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# Member State Competitiveness Performance and Policies (2011 report)

*Accompanying the document*

**Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions**

**Industrial Policy: Reinforcing Competitiveness**

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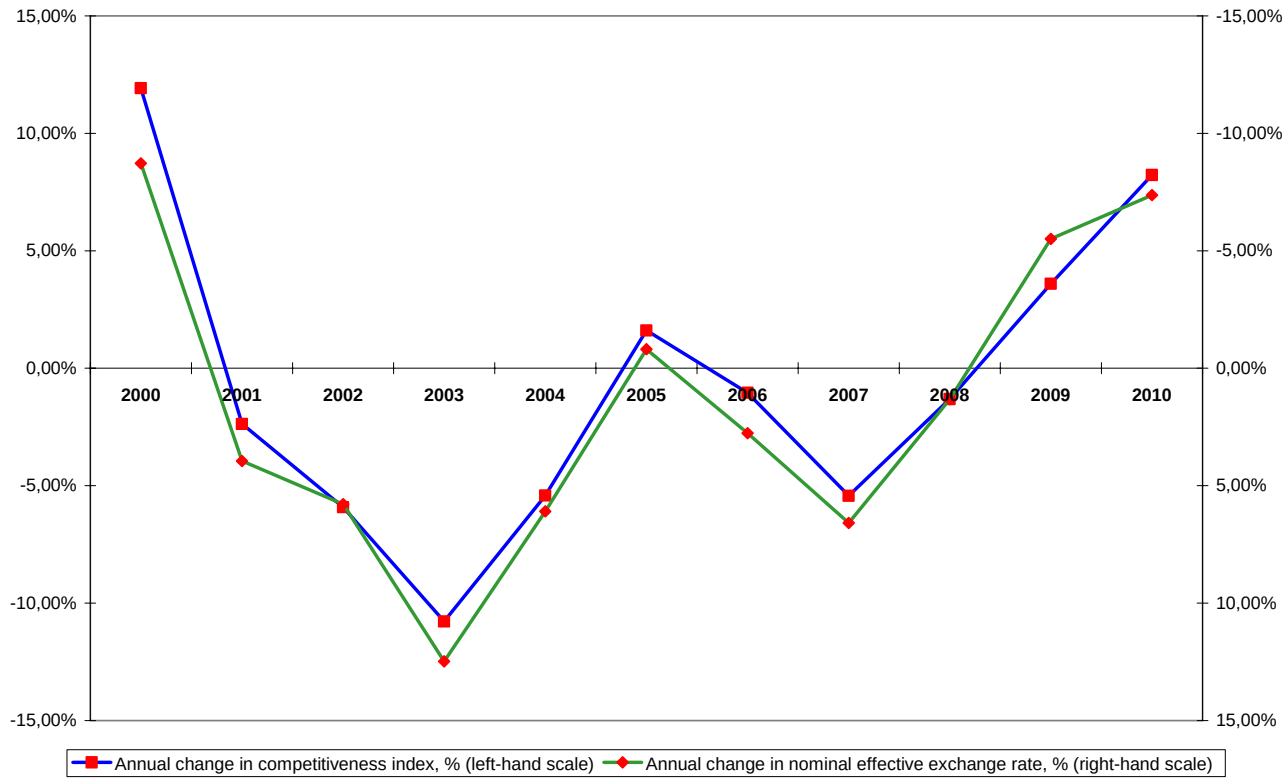
# 1 INTRODUCTION

The recovery of the EU industry from the crisis remains fragile. At the same time, many structural challenges need still to be addressed in order to safeguard its international competitiveness. These include weaknesses in the creation and exploitation of knowledge, improvement in the business environment, and raising the ability of industry to adjust to challenges such as demographic change, globalisation and climate change. A large part of the policy instruments which can improve industrial competitiveness are national, and the success of EU industry critically depends on national action. At the same time, important initiatives at the EU level are also necessary to complement national actions.

The competitiveness of European industry in international product and services markets is revealed by its rising global market share over the last decade and by some favourable dynamics regarding its trade specialisation, such as increasing reliance on exports by technology driven and capital intensive industries. Nevertheless, this encouraging performance masks a variety of developments at national level, many of which are not reassuring. Also, studies on the international competitiveness position of the Member States and their attractiveness as a location for foreign direct investment suggest that the international competitiveness of the EU may be eroding, a consequence of falling behind in the race for gaining market share through price and cost advantages, (see **FIGURE 1** below), innovation and ultimately productivity growth.

**FIGURE 1: Competitiveness Index (based on unit labour costs)**




Source: DG Economic and Financial Affairs.

Over the period 2000-2007, the cost competitiveness of the 27 EU Member States eroded by more than 25%, largely due to the movements of the exchange rate of the euro against the currencies of the 36 partner countries under consideration. The drop in the exchange rate after 2007 has brought about an improvement in the EU position in terms of cost competitiveness. From an aggregate point of view, unit labour costs in EU 27 only grew slightly faster than for the 36 trading partners (+3% above them over 2000-2010). However, as presented in the individual country chapters of this report, the situation varies considerably across Member States, a few countries (including Germany, Austria, Poland, Sweden and the UK) having experienced a gain in external cost competitiveness[1].

Nations characterised by strong and sustained productivity growth are able to gain international market share and improve their standards of living; those nations experiencing comparatively poor productivity growth are unable to gain and sustain a competitive advantage internationally.

The present report focuses on the measures Member States have carried out to improve their competitiveness, and assesses their performance with respect to a number of key framework conditions. The main policy areas covered are industrial innovation, sustainability of industry, the business environment, entrepreneurship and SMEs. The report derives from Article 173 of the Treaty on industry and forms part of the Europe 2020 framework[2], specifically of the flagship initiative "An Industrial Policy for the Globalisation Era"[3]. Implementation of the flagship initiative is on track and the Commission has already adopted, notably, the commodities and raw materials strategy[4], the Small Business Act Review[5] and the Standardisation package[6]. The policy areas which are covered in this report are also ingredients of the Broad Economic Policy Guidelines[7] which, in the relevant parts, call for improving the business and consumer environment, and for modernising and developing the industrial base in order to improve the functioning of the internal market.

This report contains a horizontal part focusing on structural change (section 2) and an overview of progress by broad policy area (section 3), followed by country chapters presenting national performance and policy developments in the same policy areas. The

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1 Cost competitiveness is measured as the inverse ratio of annual unit labour costs in aggregate EU 27 (labour compensation per unit of output) to annual unit labour costs in the 36 main trading partner countries of EU 27. Unit labour costs are calculated with a common currency using the average annual exchange rate of the EURO against the currencies of the trading partners (nominal effective exchange rate – see part 5 under "Foreign trade indicators").

2 Article 173 of Treaty on the Functioning of the European Union (TFEU) stipulates that "[t]he Union and the Member States shall ensure that the conditions necessary for the competitiveness of the Union's industry exist." Article 173 further specifies a number of objectives to this end, such as speeding up the adjustment of industry to structural changes, a favourable business environment, particularly for SMEs, and fostering better exploitation of the industrial potential of policies of innovation, research and technological development. The Commission is invited to take any useful initiative to promote co-ordination, in particular initiatives aiming at the establishment of guidelines and indicators, the organisation of exchanges of best practice, and the preparation of the necessary elements for periodic monitoring and evaluation.

3 COM(2010) 614 of 28 October 2010.

4 COM(2011) 25 of 2 February 2011.

5 COM(2011) 78 of 23 February 2011.

6 COM(2011) 311 and COM(2011)315 of 1 June 2011.

7 Council Recommendation of 13 July 2010 (2010/410/EU) on broad guidelines for the economic policies of the Member States and of the Union.

Annex provides details on the indicators and industry classifications used as well as the data used in the preparation of the various graphs.

**Box 1: The Implementation of the Industrial Policy Flagship**

The Europe 2020 flagship initiative on "An Integrated Industrial Policy for the Globalisation Era" is an ambitious action plan with more than 70 key actions. It has been well received by the EU institutions[8] and major stakeholders. In the first year following its adoption, the Commission has been vigorously pursuing implementation of the proposed actions. Here are some of the highlights of the progress achieved so far.

The **Competitiveness proofing** process has been launched as a part of the impact assessment process to ensure a reinforced analysis of the impact on competitiveness of new policy proposals. Commission services have been working on the methodology to put this commitment into practice. Competitiveness is now increasingly taken into account in Commission impact assessments. This has notably been the case for the proposals on banks' capital requirements ("CRD IV") and their impact on access to credit for companies.

The **Small Business Act for Europe** was reviewed in February 2011[9] and related follow-up actions, such as a new strategy to support internationalisation of SMEs should be adopted before the end of the year.

An **Action Plan for SME access to finance** will also be adopted before the end of the year. SME Access to finance has been established as a major priority in the dedicated programme for industrial competitiveness and SMEs to be proposed by the Commission in the framework of the Multiannual Financial Framework for 2014-2020[10].

