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**COMMUNICATION FROM THE COMMISSION**

**Raising productivity growth: key messages from the European Competitiveness Report  
2007**

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### **Raising productivity growth: key messages from the European Competitiveness Report 2007**

#### **1. INTRODUCTION**

This Communication presents the main messages from the European Competitiveness Report 2007<sup>1</sup>. Its focus is on productivity, which is the key driver of competitiveness and welfare in the long term.

The Competitiveness Report was redesigned in 2006 to contribute to a solid analytical underpinning of the microeconomic pillar of Lisbon strategy, while continuing to explore more specific aspects of the competitiveness of the European industry.

This year, after a review of recent developments concerning growth, productivity and employment, both at the level of the EU and in the main economic sectors, the Report reviews microeconomic reforms under the Growth and Jobs agenda from the point of view of their potential to raise productivity and focuses, more particularly, on skills as a competitiveness factor. The Report assesses the relative strengths and weaknesses of European industries and concludes with a long term vision of European manufacturing so as to put the emerging trends and challenges in perspective and to check whether existing policies are consistent with them. The analysis in this report is underpinned by improved data availability – longer time series and the publication of the first EU KLEMS<sup>2</sup> datasets –, which allows new insights to be drawn.

#### **2. OVERALL COMPETITIVENESS PERFORMANCE**

##### *A widespread improvement of the European economy*

The strength of the economic recovery in Europe is larger than was expected last year: the EU's real Gross Domestic Product (GDP) grew by 3.0% in 2006 - the highest growth rate since the year 2000. This improvement was supported by an acceleration in both productivity and employment growth. The enhanced productivity growth is underpinned by stronger growth in total factor productivity (TFP) (see box).

This improvement is widespread; nearly all the new Member States and Member States with relatively low GDP per capita and productivity levels are catching up in terms of economic and productivity growth. The pick-up is visible across the different sectors of the economy. Particularly, the role of services sectors in EU GDP growth is substantial, also given their large weight in the total economy. All manufacturing sectors, with the exception of tobacco,

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<sup>1</sup> Commission Staff Working Paper SEC (2007), European Competitiveness Report 2007.

<sup>2</sup> The EU KLEMS Growth and Productivity Accounts database research project aims to create a database on measures of economic growth, productivity, employment creation, capital formation and technological change at the industry level for all European Union member states from 1970 onwards.

grew substantially faster in 2006 than in the previous five years, thus contributing to the upturn in overall EU growth.

***The EU-US productivity gap has started to diminish...***

Data on the developments in the European economy in comparison to the US, which is taken as a benchmark of frontier productivity performance, confirm that the labour productivity gap vis-à-vis the US shrank in 2006, after widening continuously over the last decade. This is significant, not least since more recent data, available only for manufacturing<sup>3</sup>, confirm that this development continued in the first half of 2007.

In assessing this encouraging development, one should, however, not lose sight of the fact that labour productivity levels in the US remain some 39% higher than in the EU when expressed as GDP per person employed and 26% (2005) higher in terms of GDP per hour worked. Analysis shows that this is mainly caused by differences in total factor productivity (see box), and secondarily, in the quality of human capital<sup>4</sup>. Moreover, a large share of the catching-up seems due to cyclical factors, including a deceleration in US productivity growth in 2006.

Sector level data give some additional insights into the comparison of productivity developments between the EU and US. For instance, they confirm that the lower labour productivity growth in the EU economy in the last decade is mainly due to the poorer aggregated performance of the individual EU sectors and not to the sectoral composition of the economy (industry mix), which, actually, is slightly favourable for the EU. In particular, the EU-US growth differential reflects poor services sector performance in the EU, particularly in retailing, distribution, and financial and business services.

***Box: The role of Total Factor Productivity***

Total factor productivity is the main source of the productivity gap between the EU and the US. It is the part of productivity growth generated by intangible factors such as technical progress or organisational innovation instead of increased use of inputs, such as capital. This makes total factor productivity the most comprehensive measure of the efficiency of an economy.

At sector level, an analysis of structural relationships among the different performance indicators suggests that total factor productivity growth is the key driver of sectoral performance, whether this is expressed in terms of growth of value added, labour productivity, international trade, foreign direct investment or employment growth.

Among the policies most relevant to total factor productivity growth are those designed to foster technological progress, innovation and increased investment in R&D, the use of ICT, competition and product market reform. These policies are at the heart of the microeconomic pillar of the Lisbon strategy, suggesting that the ongoing reform process can contribute significantly to boosting total factor productivity and economic growth.

