employment rate is then compared to the target rate to measure a country's performance.
- 4) The Education and Human Capital Sub-Indicator. This sub-indicator looks at the educational qualification of the workforce. Specifically, we measure the proportion of the working population aged 25 to 64 with tertiary education (academic degrees, Masters Degrees, university or cooperative education, higher research qualifications, doctorates) in the total workforce of the same age group. To calculate a scaled value, we begin by forming the average of the three highest and the three lowest shares among the EU-15 member states plus Poland (these shares in turn being averaged over the years 2000 to 2007) and then set them as boundary points of the scale. Countries are then placed according to their relative position vis-à-vis the highest and lowest. Values around 1 put the country in the group of "education frontrunners", while values close to zero flag the laggards.
- 5) The Future-Oriented Investment Sub-Indicator. The fifth sub-indicator refers to the ability of countries to build on and deploy their human capital through productivity-enhancing investment. To calculate this, we take investment in machinery and equipment as a percentage of gross domestic product for a measure of the implementation of technological progress. The investment ratio of the G3-aggregate, consisting of the EU-15, USA and Japan, serves as the benchmark. In order to eliminate fluctuations based on the economic cycle, we use a multi-year average.
- 6) The Sustainability of Public Finances Sub-Indicator. Our sixth and final sub-indicator measures the sustainability of public finances. To do this, we break the indicator down into two components: the primary balance (the difference between government receipts and expenditure excluding interest paid on public debt) and the public debt level. We look at each of these figures as a percentage of GDP. For the first component, primary balance equilibrium is the target; countries in equilibrium receive a score of one, and countries with better than one indicate over-fulfilment. The thinking behind this is that the primary balance casts light on actual current budget management without being "distorted" by interest payments stemming from the past, like the fiscal balance. The debt burden is considered as a second component, taking the 60% debt ratio laid down in the Maastricht criteria as the target. Both components are entered into our overall Sustainability of Public Finances Sub-Indicator with equal weightings.

**The United Kingdom and Germany saw the most improvement.** The UK elbowed its way to No. 6, up from No. 9 last year, mostly on the strength of faster productivity growth and also as a result of better economic performance. Germany similarly rose three places in the ranking and now ranks No. 8, driven mainly by a stronger cyclical dynamic, which together with the increase in value-added tax significantly improved public finances. On the downside, though, development in the investment ratio was disappointing. **The Netherlands suffered the steepest downgrade**, falling to No. 9 from No. 5 last year. This was not because the country fell behind in any particular area, as the country's score remained essentially unchanged, year-on-year. The fact is that the Netherlands simply failed to keep up with the pace setters in Europe and was overtaken by other countries. Something very similar happened to Belgium, which fell three rungs to No. 11 (down from No. 8) despite a slight improvement in its overall score.

**Only three countries are actually behind schedule on meeting their Lisbon targets as things stand in 2007: Austria, France and Italy.** Although France registered solid economic growth, it failed to make the 3% grade and came last in that department. It also shows clear deficiencies with regard to the sustainability of its public finances. Austria's main weakness lies in the low proportion of employees with tertiary qualifications. Its labour productivity also falls short of the mark. **Italy improved on its score from last year, but remains the absolute tail-ender, with an overall Lisbon score of 0.66** – meaning the country is two-thirds of where it should be to obtain its Lisbon targets by 2010.

**Despite the generally rosy picture, the Lisbon Indicator does point to some potentially worrisome trends for the future.** In the second quarter of 2007, for example, the EU-15 delivered the highest indicator reading since the launch of the Lisbon Strategy in 2000, weighing in at 1.08. **But in the third quarter of 2007 (and probably also in the last three months of the year, which were not included in this study), the curve began to show a downward trend.**

Is this the end of Europe's honeymoon – the moment when Europe relapses to the low-growth, high unemployment of the past? The answer is, it need not be. Moving forward, the EU as a whole has reached a stage of the economic cycle in which domestic demand is likely to provide a major impetus for future growth – a fact which should help Europe sustain its domestic momentum even if the US economy turns sour.<sup>3</sup> The remarkable progress in Europe on the jobs front (see the section on the Employment Sub-Indicator, which begins on page 18, for more on this phenomenon), forms a firm basis for consumer spending to act as an important driver of future growth and help to dampen the negative effects of a US slowdown.

What's more, the world economy is evolving in ways that might make it easier for Europe to "decouple" from the United States in the future. Thanks to globalisation, emerging economies account for 24.9% of world GDP today, up from only 19.7% in 1990 (by contrast, industrial economies make up 75.1% of the world economy as measured in GDP terms, down from 80.3% in 1990). This means that there are more markets for Europe to sell into.

But the Lisbon Agenda has played its part in making Europe stronger, too. Put simply, structural reforms introduced over the last decade have done much to help countries build sound, stable platforms for future development that will make them better able to withstand turmoil in the global economy. Towards that end, the ongoing integration of the European economy – and the economic activity that greater access to global and internal markets has made possible – has proven particularly important. Today, the emerging economies of Europe make up 18% of extra-EU-15 exports, up from 10.2% in 1995.

**We believe the biggest threat Europe faces is not the risk that external shocks will knock us off our stride, but the possibility that recent prosperity will be used as an excuse to abandon the very policies that are working so well today.** Already, some European countries are flirting with policies which – if adopted – would do much to undermine the economic prowess it took Europe a decade to regain. Some countries are even beginning to turn back the clock on reform, reversing hard-fought measures at precisely the moment when they are starting to bear fruit. We believe that policies of this type – if they continue to be adopted – will do the most harm to Europe's prospects. **The message of The 2008 European Growth and Jobs Monitor is: Stay the course. It's working.**

<sup>3</sup> Although the recent stock market slump shows that the transmission channel between America and Europe is still fully intact.

## What's new in the Lisbon Agenda

In December 2007, the European Commission published a strategic report for the next – and final – cycle of the Lisbon Agenda, which will last until 2010. Alongside the traditional Lisbon targets for employment, growth and R&D investment, the Commission plans to deepen the scope and reach of the Lisbon Agenda in several key areas. Among the new priorities:

- A new focus on learning and skills. As part of the Lisbon process, the European Commission will provide annual forecasts of future European skill requirements, while member states commit to drawing up “national qualification frameworks” aligned with the overall EU framework. Put forward under the heading “investing in people,” these national plans will be commented on and evaluated each year as part of the Lisbon process.
- Development of an external dimension for the Lisbon Agenda. Until recently, the Lisbon Strategy focused entirely on domestic reform, but the European Commission would like to include the Lisbon Agenda in its foreign policy. Specifically, it wants to talk to countries outside the EU about the benefits of a three-pillared approach to modernisation and perhaps even start evaluating those countries on the Lisbon criteria as well.
- A focus on SMEs. The European Commission wants to do more to encourage business start-ups and create the framework conditions in which small business can expand. The cornerstone of this effort will be the European Commission’s Small Business Act, due to feature prominently under the French EU Presidency in the second half of 2008.
- More rigorous country evaluations. Member states have agreed to allow the European Commission and other EU countries to peer review their annual National Reform Programmes, thereby marking a return of the very effective “name and shame” evaluations discarded in 2005. The move demonstrates the new atmosphere of trust surrounding the Lisbon process, and amounts to a vote of confidence in the leadership of European Commission President José Manuel Barroso.

For more information about the Lisbon Agenda 2008-2010 cycle, visit <http://ec.europa.eu/growthandjobs>

## III. Economic growth: The power behind prosperity

In order to score a perfect 1 in the Economic Growth Sub-Indicator ranking, a country must register an average 3% economic growth over four quarters – an achievement that would have been unthinkable in some parts of Europe just two years ago (the 3% target is the figure laid down in the original Lisbon Agenda). Amazingly, the overall Lisbon Indicator comes in at 0.98 this year, meaning that the EU-15 stand collectively at 98% of a 3% growth rate – a remarkable achievement, which does much to shore up the improved performance figures in the five other categories surveyed.

The challenge for the future will be to maintain and hold this level. Member states will only achieve the objective of making “the EU the most competitive and dynamic knowledge-based economy in the world” by 2010 if they can turn in strong growth performance over a longer period, pushing ahead assertively with reforms and modernisation and thereby promoting sustainable employment throughout the economy. Irrespective of whether the EU delivers on the Lisbon targets or not, economic growth is necessary to **reduce unemployment** and **secure public revenues**. Another big advantage of growth is that it **defuses distributional conflicts**. Reforms that would mean painful cuts for one section of the population were there no increase in economic output can be implemented almost pain-free when the economy is humming along, creating a virtuous circle which helps Europe reach its overall social and economic goals.

Experience teaches that **sustained high growth will be difficult to achieve**. To be sure, economic growth did leap to 4% at the peak of the last economic cycle in 2000, but years of anaemic economic activity followed. Since then, the recovery that got underway in 2005 has proven remarkably durable – with eight quarters of solid growth in Europe. But given the worsening global climate, GDP is forecast to grow at best by around 2% in 2008 – less than the 2.2% average Europe has enjoyed since the beginning of the decade.

For 2009, we expect the European economy to show a bit more vigour, as the oil price eases and the external value of the euro softens.<sup>4</sup> However, over-priced housing markets in the UK, Spain and Ireland will exert downward pressure on growth. As lending rates rise, a process of consolidation has begun that entails flat or falling property markets. Jobs will be lost in housing construction, putting a damper on economic development in those countries for a while.