The **Single Market Act** was adopted in April 2011[11]. It contains twelve priority actions to relaunch the single market aiming at favouring the revival of a strong industrial economy in Europe.

In the area of **industrial innovation**, the High-Level Group on Key Enabling Technologies presented its final report in June 2011 with concrete recommendations on development and deployment of these technologies[12]. The Commission has included a major increase in investments in current and future enabling and industrial technologies and services in its proposals for the future **Horizon 2020** programme for research and innovation. The Commission also proposed in June a major modernisation of the **European standardisation system**[13].

On the **global dimension of industrial policy**, a new trade policy agenda was put in place in November 2010 and is currently being implemented. It ensures a more focused and incisive battle against trade and investment barriers in major partner economies to assure a global level playing-field for European companies.[14] On international dialogue, the Commission has made steps towards mutually beneficial cooperation with third countries, such as the Mediterranean neighbours, Latin American countries and the African Union to improve market access for European products.

Concerning **sector-specific initiatives**, the Commission has presented a strategy for space policy[15], relaunched the CARS21 process[16] and continued its efforts to address concerns of energy-intensive industries, in particular through initiating the Sustainable Industry Low Carbon Scheme (SILC) and by promoting ultra-low carbon production technologies.

[8] Council conclusions of 10 December 2010; European Parliament resolution of 9 March 2011, European Economic and Social Committee opinion of 4 May 2011.
[9] COM(2011)78 of 23 February 2011.

# 2 STRUCTURAL CHANGE AND THE COMPETITIVENESS OF EU MEMBER STATES

## 2.1 Introduction

Structural change is the long-term evolution of an economy stimulated by secular trends in income and wealth, technology, innovation and preferences or it can be initiated by changes in economic and other policies. Structural change is typically manifest by changes in the composition of national output over time. The key features of a structural change are the secular decline in the share of primary production (agriculture, fishing and mining); a rise and then stabilisation in the share of the manufacturing sector; and the increasing domination of modern industrial economies by services sectors. However, the nature of sector shifts and the secular transition to services-dominated economies reflect changes in competitiveness. As successful enterprises grow and take advantage of market opportunities, technology and innovation, it is inevitable that they will also experience changes in their domestic and international market shares over time.

This section highlights some of the shifts of production and trade shares between sectors based on a detailed study of structural change in the EU[17]. It analyses four country groupings based upon similarities in terms of industrial structure The criteria used for these groupings are GDP per capita, R&D intensity (including the R&D intensity of inputs) and a range of industry and trade specialisation indicators. These groups[18] are:

- Group 1: Countries with higher GDP/person than the EU average, with specialisation in technologically advanced sectors: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Netherlands, Sweden, United Kingdom.
- Group 2: Countries with higher GDP/person than the EU average, with specialisation in less technologically advanced sectors: Cyprus, Greece, Italy, Luxembourg, Portugal, Spain.
- Group 3: Countries with lower GDP/person than the EU average, with trade specialisation in technologically advanced sectors: Czech Republic, Hungary, Malta, Poland, Slovakia, Slovenia.
- Group 4: Countries with lower GDP/person than the EU average, with specialisation in less technologically advanced sectors: Bulgaria, Estonia, Latvia, Lithuania, Romania.

The four country groups display a hierarchy in terms of GDP per capita. Income levels correlate closely with economic structure. Shares of agriculture are lowest in group 1, the wealthier group, and highest in group 4, the less wealthy group; shares of manufacturing are lower in the higher income countries (group 1 and 2) than in the lower income countries (group 3 and 4), while for services, both market and (other) public services, shares are in

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[10] COM(2011)500 of 29 June 2011.
[11] COM(2011)206 of 13 April 2011.
[12] http://ec.europa.eu/enterprise/sectors/ict/key_technologies/kets_high_level_group_en.htm
[13] COM(2011)311 and COM(2011)315 of 1 June 2011.
[14] COM(2011)114 of 10 March 2011.
[15] COM(2011)152 of 4 April 2011.
[16] First meeting of the relaunched High Level Group on 10 November 2010.
[17] Detailed results will be included in a forthcoming study "Structural change and the competitiveness of EU Member States" under preparation by WIFO.
[18] Group averages are weighted by the relative importance of countries within the EU.

reversed order, consistent with longstanding accounts of structural change as economies develop.

In this presentation, the focus is on indicators[19] of relative value added share (RVA) and revealed comparative advantage (RCA) for high-technology industries and high-education sectors, as well as indicators of world market share and international trade prices. High-technology industries and high-skill industries are important because they tend to have higher productivity growth. Moreover, they tend to be less exposed to international competition, since they face weaker price-based competition from the emerging economies than traditional labour intensive industries.

Since strong cyclical effect dominate the post-2007 data, for the analysis of structural change this report concentrates on data up to 2007.

## 2.2 Structural change in the European Union

### 2.2.1 Industry specialisation and structural change

Structural change is generally a slow process where substantial movements may take several decades to occur. Examining the changes in industrial structure in the period 1999-2007, industries have followed different paths towards higher technology or higher skills base. Changes in the production share of different sectors in national income may ultimately lead to sector specialisation and could also result in improving competitiveness. Similarly, firm-level specialisation and changes in the sector composition of output may also be a reflection of improving competitiveness, especially if firms upgrade their capabilities and intangibles by absorbing or developing new technologies or production routines, or if new, more innovative firms enter a sector. In general, a predominantly less advanced country might play a key role in the production of technologically advanced products as a result of specialisation and of the geographical disaggregation of production. The data should, therefore, be interpreted with caution when making judgements about industrial structure and the level of economic development.

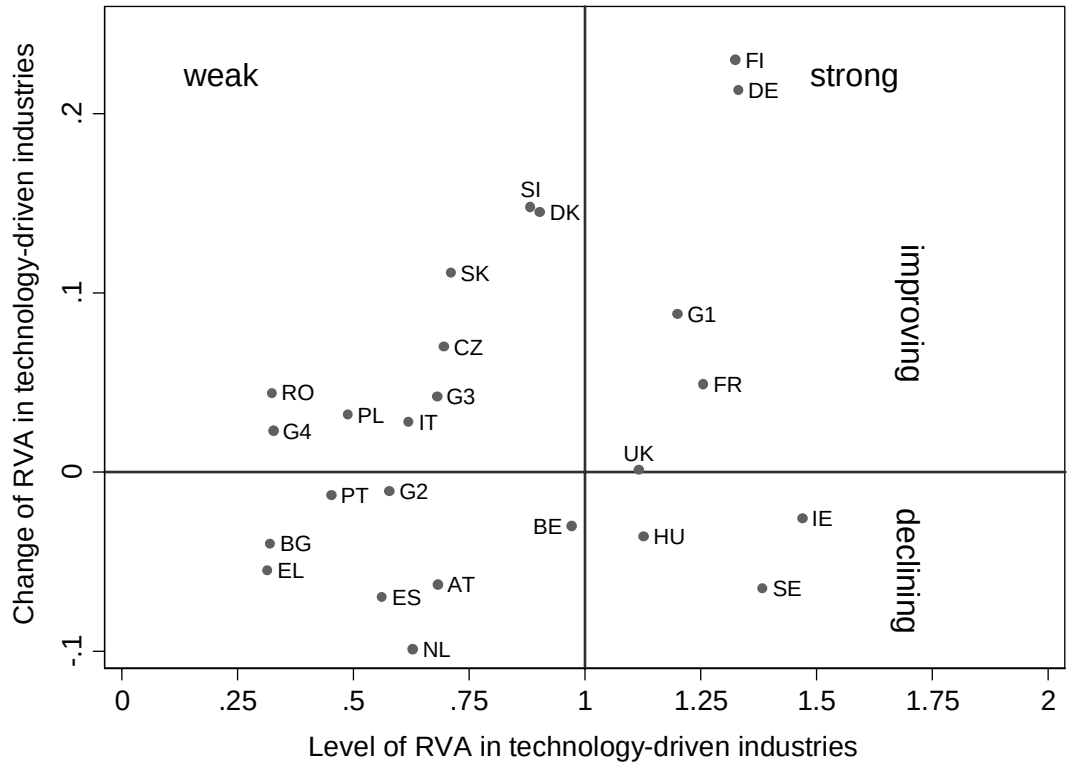
**FIGURE 2** compares the change and the level of relative valued added (RVA) in technology-driven industries. The 2007 level of the relative valued added on the horizontal axis and its change relative to 1999 on the vertical axis. Countries can be in one of four areas, as shown in Figure 2: i) high and improving – level and change values above the EU average, in the top right of the figure; ii) high and declining – levels above the EU average and changes below the EU average, in the bottom right of the figure; iii) weak and improving – meaning levels below the EU average and changes below the EU average, in the top left of the figure; and finally, iv) weak and declining – meaning level and change values below the EU average (bottom left of figure).