***...with some indications that also factors other than the favourable cycle may contribute***

<sup>3</sup> Manufacturing and the whole economy display very similar, and synchronous, patterns of productivity growth even if the productivity growth rates of the former are generally higher.

<sup>4</sup> However, the EU uses more capital per worker which reduces the labour productivity gap with the US.

While the reasons underpinning the widening of the EU-US productivity gap over the last decade were structural, it is still too early to say whether the recent narrowing of the gap is the product of purely cyclical developments or the first manifestation of a new pattern.

Analysis by the Commission services<sup>5</sup> indicates that, while the upturn is essentially cyclical in nature, it is possible that there is also a structural component linked with past structural reforms enacted by the EU Member States, especially in the labour market. Sectoral productivity gains, such as in network industries, and the increase in the skill levels of the work force would also support such a view. Such a structural improvement in productivity can be expected to become visible in the future as the effects of recent reforms – particularly those generated through the renewed Lisbon strategy – start feeding through more strongly.

### **3. DRIVERS OF COMPETITIVENESS**

#### ***Productivity and the microeconomic pillar of the Lisbon agenda***

Raising the long-term economic growth potential by increasing productivity growth is one of the fundamental objectives of the renewed Lisbon strategy and an important response to the challenges of globalisation, ageing, the rapid pace of technological progress and the need to combat climate change. The microeconomic policy pillar of the Lisbon strategy covers many of the policy areas most relevant to enhancing productivity, such as:

- Increased investment in R&D can significantly increase productivity growth, especially if the elements of the knowledge triangle, R&D, innovation and education and training, are well integrated, including as concerns the provision of scientific personnel.
- ICT investment brings high returns in terms of productivity gains when accompanied by appropriate organisational changes and investments in skills.
- Increased competition in open markets with an adequate regulatory framework tends to have positive effects on productivity and employment by improving allocative (static) efficiency, productive efficiency (work organisation), and dynamic efficiency (innovative products and processes). However, the effect of competition on innovation is more ambiguous, depending as it does on market structures and on the distance of market participants to the technological frontier. Competition is of particular importance for the countries and industries close to the technological frontier for maintaining their edge.
- Stimulating entrepreneurship by easing the start and growth of companies as well as enhancing conditions for SMEs to use the potential of the Single Market allows new ideas to be transformed into value-added products and services and these to be traded internationally, with an important positive effect on productivity.
- Significant increases of output and consumption can also be achieved by reducing unnecessary regulatory costs such as overly heavy administrative burdens, thereby freeing resources for more productive uses. The benefits will be felt particularly by SMEs, where such overheads represent a higher proportion of their total costs.

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<sup>5</sup> See *EU Economy Review 2007* and related Communication "Moving Europe's productivity frontier", forthcoming.

- Reducing corporate tax barriers and related compliance costs and facilitating the restructuring of group companies foster the functioning of the Single Market. Adopting a Common Consolidated Corporate Tax Base would also positively impact on the EU GDP.

Accelerated adaptation requirements call for mechanisms facilitating transition between different jobs. More generally, EU cohesion policy plays in this context an important role, by contributing to a better functioning of the internal market and supporting productivity and competitiveness improvements in the countries and regions whose development is lagging behind or are affected by industrial restructuring.

An assessment of recent reforms by the Member States in product and services markets as well as with regard to better regulation and SME policy reveals that, in general, notable progress has been made with reforms in these areas, although more still remains to be done. This progress is not yet fully reflected in the data measuring economic performance.

### *Coordination matters*

The governance of national reform policies in the EU is an important element of the Growth and Jobs Strategy. There are several reasons why the coordination of Member States' economic reforms may bring additional benefits. While countries can learn from each other, joint efforts and coordination can stimulate the drive to reform and overcome national resistance against reforms. Most importantly, coordinated implementation may create benefits which would be absent, had the reforms been pursued unilaterally.

The empirical analysis of international spillovers from national reforms presented in the Report confirms that coordinated action produces, in many cases, benefits which are substantially superior to those derived from acting alone. For instance, roughly half of the potential increase of GDP generated by Member States' achievement of their R&D intensity targets would result from cross-border knowledge spillovers.