European Growth and Jobs Monitor  
economic growth component (EU15)



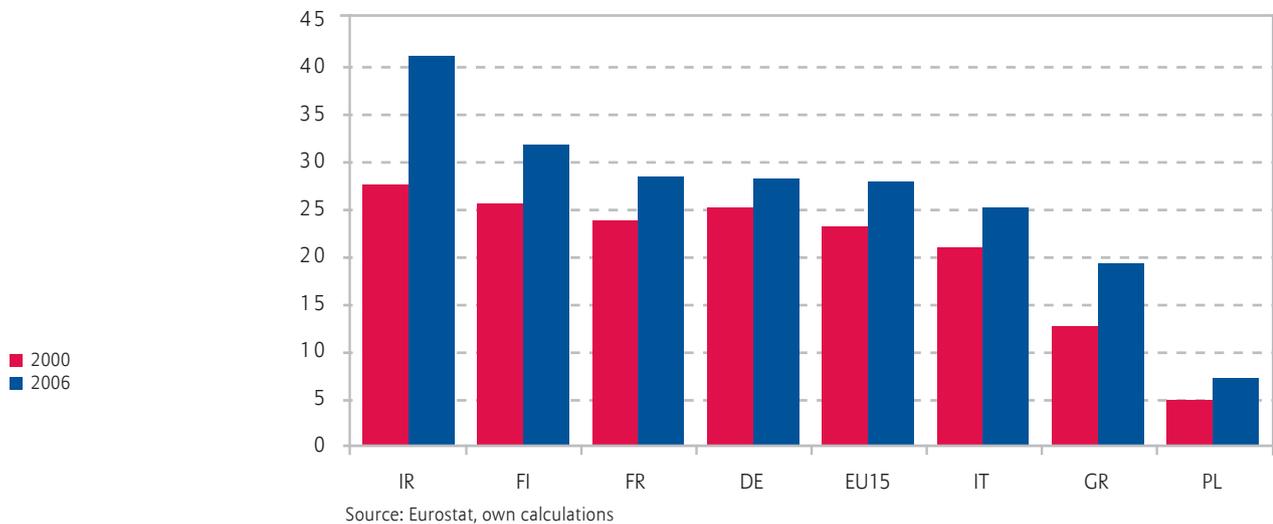
current rank  
one year ago

1	Poland	2
2	Ireland	1
3	Finland	3
4	Greece	5
5	Spain	6
6	Austria	8
7	Sweden	4
8	United Kingdom	11
9	Germany	12
10	Netherlands	10
	EU15	
11	Belgium	9
12	Italy	14
13	Denmark	7
14	France	13

<sup>4</sup> Allianz/Dresdner forecasts the dollar/euro exchange rate will average 1.45 in 2008, declining to 1.37 in 2009. The price of oil is forecast to average \$80 a barrel in both years.

The overall score of 0.98 for the EU-15 in the Economic Growth Sub-Indicator also masks huge regional variations – with differentials between some countries of more than 1.5 points. **Finland, Greece, Ireland and Poland** – all newcomers to this year’s edition of The European Growth and Jobs Monitor – **top the ranking**. Poland, which has the lowest per capita income of the countries surveyed, notched up a score of well above 2 – indicating the country enjoyed a growth rate nearly twice the level required to attain the Lisbon Agenda targets. **Ireland and Finland**, which can already be numbered among Europe’s wealthiest countries, were No. 2 and No. 3, respectively. Finland was buoyed by dynamic export trade and robust consumer spending. Ireland partly compensated for the drop in housing construction with a rise in public construction spending and extremely brisk private consumption, but its GDP growth still slowed from previous years. But Ireland’s growth potential, which uniquely among European countries has been solid for several decades, is far from exhausted.

GDP per head  
nominal, in EUR 1,000



**Greece**, which has turned in uninterrupted strong growth for 10 years, **came in at No. 4**, up one spot in this year’s rank. It stands a **good chance** of staying on target for the economic growth component next year – thanks not least to substantial EU subsidies. **Spain**, where a slowdown in growth has been augured for some time with development funds from Brussels flowing more sparingly, managed to **improve its relative position a little**, rising to No. 5. The **UK and Germany**, by contrast, sharply stepped up the pace to overtake the EU-15 average, weighing in at Nos. 8 and 9, respectively, each of them up three positions in the Economic Growth Sub-Indicator ranking. At least through the third quarter of last year, Britain rode the wave of a booming housing market.

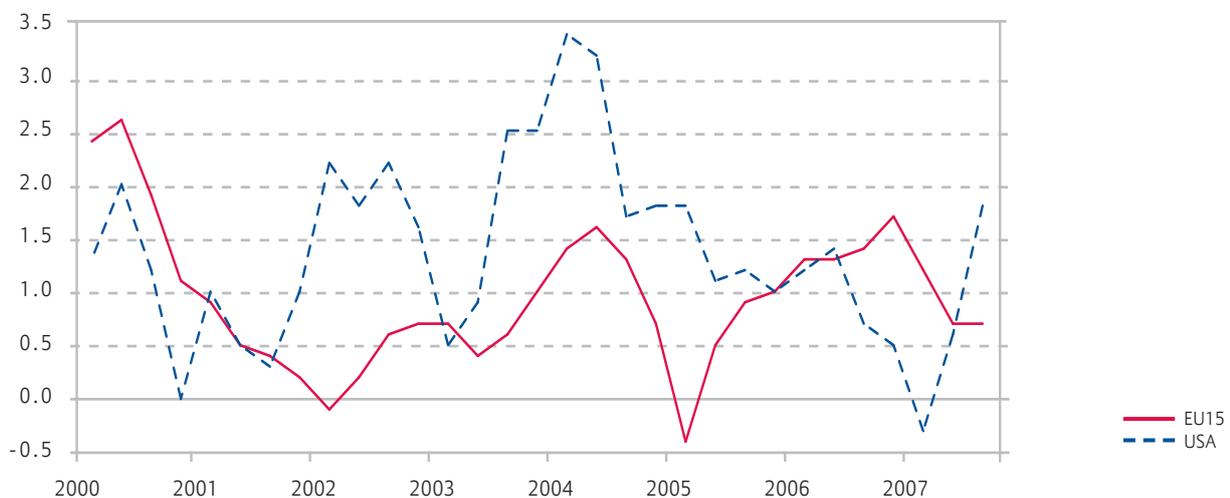
**Denmark fell sharply in this category**, dropping to No. 13 from No. 7, as tightening money market rates distinctly doused domestic demand. Here and there, **labour market constraints** also checked further growth. **Italy** is no longer bottom of the growth league, but it could certainly do with more growth in view of its **unsustainable finances** and the immense need for economic reform. The many extra items of expenditure destined for various sections of the population in 2008 will **keep the economy sweet for a while**, but they will not strengthen the country’s potential growth.

## IV. Productivity growth: Is it here to stay?

High productivity is key to any successful modern economic model. And, while the Lisbon Agenda does not set any specific productivity targets, it does vow to make Europe “the most competitive and dynamic knowledge-based economy in the world” – a ringing declaration which seems to imply that, in the vital area of economic dynamism, Europe can and should be benchmarked against the leading industrial countries. In the area of productivity, that means first and foremost the United States.

With an overall average score higher than one, our Productivity Growth Sub-Indicator shows the **EU-15 on a stronger productivity trend than the US since the beginning of 2007** (measured on an eight-quarter average). This is due partly to **weaker US performance**, as the chart below shows. US Productivity growth slowed to around 1% in 2006, and the rate of change year-on-year averaged only 0.7% in the first three quarters of 2007. But **labour productivity per person employed in Europe is gathering speed**. In 2006, the rate of increase rose to 1.4%, although it dipped in the two summer quarters of 2007 to 0.7%. As a result, the latest year-on-year difference came in below the 2000-2007 average, seemingly confirming the sceptics’ theory that while Europe is doing better in the productivity sweepstakes, it probably owes its higher productivity more to the economic cycle than to structural improvements. If true, this means the recent gain – as impressive and potentially important as it is – may be only temporary and ultimately unsustainable.

Labour productivity growth  
real GDP per person employed, in % y-o-y



Source: Eurostat, own calculations

The European Commission offers a cautious assessment. In a recent study<sup>5</sup>, it notes that productivity growth has picked up since mid-2005, but says the **trend reversal is yet to be confirmed**. The European Central Bank writes in a similar vein.<sup>6</sup> “The latest data suggest that the **declining trend may have come to a halt** in recent years but, to date, there is no conclusive sign of an inversion of the trend,” it notes, adding “since persistent changes in productivity growth are, by nature, relatively infrequent, they will often be mistaken for temporary fluctuations.”

<sup>5</sup> Directorate-General Economic and Financial Affairs, “EU Economy 2007 Review: Moving Europe’s Productivity Frontier,” SEC (2007) 1507, (Luxembourg European Commission, 2007).

<sup>6</sup> European Central Bank, Monthly Bulletin January 2008.