Group 1 is in the strong and improving area, which means that the share of technology driven industries is high and increasing. Countries in groups 3 and 4 are also improving, but from a weaker position, indicating a catching up path. On the other hand the share of technology-driven industries seems to be declining in group 2, from an already low level. The level of group 3 is above the one of groups 2 and 4. Finland and Germany have improved most and the Netherlands, Spain, Austria and Sweden have lost most.

[19] See the Annex for a summary presentation and Table A for details.

For countries specialised in labour-intensive industries (as opposed to those specialised in more technology-driven industries), competitiveness can be improved by shifting towards higher skilled activities – typical examples include the manufacturing of machine tools, furniture, or electrical equipment.

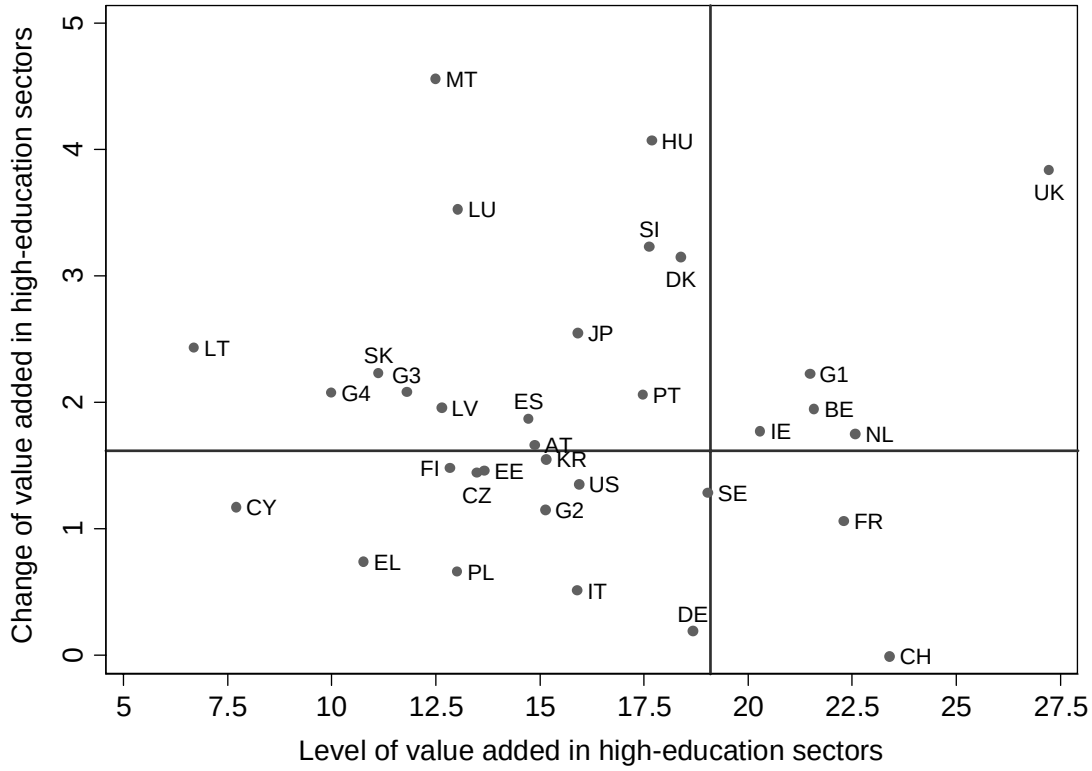
**FIGURE 2: Change (1999/2007) vs. level (2007) of relative value added in technology-driven industries**




Note: Change in relative value added of Greece was cut to a half to improve the graphical representation. The intersection of the horizontal and the vertical line represents the EU average. Countries where data are incomplete are not shown (Estonia, Cyprus, Latvia, Lithuania, Luxembourg, Malta, and the United States).
Source: Eurostat (SBS).

**FIGURE 3** shows the value added shares of high education intensity sectors, including services sectors in addition to manufacturing. Classic service-oriented countries such as the United Kingdom excel here. Group 1 is characterised by a strong and improving level. Despite substantial differences in levels, most countries are increasing their share of value added arising from these sectors, again proving that the Member States are moving up the value chain. The progress towards high-education sectors in groups 3 and 4 is broadly similar to that of group 1. However, the development of high-education sectors is progressing on average more slowly in group 2. There thus appears to be room for countries in the lower part, including many countries in group 2, to further develop their high-skill sectors, particularly in service industries.

**FIGURE 3: Change (1999/2007) vs. level (2007) of value added in high-education sectors**




Note: Change in value added share of UK was reduced by a factor of 1.8 to improve the graphical representation. The intersection of the horizontal and the vertical line represents the EU-25.

Source: OECD (STAN), EU KLEMS databases.

### 2.2.2 Trade specialisation and structural change

Regarding trade performance, consider world export market shares in 2009 and their changes compared to 1999 for industry and to 2004 for services.[20]

In total manufacturing, the EU (27 Member States) increased its market share by 2.5 percentage points to 22.1% between 1999 and 2009, while the US and Japan both lost market share, by 6.6 and 4.3 percentage points to 12.2 and 7.6%, respectively. China increased its share of manufacturing exports by 11.2 percentage points to almost 17%, while the other BRIC countries showed slower growth. In terms of trade specialisation, the EU has gained more than 5 percentage points in its market share in exports by technology-driven industries, in which it is now specialised as compared to 1999. Like the US and Japan, the EU has a higher market share in technology-driven industries than in the total. Only mainstream manufacturing industries have an even higher market share, but the dynamics over the time period in question (1999-2009) are much less pronounced. The second-strongest growing area by market share is capital-intensive industries, where the EU is not specialised but might soon be if current trends continue. By contrast, the market share of labour-intensive industries is declining quickly, along with the market share of marketing-driven industries.

The performance of the EU in services sectors has been evaluated over a shorter period 2004-2009. It is less positive given a fall in market share by 1.8 percentage points between 2004

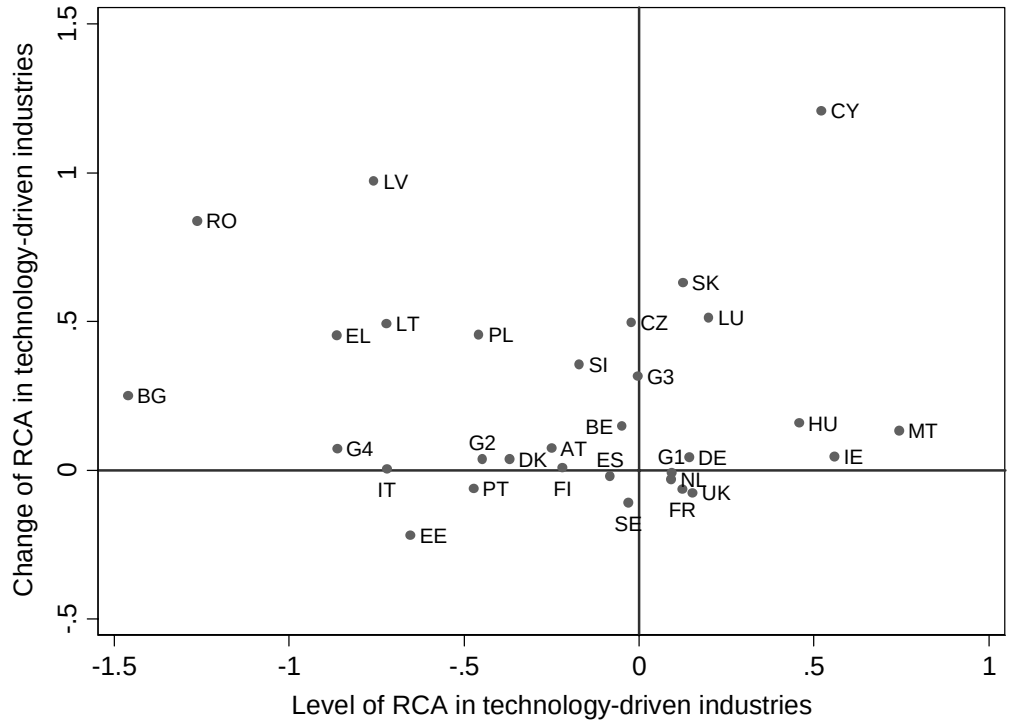
[20] See the Annex for details. Note that detailed service data is not available prior to 2004.

and 2009, as opposed to the moderate decrease observed in the US and in Japan over the same period. In comparison with the latter two countries, the fall in market share is most pronounced for insurance, financial and ICT services, in which the EU holds substantial world market shares.

Overall, the market share developments in services are much more stable than in manufacturing. The EU, the US and Japan have held up their export market shares much better in comparison with the BRIC. China has only 5.8%, with an increase of 1.5 percentage points (about as much as India's market share gain to 4%). China achieved substantial market share only in construction, whereas India has a considerable 35.5% market share in computer services.