Additional benefits accrue from complementarities between policies. As an example, increasing skills and R&D raises real wages, which in turn should increase participation rates. Also, the reduction of administrative burdens, through lower mark-ups, has strong synergies with the employment target by helping to reduce equilibrium unemployment.

### *Trade openness and productivity go together*

Increasing trade openness (trade volumes compared to GDP) and Foreign Direct Investment (FDI) stocks illustrate the acceleration of globalisation. While in general global market shares have been redistributed in favour of the emerging economies, the EU27 has been relatively successful in maintaining its position. Between 1996 and 2005 the share of EU 27 in total World exports decreased from 23.3 to 22.0%, the US share decreased from 19.1 to 15.2% and Japan's from 13.7 to 10.5%.<sup>6 7</sup>

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<sup>6</sup> Excluding intra-EU trade. "World" refers to an aggregate of countries which accounts for 86% of total world exports (in order to assure comparability of the shares across time by keeping the reporting countries stable).

<sup>7</sup> These results, taken in isolation, are prone to over-interpretation, i.e. losses of export market share could lead to the conclusion of a competitiveness decline where other factors (such as higher growth or consumption) might be in play.

Trade performance of the EU in services was encouraging: the EU-15<sup>8</sup> more than doubled its export growth in services between 1996 and 2005, whereas its imports grew less fast. As a result, over a nine year period the EU-15 almost quadrupled its services trade balance. In the same period the United States services trade balance diminished by 26% to 50bn€ (the EU-25 balance in 2005 was 56.9bn€). In contrast, Japan reported a services trade deficit of 30bn € in 2003.

Too often, globalisation is associated with job losses in sectors that lose out. The resulting social costs and anxiety are real and call for appropriate policy response. However, they should not lead to overlooking the strongly positive effects that openness and integration into world markets have on a country's economic performance. The Report illustrates the positive relationship between aggregate productivity and globalisation, using trade openness as a proxy, and summarises the empirical findings on the relationship between productivity and globalisation.

The causality links are not always straightforward. More intense import competition spurs productivity which leads to improved competitiveness and higher exports. This, in turn, brings further efficiency gains. Empirical work presented in the Report underlines the robustness of the relationship. This illustrates the power of the mechanisms in play: specialisation, scale effects, elimination of less efficient firms and a greater ability to absorb technological advances and new ideas developed in the rest of the world. Taken together, these factors suggest that openness to trade can play an important role in raising productivity growth. For instance, empirical analysis indicates that, on average, a 1% increase in the openness of the economy, as measured by the ratio of imports to value added, results in an increase of 0.6% in labour productivity in the following year. These results suggest that both increased intra-EU trade as a result of improving the Single Market and ambitious external policies – such as concluding the Doha Development Agenda, the new generation of bilateral free trade agreements, rebalancing the trade relationship with China, removing barriers to EU exports and a stepped-up market access strategy – hold out the potential of significantly contributing to productivity growth in the EU. It should be underlined, however, that the full benefits of openness only accrue to economies that can easily redeploy factors of production between firms as well as from declining to growing industries. These are also crucial preconditions for managing the difficult adjustment that will be necessary in specific sectors and regions that have a significant impact on the public acceptability of globalisation. Furthermore, in order to seize the advantages of openness, the protection of intellectual property rights on an international level is crucial.

### *Skills upgrading as a competitiveness factor*

Skills contribute directly to international competitiveness and productivity since a better educated workforce augments the efficiency of labour and raises the absorptive capacity of firms to more easily integrate new technologies and ideas. For example, empirical research indicates that raising the average duration of schooling by one year would increase productivity by 8 to 10% in the long run<sup>9</sup>. Skills upgrading is under way in all economic sectors, even in low-skill ones. Empirical analyses reveal that sectors employing a larger share of high or medium skilled workers exhibit higher productivity growth while a high share of

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<sup>8</sup> EU -27 or EU-25 services trade data are not available since 1996.

<sup>9</sup> Canton, E. (2007), Social returns to education: Macro-evidence, De Economist (forthcoming December 2007)

low skilled workers in a sector exerts a negative influence on productivity growth. Furthermore, skills matter for the speed of convergence towards the technology frontier. As might be expected, convergence is faster in high skill intensive industries. Finally, a higher share of high and medium skilled workers spurs growth of exports.

At the level of individual industries, the analysis demonstrates that the skill upgrading process within industries contributes more to the increasing demand for highly skilled workers than shifts of employment between sectors or industries. Nonetheless, there is also a general shift of employment away from low-skill intensive industries towards medium- and high-skill intensive industries, and this shift occurs across all groups of EU countries.