It will take time and more data before we can say with certainty whether Europe has moved to a higher long-term productivity growth path. But one very important factor gives us reason to embrace the optimistic scenario. Europe's accelerated labour productivity has been accompanied by a "job miracle" since it began in 2005 (for more on this phenomenon, see the Employment Sub-Indicator section, which begins on page 18). In this study, we calculate labour productivity as output (GDP) per person employed, meaning there will be by definition a trade-off between growth in productivity and job creation. Remarkably, **our data shows no signs of that trade off – which could be an important sign that the recent productivity trends could well be due to structural improvements and may prove to be longer lived than the pessimists believe.** This trend is all the more remarkable given that, while productivity has been rising, the "low-wage sector" in Europe has been boosted through measures such as tax and contribution cuts for low earners, employment subsidies, wage top-ups or negative income taxes and the promotion of temporary and part-time employment. In point of fact, **employing more low-skilled labour should have acted as an additional damper to productivity, but it has not done so – a sign that there may well be a structural component in recent productivity improvements.**

Hence, we do not worry too much about the slight slowdown in the recent pace of European productivity growth, which we see as a reflection of changes in the business cycle. Since last autumn the overall trend has been dampened additionally by the credit crisis dragging down the banking sector. Looking forward, we also take a more upbeat view. There is, unquestionably, still much to do, with **two major thrusts**. First, **more competition** is needed to spur productivity by stepping up the pressure to innovate and open markets (encouraging businesses to come and go in a process of creative destruction).<sup>7</sup> **Greater flexibility** and less red tape also belong in this department. Second, investment needs to be made in **human capital**, for example to obtain maximum benefit from information and communications technologies or to optimise work and management processes and organisational structures. Productivity gains driven by technological advances also require appropriate **investment in research and development**. The Lisbon Agenda targets R&D spending equivalent to 3% of GDP by 2010, but on present planning the EU countries look set to achieve only 2.6%. With the official figure weighing in just under 2% in 2006, even this would mark a significant increase – but it will still require some considerable effort.

But the upside of all of this is that structural reform has been clearly targeted in the Lisbon Agenda; now that structural change is being implemented in many countries, the positive effects of these reforms should make themselves increasingly felt. The optimistic take is that **for years Europe's structural rigidities acted as a drag on productivity growth**, but tackling this sclerosis harbours **greater potential than in the US, whose economy is already comparatively flexible**. To rev up the slackened tempo of US productivity growth again, America may need a new technology revolution, given that the bones of the last IT wave have been picked more or less bare. Europe has yet to fully absorb the productivity boost which the IT wave of the 1990s made possible, indicating that there may yet be further upside in the productivity growth story.

## European Growth and Jobs Monitor

### productivity growth component (EU15)



## current rank

one year ago

1	Finland	3
2	Greece	2
3	Poland	5
4	United Kingdom	9
5	Germany	8
6	Ireland	11
7	Sweden	1
8	Denmark	4
	EU15	
9	France	7
10	Belgium	10
11	Netherlands	6
12	Austria	12
13	Italy	13
14	Spain	14

Our Productivity Growth Sub-Indicator reveals big performance differences among countries. **At the bottom of the league, Spain and Italy** rallied from their negative third-quarter 2006 readings to make substantial progress in the following four quarters. But **together with Austria** their performance is still **poor**. The other 11 countries analysed in this study scored more than one on the Productivity Growth Sub-Indicator, signalling that their labour productivity is rising faster than in the US. **There have been marked shifts in ranking**. Sweden, for instance, plummeted to No. 7, down from the top spot last year. Denmark and the Netherlands also registered steep declines. The three biggest climbers were the UK, Germany and Ireland. **Finland came in at No. 1**, with strong productivity gains helping to cushion pay increases averaging more than 3% in recent years (with upwards of 4% expected for 2008). **Greece and Poland also did well, weighing in at No. 2 and No. 3, respectively**. As quintessential catch-up countries, they offer the most scope for further productivity improvements in years to come.

## V. Employment: The jobs miracle

Since 2000, nearly 17 million more people have entered the workforce in the EU-15 – a rate of growth that outpaces the US in the same time. What's more, having more people in work is strengthening the overall economic framework of the EU. Tax revenues in most countries are rising, and the workforce itself has become an important source of future EU growth, with more and more wage earners poised to exert their purchasing power as a future source of spending. **More than six million new jobs have been created in the last two years alone.** The EU-15 unemployment rate has hit an historic low of 6.8%, down from its peak of 8.1% in 2005.

current rank  
one year ago

1	Netherlands	3
2	Sweden	2
3	Denmark	1
4	Austria	4
5	Finland	5
6	Ireland	6
7	Germany	9
8	United Kingdom	7
9	Spain	8
	EU15	
10	France	10
11	Greece	11
12	Belgium	13
13	Italy	12
14	Poland	14

European Growth and Jobs Monitor  
employment ratio component (EU15)



Interpolated annual figures 2000 - 2004, seasonally unadjusted quarterly figures starting 2005.

Our Employment Sub-Indicator tracks countries' relative proximity to the overall 70% workforce participation target of the original Lisbon Agenda. A score of one means a country is on track to meet its 70% target. A score above one means that it has already met and over-fulfilled that goal or will probably do so in 2010, while a score of less than one means that the country is not on track to meet the goal. Surprisingly, nine of the 14 countries surveyed have a score of one or higher, meaning they will likely meet their 70% participation target by 2010. The exceptions are Belgium, France, Greece, Italy, and Poland. The EU-15 as a whole is much improved, with an overall participation rate of 67%, putting it almost perfectly on track to hit the 70% Lisbon target in 2010.

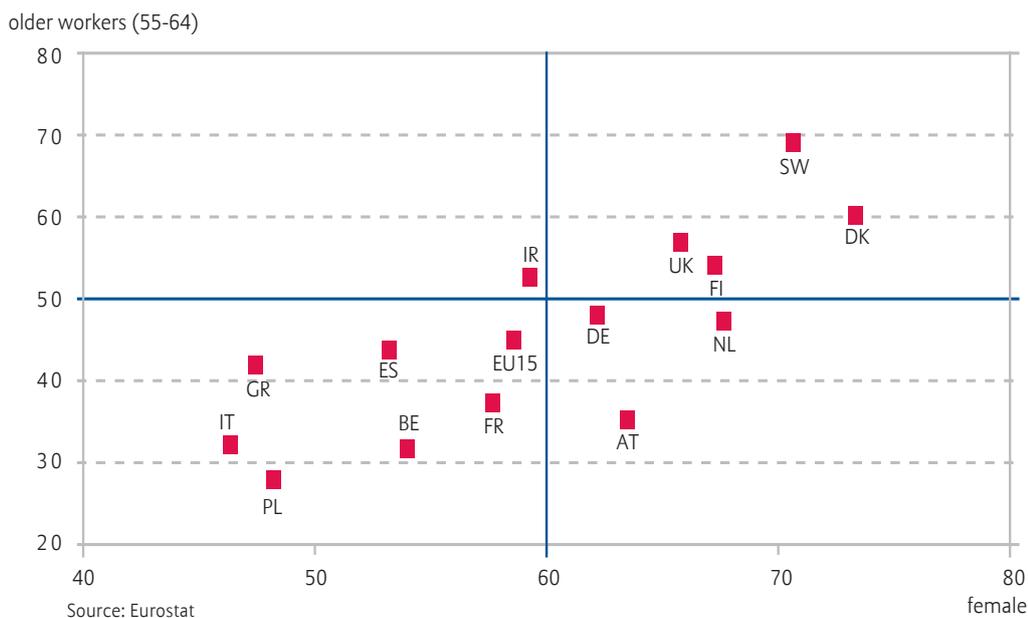
The Netherlands, Sweden and Denmark have shown the best performance in this category. All three countries have beaten the target since the beginning of the Lisbon process and can currently boast employment rates of more than 75%. They are followed by Austria, Finland, Ireland, Germany and the UK, all of whose rates hover relatively close to the 70% mark.

The UK has long since surpassed the 70% level, though the figure has in fact been stagnating since 2000. This gives the UK a relatively low ranking of No. 8 in the Employment Sub-Indicator, although its overall score of 1.02 is still a good result that many of its neighbours can only envy. **Spain has made huge progress**, growing the rate of labour force participation since 2000 by almost 10 percentage points to 66%. However, this extremely positive trend appears very vulnerable as the severe slowdown expected in the Spanish economy as a whole and the construction sector in particular will put a strain on employment figures.

At 65%, the French employment rate is clearly unsatisfactory – not simply because of its low rank on the Lisbon Scorecard, but also because of the evident social problems which accompany its chronically high youth unemployment. Though France's overall employment picture is roughly the same as Spain's, France has seen little of the rapid improvement that Spain has enjoyed (employment participation is 65%, up a mere three percentage points on the 2000 rate). As our performance level of less than 1 for **France** indicates, the country **needs to move into higher gear** on the Employment Sub-Indicator, if it is to make the 70% mark by 2010. **Greece, Belgium and Italy** occupy places No. 11, No. 12 and No. 13, respectively, with employment rates of just over or exactly 60%. **Even farther removed from the Lisbon target is Poland**, whose participation rate barely brushes 58%.

As the chart below shows, **Denmark and Sweden also take the lead in employment for women and older workers, while here too Poland and Italy bring up the rear.** In the right-hand half of the chart are all the countries that, by 2006, had already met the 2010 Lisbon parameter of a female employment rate of 60%. The upper half shows the countries that in 2006 bettered the ratio of 50% targeted for the employment of older workers (aged between 55 and 64) by 2010. **The upper right quadrant thus contains the prime performers** in respect of both criteria and the **lower left quadrant no fewer than six EU members that satisfy neither of the two employment goals.** These countries need to take special action to create better possibilities for women to combine family (which also entails looking after family members in need of care as well as children) and working life and cut back on early retirement schemes or offer incentives to take later retirement. Another striking aspect of the chart is the evident positive correlation between the levels of both ratios. This suggests that the real political challenge in Europe lies in raising the rate of employment for mature women.