A more detailed example of trade shifts in technologically-driven industries using the country groupings can be provided using the revealed comparative advantage indicator21. Figure 4 positions countries and groups according to their revealed comparative advantage in technology-driven industries over the period 1999-200722.
The data show that, in contrast with relative value added, group 3 is improving specialisation in technology-driven industries, while group 1 in the positive and stable category; this relationship is mirrored by group 2 and 4, both in the weak area, with group 4 improving while group 2 is stable. Group 3 thus seems to be well integrated with the supply chains of advanced firms in group 1, as is well known for example in the automobile industry. Group 3 may thus be seen as a form of "China" of the EU. It remains to be seen whether trade specialisation is a predictor of future industry specialisation as measured by value added shares.

**FIGURE 4: Change (1999/2007) and level (2007) of revealed comparative advantage in technology-driven industries**




21 See the Annex for a definition of this indicator.

22 See **TABLE** L in the Annex.

Note: The intersection of the horizontal and vertical line in the origin represents the EU average.
Source: Eurostat (Comext). Includes intra-EU exports.

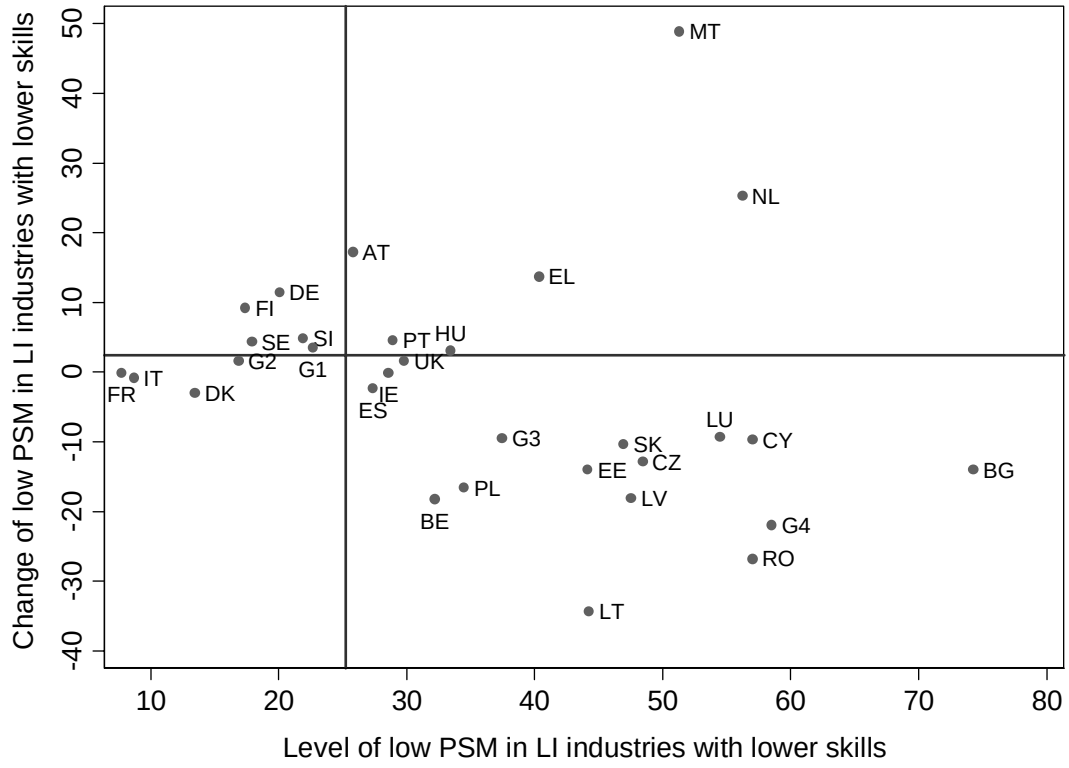
### 2.2.3 Quality content of exports

To look at the quality content of export, prices are taken as a proxy for quality. Figure 5 illustrates the change (1999/2009) and the level (2009) of Member States' share of exports in the low price segment compared to the EU average, on the grounds that this reflects a country performance in terms of its position on the quality ladder and in terms of upgrading over time. A low or declining share in the low price segment may be regarded as an advantageous outcome. Therefore, countries in the bottom left area – level and change values below the EU average – can now be interpreted as being in a strong and improving position.

**FIGURE 5** shows the shares of exports in low-skill and labour-intensive industries. Group 2 is in the strong area, mainly due to the good performance of Italy. Many more countries now display substantial changes in performance revealed by a decline in the share of exports in the low-price segment. This suggests that many countries react to rising competition in labour-intensive industries from low-wage countries by improving the quality of their products. The quality performance in labour-intensive industries also seems to explain how Italy is able to sustain exports in this industry type, and also how Italy achieves relatively high GDP per capita in industrial structures which are poorly associated with firm capabilities. Moreover, even in labour-intensive and low-skill industries, in which Italy is heavily specialised, it seems to be possible to defend competitive advantage in terms of product quality.

More generally, the data are in line with evolutionary theories of the firm, according to which technology or routines developed by firms to achieve product quality cannot be copied that easily by others. A high share of tacit knowledge involved in production – even e.g. in textiles – means that any diffusion of this knowledge is tied to learning by doing, which implies a learning process during production. Such processes usually take time, just like Italian firms have accumulated their routines and recipes for production over decades. Hence, while competitive pressure is certainly rising and the EU is losing market share in labour-intensive industries, the potential for upgrading by EU firms in a variety of sectors and the time it takes for firms from emerging countries to reach the same level of firm capabilities should not be underestimated. Competitiveness can be sustained in traditional structures, on the condition of high quality.

**FIGURE 5: Change (1999/2009) and level (2009) of low price segments in low-skill labour-intensive industries**




Note: Change is expressed in percentage points and level as percentage. The intersection of the horizontal and the vertical line represents the EU 27.

Source: Eurostat (Comext).

## 2.3 Summary of findings

Indicators of structural change, patterns of specialisation and sector upgrading shed light on firm capabilities, prospects for growth and on how to cope with adjustment pressure in the wake of rising competition.

Due to the high level of country heterogeneity within the EU, interpreting simple comparisons between individual countries and the EU average would not necessarily be particularly enlightening. Building country groups that share similar characteristics facilitates considerably the structuring and interpretation of the information in hand. The performance of the country groups is consistent across indicators and in line with theoretical and empirical research on drivers of country competitiveness.

The group of countries with higher GDP/person than the EU average, and with specialisation in technologically advanced sectors (group 1) consists of Belgium, Denmark, Germany, France, Ireland, Netherlands, Austria, Finland, Sweden and the United Kingdom. A key development is that for the years under review the specialisation of this group in technology-driven industries and high education intensity sectors increases further.

The group of countries with higher GDP/person than the EU average, and with specialisation in less technologically advanced sectors (group 2) consists of Greece, Spain, Italy, Cyprus, Luxembourg, and Portugal. A positive trend is a strengthening of its specialisation in sectors

presenting high educational intensity (essentially services), albeit from a low level. However, the shift towards higher education sectors is still too slow relative to the other groups. Moreover, taken as a group, its specialisation in labour intensive industries and low education intensive sectors, its weakness with respect to gaining market share in fast growing emerging markets signal risks of relative decline, at least with respect to the first group of countries.

The group of countries with lower GDP/person than the EU average, and with trade specialisation in technologically-advanced sectors (group 3) consists of the Czech Republic, Hungary, Malta, Poland, Slovakia and Slovenia. This group is similar to group 1 regarding trade specialisation in technology-driven industries. In terms of change, group 3 shows a decline in trade specialisation in labour-intensive industries and similarly strong but opposite trends in technology-driven industries, both in terms of production and in trade. Thus Group 3 looks like shifting towards becoming an. assembly powerhouse for the more technologically advanced countries of group 1.

The group of countries with lower GDP/person than the EU average, and with specialisation in less technologically-advanced sectors (group 4) consists of Bulgaria, Estonia, Latvia, Lithuania and Romania. In terms of specialisation it is very similar to group 2, with which it also shares the strengthening of specialisation in sectors with high educational intensity. But group 4 experiences more positive changes than group 2 as regards industry and trade specialisation in technology-driven industries.

Qualifying to some extent the above considerations, the analysis shows that competitiveness can be sustained in very different industries or sectors; there is not only one industrial structure that is conducive to growth and the creation of more and better jobs. Ultimately, it is the successful transformation of different production factors into innovative or high-quality outputs that determines the competitiveness of firms in developed countries. These processes take time to be established and cannot be copied overnight. However, it is clear that in technologically less advanced industries the task of maintaining competitiveness is harder. Even though in some countries labour-intensive industries produce high product quality, the fact remains that these industries are clearly declining, both in terms of export market share and in terms of shares in national value added. Apart from firm capabilities, structures can also provide information about future growth prospects. These may be linked to knowledge spillover, but may simply arise from trade growth patterns, i.e. international demand for European exports. Technologically advanced industries feature much higher shares in exports to fast growing emerging countries than industries characterised by low innovative activity.