Against this background, skill gaps can be seen, firstly, as an adjustment problem, arising after an increase in demand for (or a decrease in the supply of) a certain skill. In such a situation the government's role could be to smooth the transition process whereas there seems to be limited scope for strong sector specific policies. Secondly, where skill gaps are due to the legacy of the past, policies should focus on measures to help the economy to reach a better mix of skills. But addressing the skill mismatch is not just a task for the government. Many more European enterprises will have to address the skill mismatch in their corporate strategies.

The efforts within the growth and jobs strategy to foster the accumulation of human capital, such as through a reduction in the number of early school leavers and the encouragement of academic enrolment in mathematics, science and technology, should support the increasing demand for skills connected to skill-biased technical change. Higher employment rates, notably of women, will also help to reduce the skill gap. Whereas education policies mainly remain a national competence, the education of top researchers in the EU will benefit from EU-wide initiatives such as the development of the European Institute of Technology and increased mobility of researchers.

#### **4. COMPETITIVENESS OF EUROPEAN INDUSTRIES**

##### *The state of play*

Overall, the competitive performance of European industries, where SMEs play a considerable role, is strong. However, this masks a highly variable performance at the level of individual industries, both across countries and between sectors. For the period since 1995, the EU exhibits low performance in terms of the growth of value added, labour and total factor productivity, while appearing quite healthy in terms of trade performance. Foreign direct investments expand rapidly in each direction, with outward foreign direct investment growing more strongly.

Assessing the relative strengths and weaknesses by sector, the sectors of mining and, among manufacturing industries, the production of leather & footwear, clothing, textiles, nuclear fuel and tobacco are those presenting a decline not only in employment but also in value added. Conversely, apart from water transport, all the industries with the highest rates of value added growth in the European Union – communication equipment, office machinery and computers, as well as telecommunications and computer related services – relate to the new information and communication technologies.

Compared to the US, the biggest gap in sectoral performance can be found in the manufacturing of office machinery and computers, wholesale and retail trade, air transport, and the financial services. The latter three services sectors all appear to be rather sensitive to economies of scale and are likely to benefit from the larger integrated markets in the US. Conversely, the EU shows pockets of higher growth in selected areas of high-tech manufacturing, particularly pharmaceuticals, and the network industries.

### *Higher service content in European manufacturing*

Taking the long view<sup>10</sup> indicates that Europe, whilst still being among the richest regions on a GDP per capita basis, will be overtaken by some of the emerging economies in terms of overall economic size. This is due both to demographic factors and the relatively strong growth in productivity as the emerging economies catch up. By 2050 Asia will most likely have become the most important market and pole of growth.

The analysis shows that over the next decades, manufacturing is set to continue to play a major role in the EU economy, contributing directly to welfare and productivity growth and generating significant demand for research and high skilled services which spills over to the rest of the economy<sup>11</sup>. At the same time, it is expected that manufacturing, defined in a narrow sense, will directly employ less people than today and will represent a relatively smaller part of the whole economy.

The trends on employment and relative size must not be confused with stagnation or decline. To a certain extent, they reflect the effect of differences in productivity growth. Additionally, these trends are of a statistical nature, i.e. the fragmentation of the value chain results in activities previously classified as manufacturing shifting to the services sector. The manufacturing industry with its related service sectors will remain a key pillar of the EU economy in the 21<sup>st</sup> century, not only because of its continued economic weight but also because it is an integral part of the innovation system of a modern economy.

The analysis suggests that the most successful of these firms will act as leaders of global value networks, providing planning, marketing and R&D services and integrating components from outside sources. Thus, the service content of manufacturing and also of the whole package sold with the final product is likely to increase further. This creates new revenue opportunities and valuable long lasting relationships with customers; however, it also increases the potential for outsourcing. Hence the existing statistical classifications of activities in manufacturing and services, respectively, will become increasingly less relevant and new types of analysis of company and market developments will become necessary.

It is not clear to which extent the emerging technologies (electromechanical microsystems, advanced materials, bio and nanotechnologies) will realise their perceived potential, although it must be underlined that their potential is very significant and could make a major contribution to productivity growth and innovation over the next decades. It is, however, likely that managing knowledge will become more important and the successful business models of the future will be those that perform better in this respect. Intellectual capital and intangibles are likely to become ever more important. This will probably lead to more

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<sup>10</sup> On the basis of a literature review of foresight and futures studies, the backbone of which is three recent EU-wide foresight projects on the future of manufacturing in Europe FutMan, ManVis and Manufacture.