### Employment ratios 2006



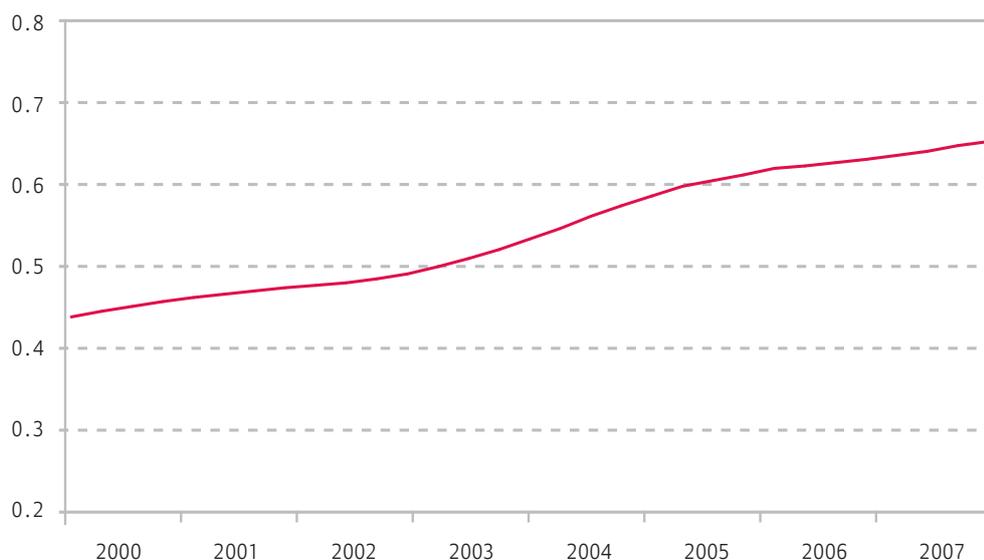
## VI. Human capital: The education imperative

The European Commission has good reason to place special emphasis in its revised Lisbon strategy on knowledge, innovation and optimising human capital (see the box on the revised Lisbon Agenda on page 12 for more on the new priorities). To date, investment in training and education has been treated largely as an expense, which it most certainly is in the beginning. But in the medium to long term, access to education and training can yield high returns by making an economy more regenerative and competitive and improving **social integration**, giving this type of spending the character of an “investment.” In the field of education the Lisbon Agenda is flanked by the “Bologna Process”. Signed by 30 European ministers of education, this aims to **create a European Higher Education Area** by 2010. The intention is to put in place consistent higher education systems making it easier to assess the quality of academic courses at different universities and to achieve greater readability and comparability of qualifications. It is hoped that this will facilitate the mutual recognition of university degrees and encourage student mobility. Universities are to be transformed into client-oriented service providers capable of competing globally.

current rank  
one year ago

1	Finland	1
2	Belgium	2
3	Ireland	4
4	United Kingdom	7
5	Denmark	3
6	Spain	5
7	Netherlands	6
8	Sweden	8
9	France	9
	EU15	
10	Germany	10
11	Greece	11
12	Poland	12
13	Austria	13
14	Italy	14

European Growth and Jobs Monitor  
education and human capital component (EU15)

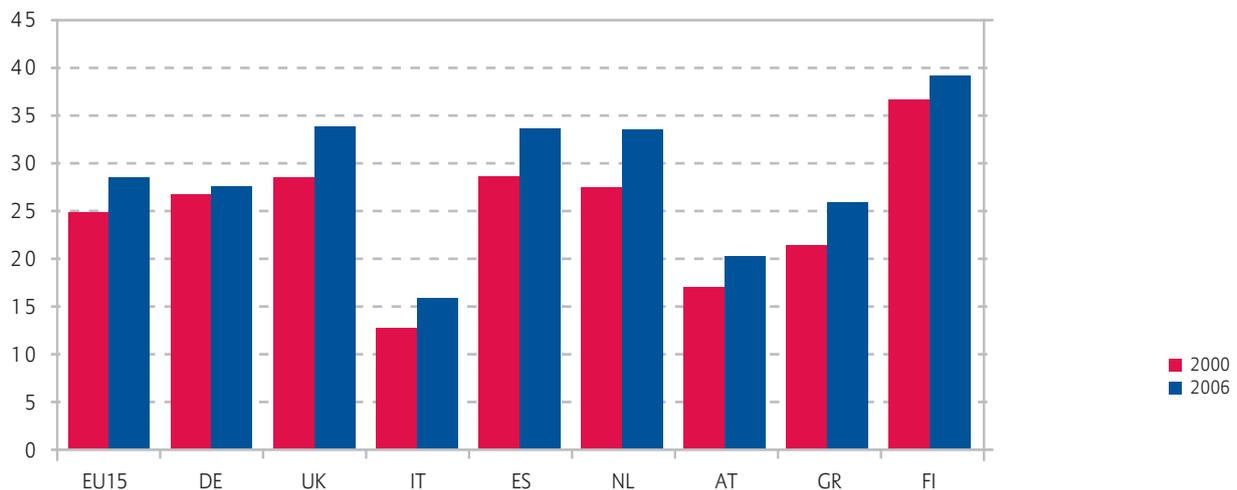


Our measure of the knowledge base, the **proportion of employees with tertiary education**, helps us understand the level and depth of a country’s human capital development. The Human Capital Sub-Indicator is based on the share of tertiary graduates in the total workforce rather than in the population as a whole, because graduates not in work represent human capital that, although available, is not being used in the formal economy. In contrast to secondary education, tertiary education focuses more on imparting the **ability to analyse and solve abstract problems**. As a prerequisite to further scientific activity, it therefore paves the way for innovations which, when implemented in practice, increase an economy’s potential. But tertiary education pays off not only from a macroeconomic viewpoint. For the individual, too, a university degree confers an **employment and earnings edge** on an upper secondary level qualification.<sup>8</sup>

All told, the economies of the EU-15 are becoming more knowledge-based. Roughly 29% of employees have tertiary qualifications. **Finland is No. 1**, with fully 40% of the workforce having graduated from universities or universities of applied science, or possessing a doctor's degree. **Belgium is No. 2**, and **Ireland is No. 3**, even though it is a newcomer to the European Growth and Jobs Monitor this year. Like Spain, Ireland is considered a country with **comparatively high equality of access to tertiary education**. Conversely, lack of overall access to tertiary education may explain why fewer than 30% of workers in the same age group in Germany have studied at the tertiary level, putting **Germany below the EU-15 average** in the No. 10 spot. The OECD 'Education at a Glance' study<sup>9</sup> classifies Germany as one of the countries where the social background has the greatest influence on participation in tertiary education. The likelihood of a child from a working-class family obtaining a degree is still scant.

As in past years, the laggard in the tertiary education stakes is **Italy**, home to Europe's oldest university. **Greece and Poland**, although less "modern" economies, make a better showing. Whilst throwing funds at the problem is not the only solution, the fact that **education has never been a priority of Italian spending policy** has had consequences.

Share of employment with tertiary education level attained  
(age 25-64)



Source: Eurostat, own calculations

The **outlook** for a further increase in the depth of tertiary education over the medium term in the EU is **not bad**. Admittedly there are some alarming aspects, such as the high drop-out rates in some countries or the fact that in Germany only about one-fifth of 15 year olds plan to go on to university. But basically the academic changes envisaged in the Bologna Process should serve to make studying in Europe more attractive. For example, switching from the previous 5-6-year courses to a **two-stage Bachelor/Masters system should mean more flexibility for students**. These structural changes are not of course a quick fix, but they could produce solid results in the coming decade.

<sup>9</sup> OECD, Education at a Glance 2007, (Paris: OECD, 2007)

## VII. Growth-related investment

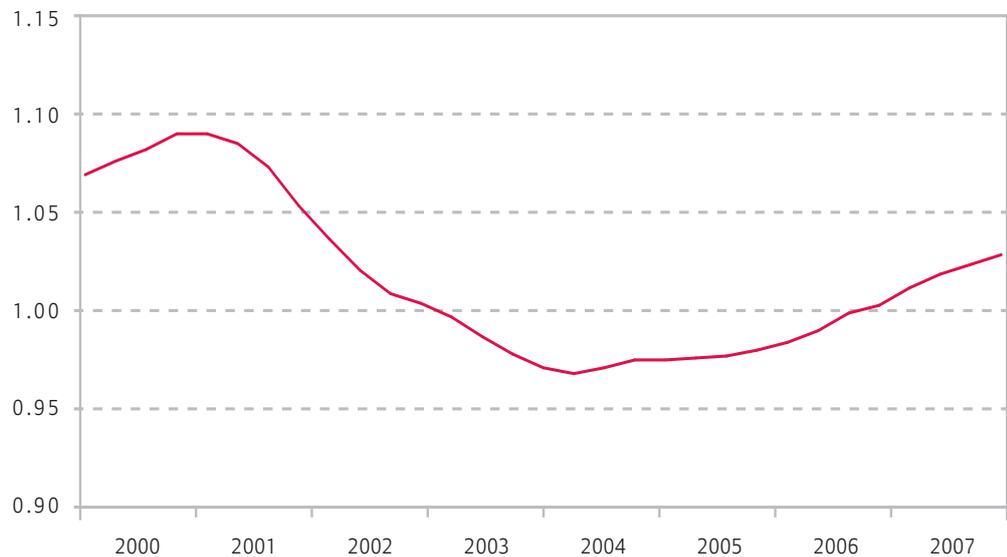
An economy can only reliably claim to be knowledge-based if the ideas that its human capital comes up with culminate in technical advances and the country's businesses **invest in improved products and processes**. That way, they increase the productivity of the factor inputs and enhance the economy's potential growth. This is a complex process differing in quality from country to country. Our measure of the implementation of technical progress, investment in machinery and equipment as a percentage of gross domestic product, is at best a rough approximation. By this calculation, the EU-15's investment ratio has clearly been **on an upward path** since its 2004 low and has now passed the indicator level of 1.