# 3 OVERVIEW OF PROGRESS BY BROAD POLICY AREA

## 3.1 Towards an innovative industry

### 3.1.1 R&D: there is margin for improvement

The EU has achieved research excellence while in terms of R&D intensity it is on the third place behind the US and Japan, largely because of lower private investment. Some of the recently industrialised countries have also increased their research and innovation investments. Within the EU, Denmark, Germany, Finland and Sweden are innovation leaders. This year's Innovation Union Scoreboard[23] concluded that while less innovative Member States grow faster and have been catching up with the more innovative countries, this convergence process seems to be slowing down.

Direct comparisons of R&D expenditures relative to GDP are heavily influenced by the industrial structure of each country and so give a distorted picture, especially business R&D expenditures (BERD). The decomposition of business R&D intensity into a sector effect and a country effect allows for appropriate assessments of the level and change of R&D intensity over time, both showing structural change between sectors and sector upgrading in terms of rising (or falling) R&D intensities.

R&D intensity in a given country is defined as the ratio of R&D expenditure to total value added. In the context of cross-country comparisons this ratio can be analysed as the result of two effects: a "structural" effect measuring aggregate innovation intensity if all business sectors, relative to their value-added, invested in R&D like the cross-country average, and a "country" effect taking account of deviations of country-specific R&D intensities to the cross-country average for all business sectors.

FIGURE 6 shows all EU countries, with the exception of Luxembourg, and a variety of non-EU countries relative to the size of their country and sector effect. Countries above the 45°-line show a positive country effect, meaning that the sum of their sector R&D intensities is above the sector R&D intensities averaged across a set of benchmark of 12 countries at the technology frontier: Japan, the US, Norway; and EU Member States Belgium, Denmark, Germany, France, the Netherlands, Austria, Finland, Sweden and the United Kingdom[24]. The size of the country effect corresponds to the vertical distance between the 45 degree line and the individual countries. If the country effect is below this line, it is negative, meaning that sector R&D intensities are below the average of the benchmark countries.

The sector effect (horizontal distance from the origin) reflects the industrial structures of countries. Group 1 is above the line, while group 2, 3 and 4 are below the line, in principle lending support to the view that structural specialisation is related to innovative ability or at least to the intensity of R&D investment.

At the country level, some countries specialised in knowledge-intensive structures, such as Ireland and Hungary, are well below the line, but some countries featuring less-knowledge intensive structures – e.g. within group 1, Denmark and Austria feature high R&D intensities.

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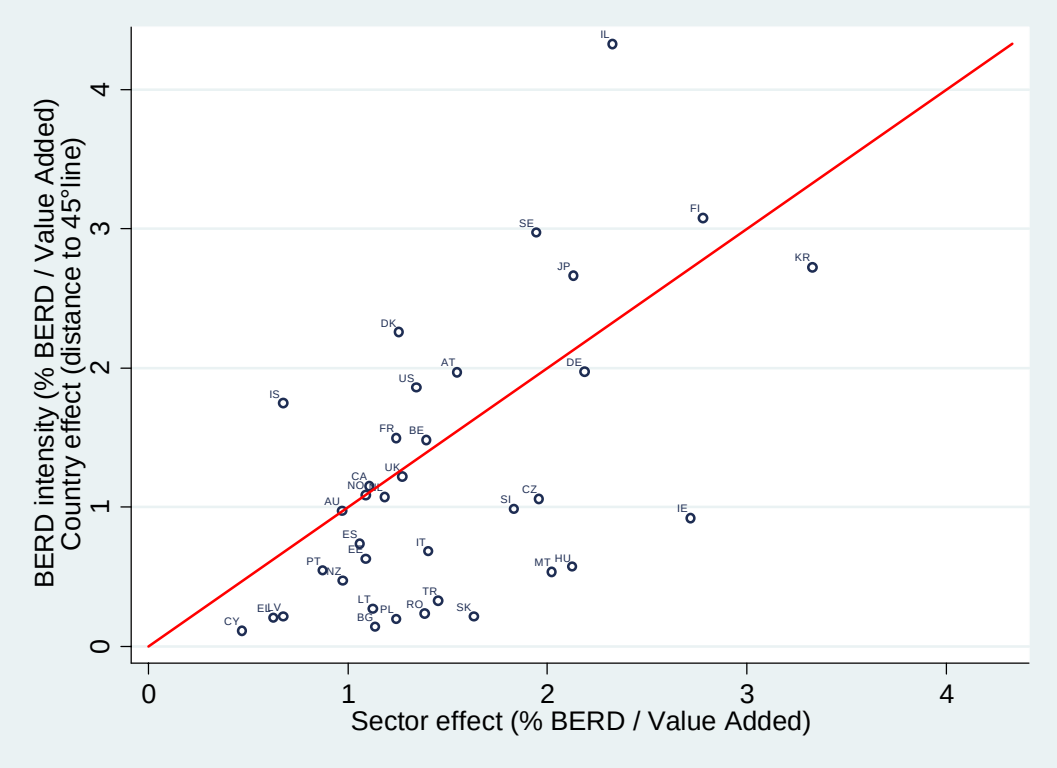
[23] http://www.proinno-europe.eu/inno-metrics/page/innovation-union-scoreboard-2010, page 4

[24] See the Annex and **TABLE** Q for details;

Some countries featuring high sector specialisation in technology driven industries do not seem to have yet reached full potential in R&D intensity (Germany). Again, as with quality indicators, this comes as a qualifier that while industrial structure is an important concept, it is advisable to complement it with indicators measuring structural change within industries, or sector upgrading. The ”within industry“ indicators provide important clues as to why countries with structures which are only poorly associated with advanced firm capabilities and the potential for future growth prospects are able to sustain high incomes per capita, and the other way around – why countries with structures which seem to indicate advanced firm capabilities have not reached a high level of income per capita, an indication that these countries work in less technology intensive value chain segments. Moreover, the Member States at the forefront of innovation, specialising in technology-driven sectors, such as Germany, Ireland or the Netherlands, may need to invest even more in research and innovation than they currently do to maintain their position.

**FIGURE 6: R&D decomposition: country and sector effect 2007**




Source: Eurostat, OECD.

The rest of the section focuses on recent innovation policy developments[25] with particular relevance to the business sector. Analysis on Member State performance regarding innovation and research can be found in recent publications of the European Commission and others[26].

[25] The country reports of the *Innovation Trendchart* available at http://www.proinno-europe.eu/trendchart/annual-country-reports providing detailed information about innovation policies of the Member States. However, as there will be no Trendchart edition in 2011, the innovation sub-section of this report has been expanded.

[26] Innovation Union Scoreboard 2010, http://ec.europa.eu/enterprise/policies/innovation/files/ius/ius-2010_en.pdf, and Innovation Union Competitiveness Report, http://ec.europa.eu/research/innovation-union/pdf/competitiveness-report/2011/iuc2011-full-report.pdf. The OECD Working Group of National Experts on Science and Technology Indicators (NESTI) has developed statistical methodologies for the analysis of science and technology performance.

### 3.1.2 Facilitating private research efforts

Research, development and innovation are key sources of economic and productivity growth with private research deemed orientated towards shorter term results. Many Member States have therefore enacted measures to promote business sector research, in particular tax incentives, grants and credits.

Concerning tax incentives, France has a comprehensive system to support innovation[27] including a tax credit[28] of up to 50% for first time applicants in the first year and 40% in the second year. Portugal has now one of the most competitive tax credit systems for R&D in the EU 27 in place and is expanding it further. Denmark provides tax deductions for R&D expenditures and subsidises R&D by SMEs. Italy has also tax credits for companies financing research projects in universities. Austria, Belgium and Ireland have extended their R&D tax incentives, while Finland and the Czech Republic are planning to introduce them. The Netherlands is cutting subsidies and transforming them into generic tax deductions, especially for R&D wages and R&D based profits. The United Kingdom is reviewing its R&D tax credit scheme.

All Member States are encouraging closer cooperation between academia and enterprises, with some new developments: Malta even plans to only fund projects involving at least one commercial actor. Sweden, Slovenia and Latvia have set up further competence centres to bridge the gap between companies and academic research. Innovation vouchers for enterprises to buy services from R&D providers are an increasingly popular policy measure. For instance Estonia, Slovenia, Portugal, Greece and Lithuania and two regions in the Czech Republic recently introduced them.

### 3.1.3 Promoting technology development and diffusion

Key enabling technologies, e.g. micro and nano-electronics, advanced materials, nanotechnology, industrial biotechnology, photonics and advanced manufacturing systems are the basis for future competitiveness of EU industry[29]. Several Member States are promoting such technologies explicitly, while others set up functionally similar programmes: Germany adopted a new high-tech strategy until 2020 while Estonia has set up a loan scheme. France invests heavily in digital infrastructures, while Sweden, Italy, Portugal and Slovenia promote high-tech projects. Lithuania incentivises technology investment by tax relief, Greece by grants but is moving towards tax reliefs as well. Going a step further, the United Kingdom adopted a new key technologies strategy.