<sup>11</sup> One Euro of manufacturing goods sold requires between 22 (Netherlands) and 36 cents (Germany) of inputs from market services (2000 input-output data).



complex organisational approaches, with a high degree of collaboration and networking with suppliers, customers, competitors and an increased use of external sources of knowledge, such as research institutions and universities.

These developments will put increased emphasis on the possession of skills. In particular, soft skills such as team working, learning, sharing and communicating, providing a service as well as a good and the ability to think in an interdisciplinary way will become crucial, especially for SMEs wanting to participate in the global networks. These skills may become necessary even for serving local markets.

Dynamic specialisation, i.e. when given competitive strengths not only persist but tend to be reinforced, suggests that Europe will maintain strong positions in many medium-high and high technology sectors (chemicals, including pharmaceuticals, mechanical engineering, cars, aerospace, embedded electronics). This will necessitate important R&D efforts to continuously expand the technological frontier in these industries so as to keep competitive edge. High quality products in traditional sectors may also be strongholds, where technological innovation together with design and marketing play an important role.

Much will also depend on the ability of European firms to capitalise on the opportunities represented by global challenges, such as ageing and climate change. Since Europe will need to address these challenges early on, there is a real opportunity for establishing lead market positions in products such as those linked to health care, convenience, leisure and entertainment and environmental technologies.

### ***The horizontal policy framework matters for manufacturing***

By taking a more quantitative, model based approach, it is possible to evaluate the impact of policies that aim at improving the general framework conditions for competitiveness and their relative importance in such a long term perspective. The results of such an approach depend strongly on the specifications and assumptions of the model; however, they give useful indications on the direction and order of magnitude of the outcomes generated by policy changes. The key determinant of longer-term growth and productivity is the degree of openness of the EU and world economy. Nevertheless, other structural policy reforms can have important effects.

The policies considered are upgrading skills, better regulation and less administrative burdens for firms, R&D and innovation, a more competitive Single Market and environmental policies, in the form of improved energy efficiency. Their individual impact on GDP by 2025 is in the range of 0.5-0.6 % (skills<sup>12</sup>) to 3.0-3.5% (R&D), with the other structural policies in-between. Their cumulative impact amounts to around 8% to 9%.

Amongst the policies considered, R&D and innovation policies and strengthening the internal market have the strongest and most positive impact on manufacturing. Improving the horizontal policy framework will help slow down the trend decrease in the relative size of manufacturing in Europe. The model-based results confirm that with a favourable external

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<sup>12</sup> The policy modelled is the achievement of the targets adopted in 2004 for 2010 (10% maximum of early school leavers, at least 85% of 22 years olds with upper secondary education, 20% reduction of 15 years olds with low reading literacy achieving , at least 12.5% participation in Lifelong Learning and 15% increase of S&T graduates). Their economic effect will increase very gradually only, as successive, better educated cohorts enter the work force.

environment some manufacturing sectors such as chemicals, rubber and plastics, combined machinery and equipment could approximately maintain their present shares in the EU economy. In terms of the EU share in world production, in the absence of improved framework conditions, there is no sector where the EU maintains its relative importance by 2025. In the presence of the above-mentioned policies, sectors such as transport equipment, wood and other manufacturing, energy carriers, research and development services, chemicals, rubber and plastics, transport services and other business services maintain or almost maintain their share in global production. This analysis confirms that the economic reforms are especially important for sectors exposed to trade, such as manufacturing.

## **5. SYNTHESIS**

The key conclusion of this Report is to underline the central role that productivity plays as a source for growth over the long term. The disappointing productivity performance of the EU over the recent past as well as the recent recovery is explained to a large extent by total factor productivity developments. This has clear policy implications, i.e. the importance of research and innovation as well as training and education policies and of economic reforms that enhance the general business environment and facilitate structural change and re-allocation of resources. Coordinated action in these areas produces, in most cases, superior benefits to acting alone. A major driver for increased economic efficiency is competition, either through trade openness, a reinforced Single Market, especially in services, continuous liberalisation of network industries or product market reform.

The future holds out the promise that the European manufacturing industry will continue to play a major global role in a context where the crucial assets will be knowledge and skills. The implementation of the policies and reforms referred to above will be central in realising this perspective.