### current rank

one year ago

1	Spain	1
2	Denmark	2
3	Italy	3
4	Sweden	6
5	Greece	5
6	Belgium	4
7	France	7
	EU15	
8	Poland	9
9	United Kingdom	11
10	Austria	8
11	Germany	10
12	Netherlands	12
13	Finland	13
14	Ireland	14

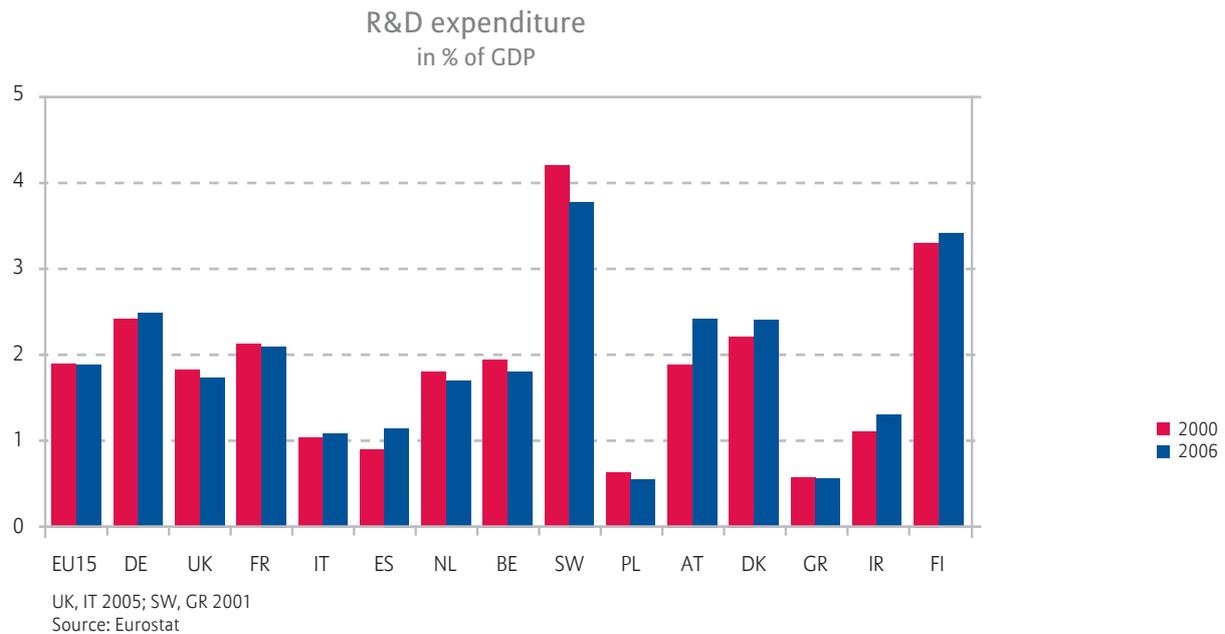
European Growth and Jobs Monitor  
future-oriented investment component (EU15)



**Spain, Denmark and Italy take the top three places.** At first sight, Italy's strong performance comes as a surprise inasmuch as its economic momentum in recent years has been considerably slacker than the EU-15 average. However, this period of low growth was characterised mainly by declining competitiveness on world markets rather than by investment weakness. Almost without fail, Italy has since the mid-1990s grown its investment at double-digit rates and performs well by EU-15 standards at 10.9%. In comparison, Germany channelled only 8.8% of its GDP into investment at last count, and the Netherlands, Finland and Ireland even less. The new technologies developed in these countries would be better diffused if more were spent on **machinery and computers, patents and self-produced software**.

At any rate, it is good to see that almost all the countries analysed have raised their investment ratio since The 2007 Growth and Jobs Monitor. Less positive in respect of the Lisbon Agenda is the limited progress on meeting the prominent **research and development spending target**. According to the Lisbon Agenda, EU R&D spending should reach 3% of GDP by 2010 – an important global benchmark. But the most recent data – which, due to a time lag, is only available from 2006 – show that the public sector, the corporate sector and foreign sources commit only an average of around 1.9% of GDP to R&D in Europe. R&D intensity has remained stuck obstinately at this level since the beginning of the decade.

Most countries have a **lot of catching up** to do in this regard. Even more mature economies like the Netherlands, Belgium and France are way below the Lisbon target. On the other hand, the latest statistics for Sweden and Finland show that well over 3% of their economic output goes to R&D. Comparing relative R&D spending with the data gathered from the Community Innovation Survey, the underlying message is that most countries with high R&D spending featured quite a high proportion of companies that had implemented innovations with the launch of a new or appreciably improved product or the introduction of a more sophisticated process.<sup>10</sup> Countries with **low research and development expenditure** such as Poland and Greece had **far fewer innovative companies** in the period under review.



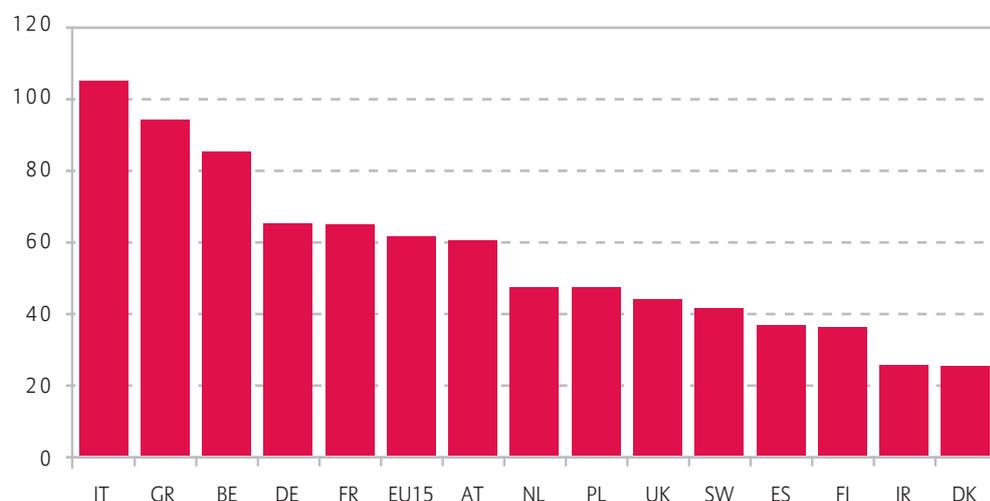
Not only do the EU-15 as a whole spend a lower proportion of their output on R&D than America or Japan; at 55%, the share financed by the corporate sector is also much less than in the US (64%) and Japan (75%). The number of patent applications can be taken as a further indication of Europe's weaker innovation drive. The most recent data available for the EU-25 show far fewer patent applications per million inhabitants. If European countries are to achieve an R&D intensity of even 2.5% by 2010, they will have to commit far more actively to this aspect of the Lisbon Agenda. And the onus is increasingly on the business community.

<sup>10</sup> Fourth Community Innovation Survey, Eurostat, 22 February 2007.

## VIII. Sustainability of public finances

Fiscal deficits do matter – especially in an age when one of the principal challenges Europe faces is the very real fact that Europe’s population is ageing and shrinking. This puts a special onus on governments – and on the voters who elect them – to understand the important generational equity issues inherent in the way we finance and manage our social systems. Put simply, it is time for the generation alive today to do more to make sure the social and economic advantages we enjoy will be there for our children to enjoy tomorrow. In many countries, that means running a tighter fiscal shop, so there will be enough money to pay for and sustain our European social model in the future.

Public debt 2007  
in % of GDP



Source: EU Commission

The chart above shows marked differences among countries in the public debt level as a percentage of gross domestic product, which is the first component we look at in the Sustainability of Public Finances Sub-Indicator. **Debt ratios in Italy, Greece and Belgium are well over the 60% Maastricht limit, but in Ireland and Denmark the ratio is only about 25%. For the EU-15 as a whole, public debt is almost on the Maastricht target at 61% of GDP.**

**Finland, Denmark and Sweden perform best in the second of the two components we analysed, the primary balance as a percentage of GDP (which measures the difference between government receipts and expenditure excluding interest paid on the public debt). Those three countries weigh in with primary-balance surpluses of 6%, 5.3% and 4.7%, respectively. By contrast, the UK chalks up the worst result with a primary deficit of 1% of GDP. Poland is also in the red with a primary-balance deficit of 0.3%. Although France’s public finances are in balance and just meet our requirement, they clearly lag the EU-15 average – a primary surplus ratio of 1.7%.<sup>11</sup>**

But once you add the debt component to the picture, you get a slightly different view. As a whole, the EU-15 further improved their public budget situation in 2007, but their Sustainability of Public Finances Sub-Indicator scores are not as high as in 2000 and 2001 – implying that many countries are not using economic growth to prepare us well for coming challenges. The three Nordic countries Denmark, Finland and Sweden came in at Nos. 1, 2 and 3, respectively. Spain came in at No. 4, proving a positive exception among the countries of southern Europe (Italy and Greece bring up the rear at Nos. 13 and 14, respectively). France also does badly, coming in at No. 12, and making Europe's second largest economy one of only three to score less than one on the overall Sustainability of Public Finances Sub-Indicator (the other two are Greece and Italy). The fact that the French public sector has not sorted out its finances better despite solid economic performance should give serious pause for thought.