Some countries pursue active cluster policies to promote regional links between academia, enterprises, banks and policy-makers, for instance Denmark, France, Germany, Poland, Sweden and all regions in Belgium. Lithuania has adopted an ambitious programme with significant funding while Malta aims for ”smart specialisation“. Italy promotes cooperation among companies and Greece has published a first call for expression of interest in clusters. But more could be done in line with the Innovation Union Communication[30]. The

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27 http://www.oseo.fr/votre_projet/innovation/aides_et_financements

28 http://www.oseo.fr/votre_projet/creation/guides_de_la_creation/credit_d_impot_recherche_cir

29 See the report of the High Level Expert Group on Key Enabling Technologies and its policy recommendations http://ec.europa.eu/enterprise/sectors/ict/files/kets/hlg_report_final_en.pdf

30 http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=intro

development of clusters and networks can be supported through smart specialisation strategies, with the assistance of the EU Regional Policy[31].

Eco-innovation programmes aimed at greening the economy are spreading quickly. For instance, Germany extended a sustainable energy research programme, Denmark set up a ”renewal fund“ for green technologies in SMEs, and Italy has introduced incentives for sustainable energy production. France and Belgium shifted considerable funding towards clusters for environmental technologies.

Several Member States have set up ambitious programmes to use public procurement better as a tool to promote innovation: The United Kingdom is extending its Small Business Innovation Research programme. Spain has recently adopted a package of measures in order to promote innovative public procurement. Pre-commercial procurement is being introduced in Cyprus, while Slovenia intends to use conventional public procurement better for innovation.

### 3.1.4 Unlocking the transformative power of service innovation

The boundaries between manufacturing and services are increasingly blurring and service innovation can have a transformative power to change value chain, sectors and markets. Service innovation is now recognised by an increasing number of Member States as element of innovation policy that reaches beyond manufacturing enterprises. Service innovation can contribute to smart, sustainable and inclusive growth with profound effects on industrial value chains. Examples include amongst others public-private partnerships for efficient logistics in Germany, real-time vessel fuel consumption optimisation services in Finland and initiatives to innovate tourism and hospitality service in the Czech Republic and Slovenia through bundling, support services and regional competitions.[32]

If service innovation escapes the logic of conventional R&D projects and rather occurs through experimental interaction with users and potential clients, policies to foster service innovation require such ‘experimentation environments’. It is recognised that the model regions for e-mobility in Germany and demonstrator projects for healthcare services in the UK integrate such aspects. It can therefore be observed that Member States have started to use service innovation to address societal challenges. However, the transformative power of service innovation is not yet exploited at a policy level in all Member States.

### 3.1.5 Improving skills for innovation

Technological and industrial changes are increasing demand for people with high and intermediate levels of skills[33]. Excellence in management, research, engineering and science needs to be accompanied by a broader skills base (including team work, creativity, and design). A better trained and more entrepreneurial workforce is crucial to ensure that enterprises can benefit from new technologies and develop innovative products, but also innovative process and work organisation.

Some Member States have started to experience skills gaps, partly related to a decrease in the working age population due to decreasing birth rates over the last decades and emigration of

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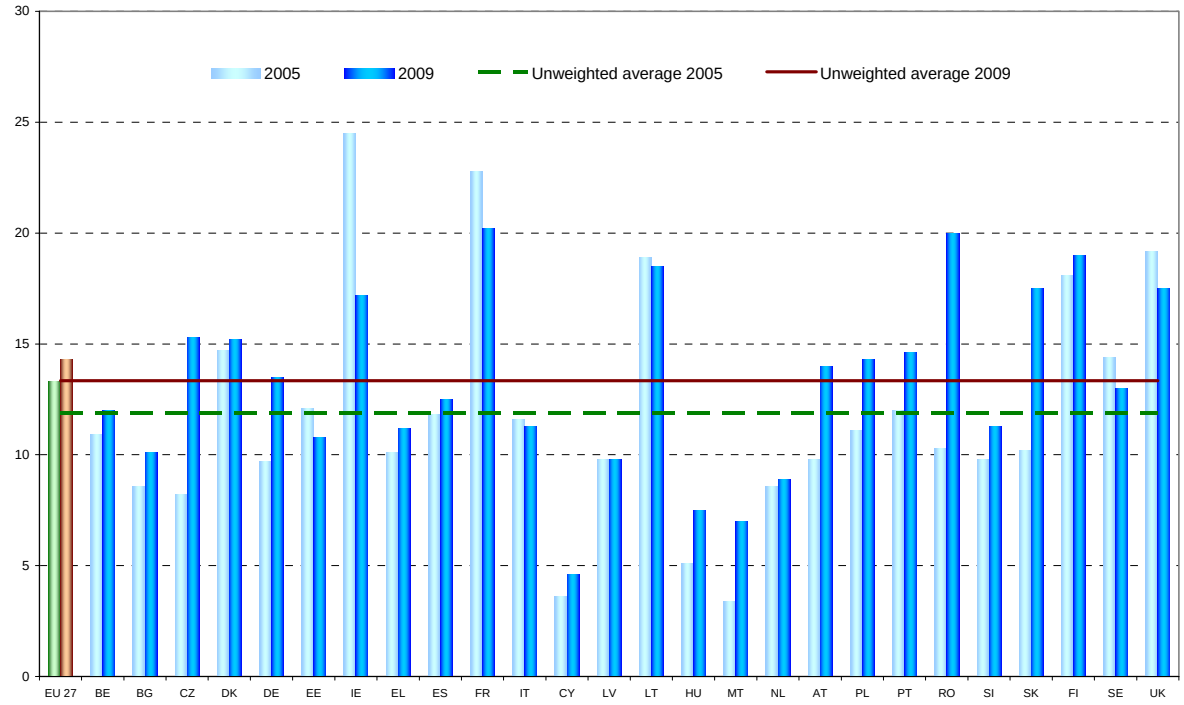
31 "Smart Specialisation Platform": http://ipts.jrc.ec.europa.eu/activities/research-and-innovation/s3platform.cfm

32 Expert Panel on Service Innovation in the EU, http://www.europe-innova.eu/web/guest/innovation-in-services/expert-panel/about

33 Cedefop (2011), "What next for skills on the European labour market?", Briefing note

well-qualified persons . This issue is likely to become more important in the future. However, progress is slow. For instance, most Member States have a low share of graduates in science, technology and engineering (FIGURE 7), but only a few have taken ambitious action. The positive examples include Germany, which is rewarding the excellence of universities, the Czech Republic which will provide grants to attract more students to science, technology and engineering studies and Finland plans to extend a distinguished professor programme. Luxembourg liberalised immigration rules for researchers and provides grants for PhD and post-docs of all nationalities whereas Estonia has announced plans for tax deductions for work-related studies of enterprises' employees.

**FIGURE 7: Tertiary graduates in science and technology per 1000 of population aged 20-29**




Note: Latest available data for Greece and Italy are from 2008 instead of 2009.

Source: Eurostat, 2011.

Innovation management has been identified as a further bottleneck for innovation in many enterprises. Some Member States have therefore set up advisory services. Ireland is stepping up cooperation between enterprises and higher education institutions to increase the managerial capacity. Malta plans to provide advice on innovation management. Innovation in workplace organisation is also receiving increased attention, but only few Member States have put an emphasis on it, for instance the Netherlands and Belgium.

### 3.1.6 Good governance in the area of innovation policy

Many Member States have improved the governance of their innovation system. However, further steps to better monitor and evaluate policy impacts are needed.

With regard to evaluation, a recent study concluded: «An evidence-based approach to

informed agenda setting and policy adjustments is relatively weak in many EU countries. Evaluations, benchmarking, foresight studies, etc. are not as frequent and generalised as might be expected. One argument may be that there is reluctance to spend scarce resources on intelligence gathering, another that there is an inherent reluctance to be evaluated and a third is a belief that internal knowledge is sufficient.[34]

In fact, there is evidence that the practice of evaluation is progressing. Austria has evaluated its innovation system recently while Finland has performed an extensive international evaluation of its innovation system in 2009 and is planning further evaluations of its strategic centres for science, technology and innovation. France plans to evaluate of its clusters policy in 2012 and of its research tax credit programme in 2013. The Netherlands has performed several evaluations of its R&D wage tax deduction scheme and innovation vouchers. Italy has developed a national research programme which has a potential to improve evaluation and to simplify funding instruments. Poland has started to evaluate its innovation policies. Romania and Greece have committed under their Memoranda of Understanding to monitor and evaluate its innovation policy. Slovakia is planning an external audit on the institutional aspects of its innovation system and the Czech Republic is already in the process of an international audit.

Policy fragmentation due to overlapping programmes, unclear competences of public bodies and lack of an overall strategy to promote innovation has been identified as a challenge in many Member States over the last few years. However, there have been a number of positive steps taken to improve governance and overcome policy fragmentation. Denmark has adopted a new strategy in 2010 and had good results from reducing the number of funding programmes but increasing the funding level. Austria has adopted a new comprehensive innovation strategy in 2011. Spain has a new strategy for innovation in place and plans to revise its science and innovation law, putting the emphasis also on structural factors, not just on funding levels. Slovenia has adopted a new Research and Innovation Strategy in March 2011 for the next 10 years with an increase in public investments in R&D and an increased autonomy of scientific research institutions. Poland is planning to reform its innovation strategy on the basis of ongoing evaluations. Sweden is also planning a reform, to make its strategy more coherent and reduce overlaps and gaps between funding programmes. France has adopted a new national strategy for research and innovation. Lithuania has a new strategy 2010-2020 in place which seems to address the main challenges. Portugal has started preparations for a new comprehensive innovation strategy until 2020. Governance will also be addressed in the new strategy planned in Cyprus.

Some other countries are moving in a similar direction: Finland is reforming its rather fragmented innovation system and Hungary is reforming its innovation system further. Slovakia is merging institutes and promotes specialisation to rationalise the innovation system, but policy coordination is still a weakness.

Stakeholder involvement has been recognised as an important success factor in public and private innovation governance systems.[35] However, only for Austria, Portugal, Italy and Malta consultations have been explicitly mentioned.

In this context, there is some evidence that improving the business environment for start-ups, reduction of administrative burden, SME policy and entrepreneurship can be more useful for

[34] Innovation Trendchart European Progress Report 2009, published in January 2010, page 11

[35] Innovation Trendchart European Progress Report 2009, published in January 2010, page 11

fostering innovation than fine-tuning innovation subsidies or increasing tax incentives for private R&D expenditure.[36] In this regard, it is interesting to note that Switzerland grants no specific innovation subsidies to profit-oriented enterprises, but scores very well according to the key innovation surveys. However, it provides an excellent business environment, a good education and research system and a well-functioning public administration.

Last year's report referred to the risk of a widening innovation gap between EU Member States due to the diverging way in which they have reacted to the financial and economic crisis, with innovation leaders addressing the challenges of the crisis proactively while innovation followers likely to cap or reduce their funding and support for R&D.

This year's Innovation Union Scoreboard came to a more differentiated conclusion: "There continues to be a steady convergence, where less innovative Member States have – on average – been growing faster than the more innovative Member States. This convergence process however seems to be slowing down […]. While the Moderate and Modest innovators clearly catch-up to the higher performance level of both the Innovation leaders and Innovation followers, there is no convergence between the different Member States within these 2 lower performance groups".[37] It should be noted, however, that the full impact of the crisis may still be underestimated because of a lag in data availability. The positive news is that, as evidenced in the previous section, individual governments can embark on ambitious policies regardless of their rank in the Innovation Scoreboard – if they have the political will.

## 3.2 Towards a sustainable industry

Decoupling economic growth from natural resources usage is a major societal challenge and the related policies – regulation and/or incentive schemes – have direct implications for the business sector, particularly industry. At the same time, change brings about opportunities and building up strongholds and first mover advantages in environmental as well as new and innovative goods and services is a strategic challenge, associated to the need for dealing with progressive scarcity of resources and resources' price volatility[38].

Overall, the path towards sustainable ways of production requires a stable policy framework, providing for short- and long-term incentives to encourage market creation, and addressing the whole value chain, including recycling.

### 3.2.1 Energy consumption

Particular emphasis in this context should be put to energy consumption as improvements in energy efficiency directly translate into widespread benefits for the whole economy and help in achieving ambitious climate and environmental goals. Energy savings means indeed energy-related costs savings; reduced $CO_2$ and other greenhouse gas emissions; increased energy and resources security (by reducing import dependency); improved industrial competitiveness on a world-wide scale, therefore, ultimately it represents a fundamental way for delivering growth and jobs.

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36 See Bronzini and Iachini (2011) on the risk of deadweight loss. (Raffaello Bronzini/Eleonora Iachini: Are incentives for R&D effective? Evidence from a regression discontinuity approach, Banca d'Italia Working Papers, Number 791, February 2011)

37 http://www.proinno-europe.eu/inno-metrics/page/innovation-union-scoreboard-2010, page 4

38 By mainly referring to a MS perspective, the present section does not deal with non-energy raw materials and strategic natural resources. For a focus on such important issues at EU industry level, please refer to the related sections in the European Competitiveness Report 2011.

For the EU 27 as a whole, final energy consumption in industry (including construction)[39] decreased by more than 18 % between 1995 and 2009, compared to increases of about 22 %, 23 % and 5 % recorded over the same period in the transport (mainly pulled by road transport and aviation), services and residential sectors, respectively. As a consequence, the share of industry in total final energy consumption dropped from 30.7 % to 24.2 %, while transport, residential and the services sectors absorbed 33 %, 26.5 % and 12.6 %, respectively, of final energy demand in 2009. It must be noted, however, that the recent financial and economic crisis contributed decisively to this result.

### 3.2.2 Energy intensity

Energy intensity[40] in EU 27 industry decreased by 27.5 % between 1995 and 2009, indicating an absolute decoupling[41] as the result of absolute energy savings combined with an increase in value added. In this respect, it can be noted that the financial and economic crisis has only reinforced a positive trend, already operating before 2007. Over the last decades, industry in the EU has indeed clearly improved its overall energy performance, as the combination of positive results in most of the individual sectors, although some unexploited margins for further improvements persist, as well as the great variety of conditions at the level of Member States.

**FIGURE 8** below illustrates the wide variety of Member State performance in terms of energy efficiency[42] in industry and energy. A striking development concerns the rapid convergence of the twelve Member States that joined in 2004 to the older Member States. Estonia, Romania, Poland, Bulgaria, Slovakia and Czech Republic have all reduced their energy intensity by more than 50 % over the period up to 2009 (64.5%, 63.3% and 62.5%, respectively for the first three countries), compared to a decrease of about 21 % for the 27 EU countries as a whole. Results well above the EU average were also registered for Ireland, Luxembourg, Sweden, Finland and France.

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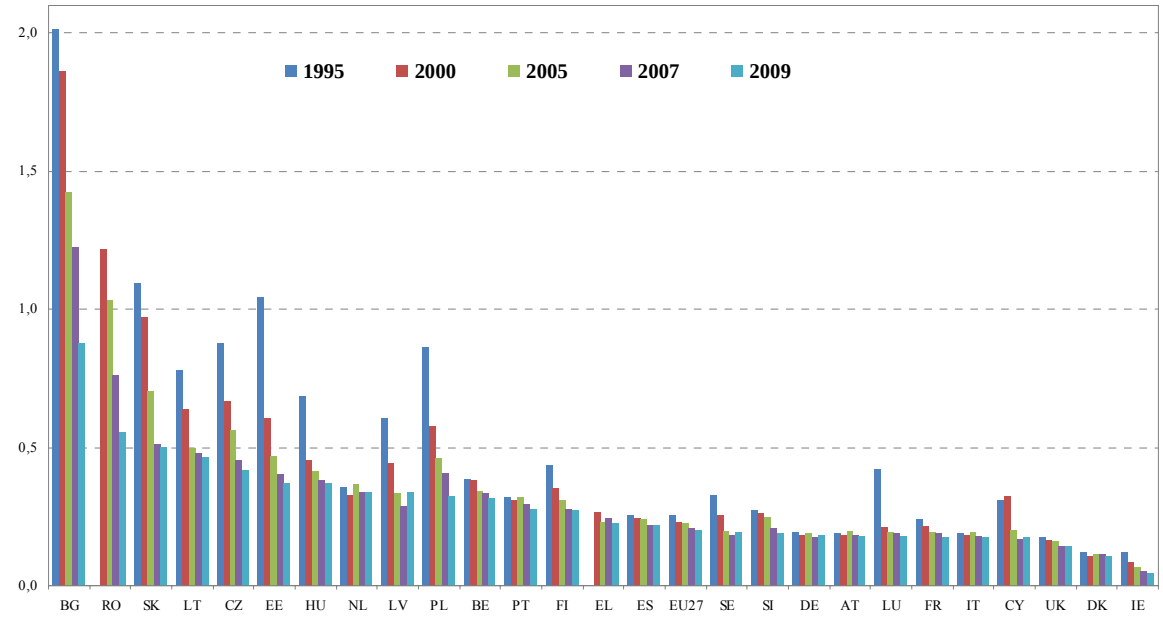
39 If not otherwise specified, the definition of industry used always includes the construction sector.

40 For ease of comparability between sectors and countries, energy intensity is here measured as the ratio between energy consumption and gross value added and is measured as kg of oil equivalent per euro.

41 An important distinction needs to be made between the two concepts of relative and absolute decoupling which, while both indicating a positive development in terms of performance, imply different paths of sustainability. In particular, the concept of either energy or carbon efficiency (as measured by intensity indicators) refers to the use of less energy inputs, or to the generation of less emissions, associated to an equivalent level of economic activity, therefore signaling relative decoupling. Absolute decoupling occurs when energy or CO2 savings in absolute terms are associated to increased level of outputs. Therefore, it can be stressed that gains in efficiency do not automatically translate into a reduction of overall energy consumption or emissions (the so-called rebound effect, that is, an increase in demand triggered by lower costs) and that important implications stem from the need to induce behavioral changes in production and consumption activities.