European Growth and Jobs Monitor  
sustainability of public finances component (EU15)



### current rank

one year ago

1	Denmark	1
2	Finland	3
3	Sweden	5
4	Spain	4
5	Ireland	2
6	Netherlands	6
7	Germany	10
8	Austria	8
	EU15	
9	Poland	11
10	Belgium	7
11	United Kingdom	9
12	France	12
13	Italy	14
14	Greece	13

By contrast, none of the countries surveyed is likely to have come into conflict last year with the 3% Maastricht deficit ratio (which is based on the primary balance plus interest payments). But Poland, the UK, Greece, Italy and France have not built up much of a safety margin. Consequently, with the advent of more challenging economic conditions these countries are in danger of running up excessive budget deficits relatively quickly. We can see from this that the preventive part of the Stability and Growth Pact is not working ideally in practice – or to put it another way, that not all countries abide by it properly, which erodes its credibility. It is the very purpose of the preventive arm to remedy budgetary imbalances in strong economic periods in order both to have room for action in case the macroeconomic environment deteriorates and also to be equipped for the demographic burdens that await the public purse further down the line.

In general, the genuine willingness to rein in spending which we saw in the middle of the decade appears to have given way to a different approach: many countries now show a strong tendency to cut direct taxes and social security contributions, and to finance these cuts through surplus revenues and indirect taxes. This is not a strong long-term – or even medium-term – strategy. The result: In contrast to the two previous years, we do not expect any serious progress in 2008 on the sustainability of public finances (partly because tax revenues will not flow so freely owing to the economic situation). This is particularly unfortunate in that some countries have not yet achieved solid fiscal positions.

## IX. Conclusion

The worst response to the global downturn would be to abandon the policies that made Europe successful again at precisely the moment when they have begun to work.

The European Growth and Jobs Monitor has captured a remarkable trend: Despite a disappointing first half of the Lisbon process, generating much criticism and doubt, since the beginning of 2007 Europe has proven that it is possible to meet its Lisbon targets, especially if current policy can be strengthened and deepened. The economic recovery must not be interpreted as an invitation to sit back and relax. Governments must stay on the ball with reforms if they do not want to see the progress achieved so far frittered away in the future. The 2008 European Growth and Jobs Monitor shows that many countries still have their work cut out for them, especially on the economic growth and employment rate front. In particular, Europe needs to **come to terms with the idea of an ongoing reform process**. Particularly at the microeconomic level, the reforms involved cannot always be big-ticket items or spectacular milestones. Often, they will be smaller coordinated measures whose individual contribution to the big picture cannot be measured in isolation but which, in total, have an appreciably positive impact on potential growth.

The 2008 Growth and Jobs Monitor presents a snapshot of Europe taken against a backdrop of relatively benign global economic developments. **Simply maintaining current achievements will be more difficult in a less favourable economic environment.** In addition, the EU-15 average does not apply to all countries. Indeed, it is striking that **some small countries are turning in exemplary performance as top-rankers** while, in contrast, the **EU heavyweights like France and above all Italy have some serious weaknesses to address.** And Germany, the biggest European economy, only managed in the course of last year to edge its way up from the bottom third of the list to the middle ranking – a welcome development, but hardly one which should encourage Germans to drop their ongoing effort to reform and modernise their country.

In order to ensure that Europe remains at the forefront of the global economy and preserve our social model for generations to come, EU countries need to commit constantly to active reform. Those who fail to fight permanently on all fronts and merely mark time will be overtaken by others and fall behind, as this survey clearly demonstrates. **As the emerging markets continue their rapid advance, the industrial countries must keep on the go to remain one step ahead.** Put simply, if we want to live better than the rest of the world, our economy has to be better than the rest of the world's.

## X. Lisbon Indicator tables

European Growth and Jobs Monitor  
current scoring (2007 Q3)

Current Ranking overall	Country	Overall score	Economic growth	Labour productivity	Employment ratio	Employment by tertiary education level	Investment activity (equipment)	Public finance
1	Finland	1.69	1.53	3.05	1.05	1.17	0.71	2.64
2	Ireland	1.44	1.88	2.13	1.03	0.99	0.60	2.04
3	Denmark	1.41	0.73	1.73	1.08	0.91	1.29	2.72
4	Sweden	1.40	1.06	2.02	1.08	0.86	1.12	2.28
5	Poland	1.38	2.18	2.60	0.88	0.40	1.00	1.21
6	United Kingdom	1.25	1.05	2.44	1.02	0.94	0.91	1.12
7	Greece	1.23	1.38	2.87	0.94	0.52	1.12	0.52
8	Germany	1.19	1.05	2.14	1.02	0.60	0.91	1.44
9	Netherlands	1.10	1.02	1.13	1.09	0.90	0.87	1.61
10	Spain	1.10	1.33	-0.12	1.01	0.90	1.35	2.13
11	Belgium	1.08	0.92	1.23	0.93	1.13	1.11	1.18
	EU15	1.05	0.98	1.35	0.99	0.66	1.03	1.31
12	France	0.94	0.63	1.35	0.97	0.74	1.05	0.91
13	Austria	0.88	1.13	0.65	1.05	0.23	0.90	1.33
14	Italy	0.66	0.74	0.53	0.92	0.04	1.14	0.60

European Growth and Jobs Monitor  
one year ago (2006 Q3)

Ranking overall	Country	Overall score	Economic growth	Labour productivity	Employment ratio	Employment by tertiary education level	Investment activity (equipment)	Public finance
1	Denmark	1.46	1.09	1.53	1.08	1.07	1.22	2.78
2	Sweden	1.45	1.45	2.26	1.06	0.81	1.07	2.07
3	Finland	1.45	1.51	1.83	1.04	1.15	0.74	2.43
4	Ireland	1.27	1.97	0.72	1.03	0.92	0.57	2.44
5	Netherlands	1.11	0.95	1.17	1.06	0.88	0.84	1.78
6	Poland	1.07	1.82	1.41	0.88	0.38	0.92	1.04
7	Greece	1.07	1.35	1.92	0.95	0.50	1.07	0.60
8	Belgium	1.04	0.96	0.85	0.92	1.10	1.12	1.26
9	United Kingdom	0.97	0.84	1.01	1.02	0.88	0.88	1.20
10	Spain	0.93	1.26	-0.93	1.02	0.89	1.28	2.08
11	Germany	0.91	0.83	1.03	1.00	0.60	0.89	1.08
12	France	0.90	0.68	1.12	0.97	0.69	1.04	0.92
	EU15	0.89	0.86	0.67	0.99	0.63	1.00	1.17
13	Austria	0.83	1.00	0.51	1.04	0.24	0.93	1.23
14	Italy	0.39	0.47	-0.26	0.93	0.01	1.12	0.09



# Special Report:

## Energy efficiency – A key driver of growth

Building on the Lisbon Agenda's commitment to "sustainable economic growth," the European Commission put forward an integrated package of energy and climate-change proposals in January, 2007. Two months later, the proposal was approved by the European Council. Among the programme's key commitments:

- A 20% increase in energy efficiency by 2020,
- A 20% reduction in greenhouse gas emissions by 2020 (and an offer to go to 30% if other countries will follow suit),
- A 20% share of renewables in overall EU energy consumption,
- A 10% biofuel component in vehicle fuel by 2020.

Inventing and deploying environmental technologies and eco-innovations will be key to achieving the targets set out. Ambitious climate protection will require a massive refocus of the entire global economy. But this refocus, in turn, can serve as an important driver of growth, bringing productivity increases in its wake and spurring demand for better, cleaner technologies in new markets. New materials, better technologies, improved production processes and intelligent products can help solve global environmental problems and keep the consequences of climate change in check. And, while success will come easiest to the countries that make the most efficient use of natural resources (raw materials, energy and water), the real winners will be the companies, countries and regions that take the lead in developing and deploying the new technologies.

To be sure, sustained global economic and population growth outside of Europe is increasing long-term pressure to adjust to more economical use of natural resources. Rising prices on the energy and commodity markets in the past few years pose ever more challenge to industry's natural resource management. In short, permanently sustainable economic and environmental development is inconceivable without radical progress on resource productivity. **Just as development of the industrial society during the last century led to a massive increase in labour productivity, so the key to Europe's future economic development now lies in boosting resource and energy productivity.**

Specifically, this means developing and deploying innovative energy- and material-saving technologies, employing new environmentally-friendly technologies and products, optimising work and production processes and tapping recycling potential. **More efficient use of energy sources** is vital to increasing resource productivity. What we need are technologies that minimise not only energy conversion losses (more efficient power plants) but also the emissions produced (e.g. clean coal technologies). Fossil fuel-based power plant technology still holds enormous potential here, if and when additional technologies can be developed and deployed to capture and sequester the carbon produced. The development of new energy technologies not reliant on fossil fuels – which therefore generate no or reduced greenhouse gases – is another central plank of climate protection. Technologies using **renewable energy sources** – water, wind, solar, biomass and geothermal power – to reduce demand for energy as a result of more efficient energy consumption offer particularly good prospects.

Empirical research suggests that overall productivity in an economy grows more rapidly when conditions are conducive to innovation and the rapid dissemination of new knowledge. This is crucial to the development of environmental engineering. Most important in this respect is the problem-adequate utilisation of R&D results, the optimum (usually interdisciplinary) combination of technologies and the consistent translation of technical knowledge into application-oriented environmental protection and management solutions. Economies with a strong science and research environment – such as Europe enjoys – can play a prominent role in these fields. In view of the foreseeable ecological demands, the extremely good growth prospects for “environmental markets” and the discernible technological trends, environmental engineering will be pivotal to economic development as an interdisciplinary cross-sectional technology. Of course, **environmental protection is not a free ride; but we can also see from the empirical data that countries with innovative environmental technologies register positive development in total factor productivity and hence dynamic economic growth** (see the box on page 31 for more on the growth-enhancing effects of improving energy efficiency).

Moving forward, interest will rise in **integrated environmental protection**, which kicks in at the production stage through recycling and more efficient use of energy, water and other raw materials. Economically speaking, as a rule it is much cheaper to avoid environmental pollution from the outset rather than having to remedy the consequences with end-of-pipe technologies in the final stages of the production process. In addition, companies often benefit directly from the cost-saving potential of production-integrated environmental protection techniques, which can be quite considerable. Consequently, production-integrated environmental protection is set to gain enormously in importance worldwide.

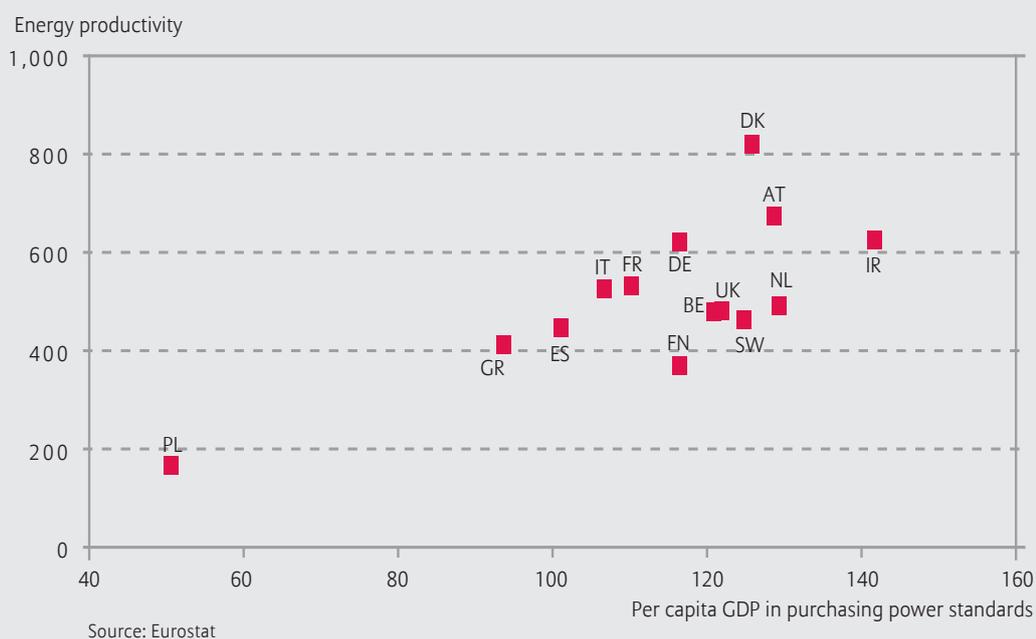
But the question remains, do we have the right regulatory framework for driving forward this change? Under market conditions, technological progress generally focuses only on enhancing the productivity of resources or factors of production that generate costs for the private sector. Given that environmental pollutants are not priced by the market since no “ownership rights” to them exist, emitters do not cost them out adequately, or indeed at all, in their accounting. Where no expenses are incurred, there is no reason to rationalise. Consequently, greater energy productivity and resource productivity in general can only be achieved by **internalising the external costs of environmental pollution**. Only if the tax and subsidy regime is redesigned and prices tell the “ecological truth” will companies and consumers be motivated to alter their production and consumption behaviour. This means incentivising desirable types of production and clamping down on undesirable polluters. **Quality growth must be the objective.**

The state must set the framework conditions for the “internalisation” of environmental costs. Apart from environmental requirements in the form of bans and regulations, market-based instruments also belong prominently in the toolkit. The **introduction of emission rights trading** in Europe is an important way of successfully counteracting climate change, although the system is still suffering from teething troubles. Many of the present shortcomings could be remedied by ceasing to allocate emission permits free of charge and auctioning them instead (in rising proportions), as the European Commission plans to do from 2013. Not until certificates are auctioned will power plant operators be obliged to rethink their investment policies. Once bidding for allowances becomes too expensive they will mothball old plants and replace them with new, lower-emission technologies. And moving beyond climate protection policy, the state also must help kick-start the ecological modernisation of industry with a package of different measures: by speeding up the rollout of innovative technologies, developing a resources strategy, with a sustainable transport policy, and by offering the right fiscal incentives to husband natural resources.

# Energy efficiency and economic growth

Can economic growth and prosperity be enhanced by more efficient energy use, or does the reduced consumption of natural resources and energy automatically mean slower growth and less output? From a theoretical perspective, the answer depends on the type of environmental protection and energy policies put in place to achieve these objectives. A cross-sectional analysis of economic performance in EU-15 countries for the year 2004 reveals a **positive correlation between energy efficiency and prosperity levels**. The following chart depicts each country's energy productivity (the ratio of gross domestic product to energy inputs) as a measure of energy efficiency relative to that country's overall prosperity (per capita GDP adjusted for purchasing power parity). The comparison shows that countries with high energy productivity in general also exhibit high levels of prosperity.

Energy productivity and prosperity



In a subsequent analysis of the five biggest EU countries (Germany, UK, France, Italy and Spain), we examined the impact of energy inputs on total factor productivity (TFP) and through TFP on economic growth. In particular, we looked at the contribution to economic growth measured by factors of production and by total factor productivity, computing the percentage change in the real input of capital, labour and energy weighted with the respective (nominal) income shares of value added for a specific period, and

including energy inputs as an additional factor of production alongside capital and labour. This approach is also known as “Solow growth decomposition,” a technique for measuring factor inputs developed by US economist Robert Solow.<sup>1</sup> The change in TFP was obtained by subtracting the contributions to growth by the factors of production from GDP growth.

The result also points to a positive correlation between energy productivity, economic growth and overall prosperity. In other words, viewed from the medium to long term, investing in more productive and hence more economical use of energy is not only good for the environment, it also promotes economic growth and prosperity.

### Contributions to growth average annual change in %

Germany					
	GDP	energy	labour	capital	TFP
80-84	1.1	0.3	-0.3	0.6	0.5
85-89	2.7	0.0	0.5	0.8	1.4
90-94	2.7	-0.2	0.0	1.2	1.6
95-99	1.7	-0.2	-0.2	1.3	0.8
00-04	1.2	0.3	-0.1	0.8	0.2
France					
80-84	2.0	-0.7	-0.6	0.7	2.6
85-89	2.8	-0.2	0.5	1.0	1.5
90-94	1.2	0.1	0.3	0.8	-0.1
95-99	2.3	0.1	0.8	0.8	0.6
00-04	1.9	0.0	0.3	0.9	0.8
Italy					
80-84	1.8	-0.6	0.6	1.0	0.9
85-89	3.2	0.2	0.6	0.9	1.5
90-94	1.1	0.0	-0.3	0.7	0.7
95-99	1.6	-0.1	0.5	0.9	0.3
00-04	1.4	0.1	0.5	0.9	-0.1
Spain					
80-84	1.1	-0.3	-0.9	0.9	1.4
85-89	4.1	-0.2	1.7	1.6	0.9
90-94	2.1	0.1	0.6	1.3	0.1
95-99	3.4	0.3	2.2	1.6	-0.6
00-04	3.3	0.8	2.0	1.7	-1.2
United Kingdom					
80-84	0.4	-0.2	-1.0	1.1	0.5
85-89	3.5	0.8	1.2	1.4	0.1
90-94	1.5	0.0	-0.6	0.9	1.2
95-99	3.1	0.5	1.1	1.6	-0.1
00-04	2.6	-0.1	1.0	1.2	0.5

The table above uses the Solow growth decomposition model to break apart and chart factors of production and total factor productivity for five-year periods from 1980 to 2004 at the industry level in the EU’s five largest economies (France, Germany, Italy, Spain and the UK). The calculations were based on the EU KLEMS database. The income weighting is between 50% and 66% for labour, between 20% and 35% for capital and between 5% and 20% for energy.

The outcomes from this growth decomposition show total factor productivity generally delivering a notable contribution to economic growth, particularly in the case of Germany, where half the value added in the years from 1985 to 1994 was accounted for by an increase in total factor productivity. One exception is Spain, where total factor productivity shrank between 1995 and 2004 even though real economic growth over the same period averaged more than 3% per year. This is partly a reflection of strong economic growth in Spain in areas of low productivity, such as housing construction and the services sector.

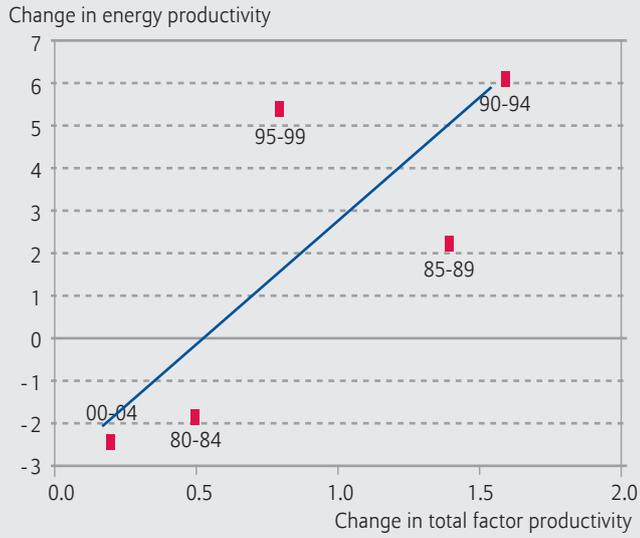
To shed further light, we also looked at the correlation between energy productivity and total factor productivity. Following the logic of the Solow decomposition model, the deployment of more energy-efficient technologies could increase the efficiency of production on given capital and labour inputs. In that case, total factor productivity would rise. However, it is also conceivable that energy efficiency increases as a result of the use of certain types of energy, possibly because their use has been administratively decreed, so that output on given capital and labour inputs – and with it total factor productivity – falls.

The results were tentatively positive, indicating that countries which adopt environmental technologies quickly do reap some benefit in overall productivity performance (though a direct correlation is not possible to demonstrate on available data). The charts on page 34 show the change in total factor productivity for the individual countries and the five periods in comparison to the change in energy productivity. The trend lines all show a positive correlation between energy productivity and total factor productivity in each of the countries surveyed (though, at five, the number of observations is relatively small). Nonetheless, it can arguably be concluded that **the more efficient use a country makes of energy as a production input, the greater the increase will tend to be in total factor productivity and therefore in economic growth and prosperity.**

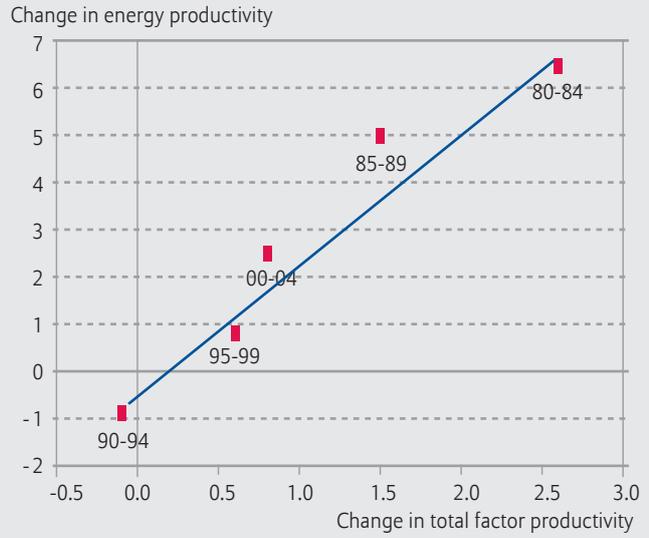
In four of the five countries surveyed, the analysis also shows a positive connection between changes in energy productivity and labour productivity. Only in Italy, where the correlation between energy productivity and total factor productivity is the least pronounced of the countries analysed, can no clear reciprocal relationship be identified. The positive correlation established between energy productivity and labour productivity/total factor productivity corresponds with the findings of several other studies, which also conclude that as a rule high rates of increase in labour productivity are accompanied by similarly strong increases in total factor productivity.<sup>2</sup>

<sup>2</sup> Crafts, Nicholas: What Creates Multi-Factor Productivity? Paper prepared for the joint ECB, Bank de France and The Conference Board conference "The Creation of Economic and Corporate Wealth in a Dynamic Economy", Frankfurt 2008

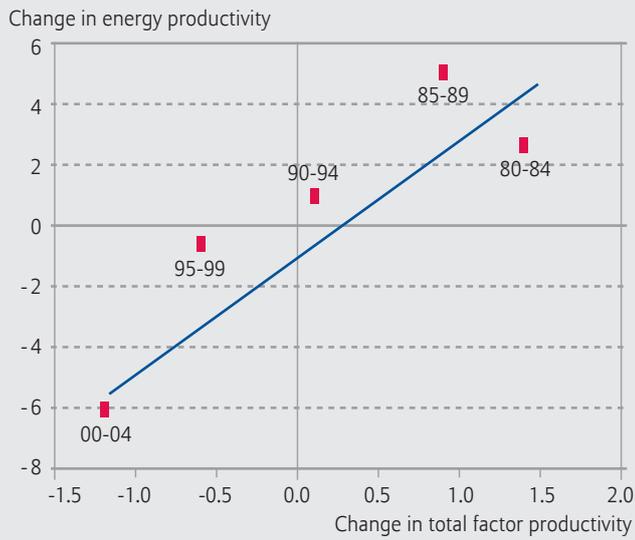
### Germany



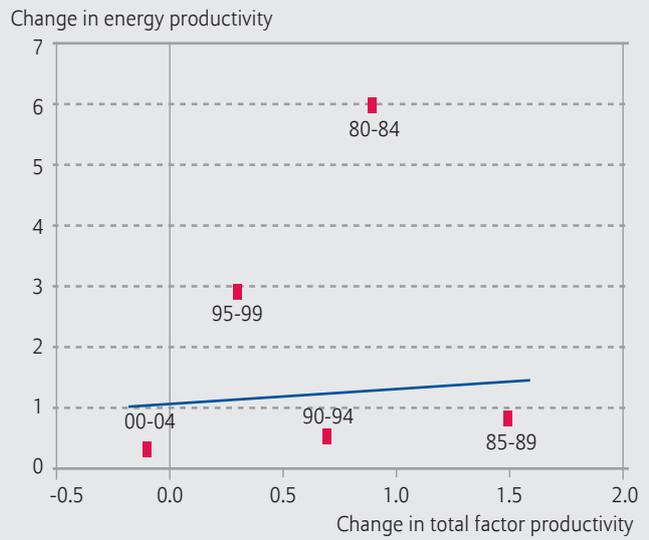
### France



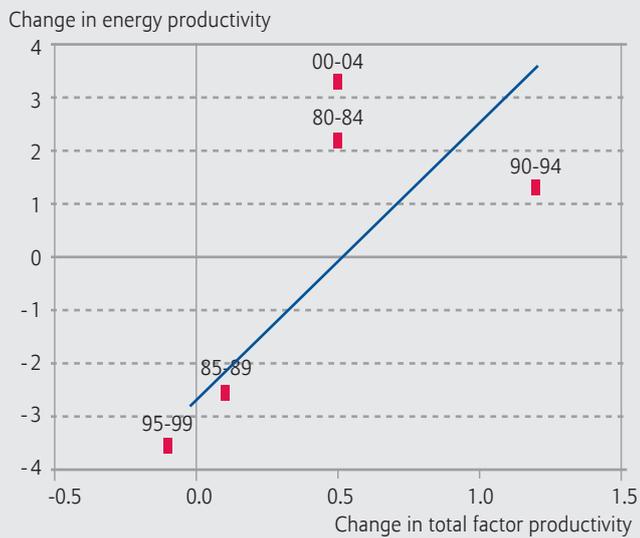
### Spain



### Italy



### United Kingdom



Of course, pushing ahead with climate protection will entail some economic burden – which will likely have to be shared worldwide. We are, after all, talking about reducing the carbon footprint of traditional patterns of production and consumption by an average of at least 50%, and in the industrial countries by fully 80%, with very tough timelines. Ultimately customers will have to pick up much of the bill. The European Commission calculates that the new climate protection targets will push up the price of a new car by an average of EUR 1,300. The total **cost of an effective climate protection policy** is estimated at roughly 1% of global economic output a year. But the potential damage from doing nothing is put far higher. Moreover, in the course of ecologically driven structural change, central **markets with powerful growth momentum** are emerging, particularly markets for energy technologies, sustainable mobility and transport technologies, efficiency technologies, recycling technologies and water supply and waste water technologies.

The pace of this environmentally driven structural change will hinge on how quickly innovations to avoid greenhouse gases can gain ground on the global market. Their impact so far is marginal because the market has not yet put a price on carbon emissions. This kind of pricing would come about with the **introduction of a global emission rights trading system** – which, however, requires international agreements. It would be extremely helpful if Europe could show that its own permit trading system was working. Only then will it be able to persuade the rest of the world – whose carbon footprint today accounts for 85% of the total – to take part in global emission rights trading. Otherwise there is little prospect of the world coming round to a regime of lower greenhouse gas emissions.

**The contribution that Europe can make towards solving the world climate problem lies in creating a functioning market for emission rights and initiating a competitive European market for renewable energies.** Both will ultimately lead to the development of efficient technologies helping to reduce CO<sub>2</sub> emissions. In creating these markets, Europe will prove that economic growth and carbon restraint are not only compatible, but ultimately mutually self-reinforcing. If it can deliver on this promise, countries like China and India should also be prepared to come on board. For Europe's economy, this could mean tapping into new export markets for low-carbon technologies. Taking the global view, Europe therefore has a chance to seize the initiative in creating energy supplies with low environmental impact and adopting cost-effective solutions that will help our economy grow and prosper in the future.