42 Due to data availability and to the specific structure of the Eurostat databases on energy and national accounts as well as of European Economic Area greenhouse gas inventories, the indicators of energy and carbon intensity calculated in the present report with regards to Member States have been built in order to include a broader, still consistent definition of industry and provide information for all countries (with the exception of Malta) and the most recent available year. In particular: energy intensity calculations refer to final energy consumption in industry (including construction), final non-energy consumption (i.e. for chemical reduction activities) as well as to consumption in the energy sector. On the other hand, the carbon intensity indicator refers to CO2 emissions in industry (including construction), from industrial processes and from solvent and other product use in industry as well as CO2 emissions from energy industries. Both aggregates (energy consumption and emissions) have been then put into relation with consistent gross value added data at constant price (2000 as the reference year).

**FIGURE 8: Energy intensity in industry and the energy sector**




*Notes*: Includes construction and final non-energy consumption. Measured in kilogrammes of oil equivalents per euro gross value added (reference year 2000). Due to lack of data on gross value added, for Greece and Romania only the periods 2000-2009 and 1996-2009, respectively, could be covered by the analysis on energy intensity. No data were available for Malta.
Source: Calculations based on Eurostat data. Countries are sorted by the level of energy intensity in 2009.

Overall, all countries have attained improvements in their energy performance by reducing energy intensity over the period 1995-2009. Again, the recent crisis has certainly had an impact on results but mainly it has reinforced a positive trend already in place. By 2009, 17 Member States have achieved absolute decoupling[43], that is, an absolute decrease in energy consumption combined to an increase in activity levels, while the remaining ones have recorded relative decoupling.

A closer look at data for 2008 and 2009, indicates that for some countries (Belgium, Ireland, Latvia, Portugal and Slovakia) the decrease in activity levels brought about by the crisis has been decisive for the positive results in terms of absolute decoupling, although relative decoupling was already registered up to 2007. On the other hand, for four countries (Germany, Cyprus, Latvia and Sweden) a strong decrease in gross value added between 2007 and 2009 was associated to an increase in energy intensity.

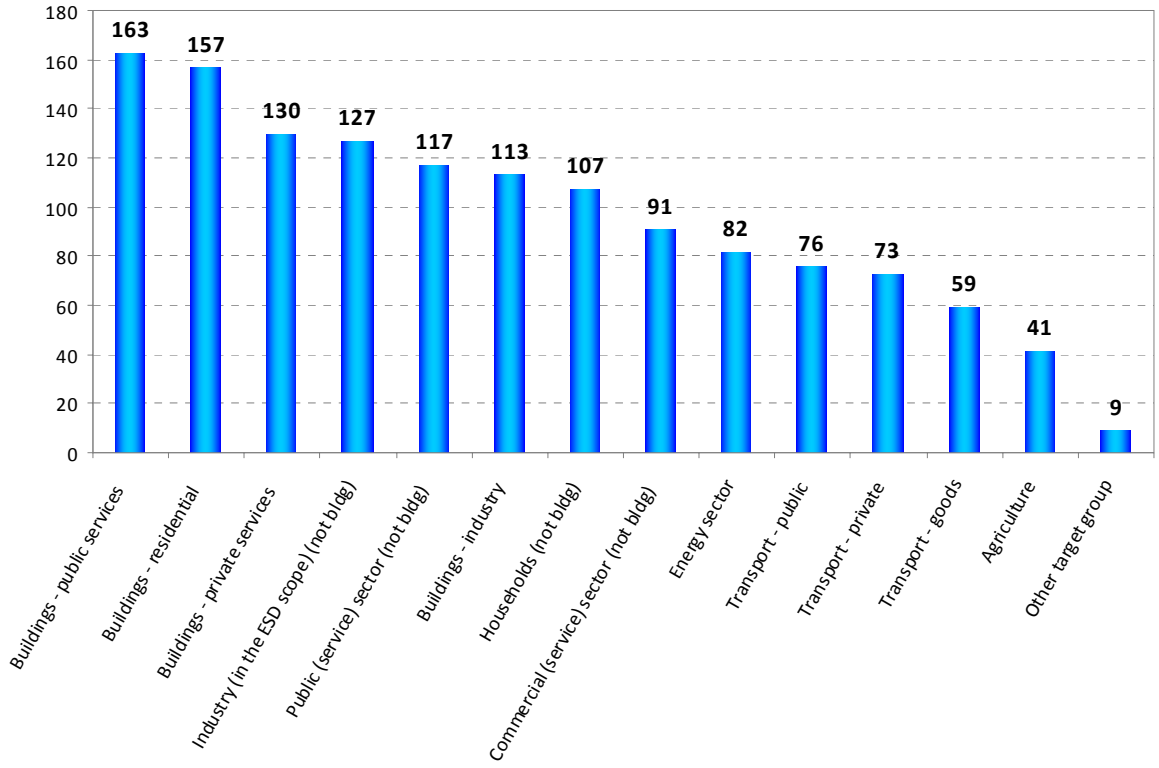
In most cases, the assessment of recent policy developments in Member States in the field of industry's energy efficiency does not reveal major strategic changes, in line with the fact that national policy frameworks up to 2010 were already set under the first National Energy Efficiency Action Plans (NEEAPs). Rather, efforts at country level have mainly concerned the implementation of already planned measures as well as the assessment of results in view of the submission of NEEAPs 2011-2014.

43 Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Ireland, Greece, France, Cyprus, Latvia, Luxembourg, Hungary, Poland, Portugal, Romania, Slovakia, and Sweden.

Member States showed a different pace in the implementation of the highly differentiated set of actions which constitutes the core of their strategies, according to a great variety of national framework conditions and level of ambitions. Overall, although on a different scale and with wide-ranging results, almost all Member States have implemented some sort of grant and support schemes for improving sustainability and energy efficiency in industry, in most cases accompanied by energy audit schemes.

From a sector-wide perspective, the analysis of the responses provided by Member States to a specific questionnaire at the end of 2010[44], showed that most of the national measures so far implemented under the NEEAPs have targeted energy performance in buildings (public and private services as well as residential), energy services and the simultaneous generation of heat and power. At the same time, despite the fact that not all countries have focused on each of the remaining sectors (tertiary, industry and transport), measures oriented towards the promotion of energy efficiency and savings in industry (outside the scope of the EU Emissions Trading System) and industrial buildings have also been the focus of specific attention and implementation efforts (**FIGURE 9**).

**FIGURE 9: Total number of energy efficiency measures in the Member States**




*Source*: Commission Staff Working Paper, *National Energy Efficiency Action Plans (NEEAPs)*: update on implementation, SEC (2011) 276 final.

With regards to industry, it is important to note that it has not been the object of any direct priority measures in the framework of the EU Energy Efficiency Action Plan 2006. In fact, many industrial installations (in particular, the most energy intensive ones) are already subject to provisions implemented under the EU Emissions Trading System, aiming at reducing carbon emissions. Therefore, besides the natural vocation of industry towards reducing costs and exploiting solutions for increasing competitiveness (including recourse to energy

[44] Commission Staff Working Paper, National Energy Efficiency Action Plans (NEEAPs): update on implementation, SEC(2011) 276 final.

efficiency), the cap-and-trade system has introduced a market based mechanism for pursuing a reduced (more rational) use of energy sources.

Though industry is the part of the economy which has attained the biggest improvements in energy efficiency over the past decades, according to recent projections[45] a cost-effective potential for further increasing energy savings (estimated at 3 % of GDP) still remains unexploited and will not be reaped by 2020 if additional measures are not implemented on top of the current scenario represented by NEEAPs.

In particular, room for action is envisaged with regards to SMEs, for which lack of information, insufficient price signals and lack of financial resources and expertise all represent major obstacles to significant improvements in energy performance[46].

Overall, the positive developments attained so far by some Member States in defining and implementing a consistent legislative framework for stimulating energy efficiency and savings in the economy, contrast with clear difficulties experienced by others for which lack of experience and adequate administrative capacity proved to be major obstacles. Especially with regards to the latter group of countries, it is then evident the key role played by a consistent advancement in framework legislation at the EU level, providing for clear guidance and support. This holds particularly true when considering that for many Member States the submission of the first NEEAPs represented the very first attempt to define a strategy addressing energy efficiency in a comprehensive way.

In particular, a field of action which still needs specific attention and improvement is the implementation of consistent monitoring systems at national level, as a priority for assessing progresses towards commitments and inspire the adoption of effective solutions. In this respect, particular attention should be paid to limit the compliance burden on business and industry through minimising as much as possible enforcement and compliance costs arising from the regulatory framework.

### 3.2.3 Carbon intensity

In terms of carbon intensity[47], significant improvements have been achieved in all countries and, in particular, in most of the EU-12 Member States which, as already signalled for energy efficiency, have undergone a virtuous path towards progressive reduction of the gap with the EU-15 average, although the process is clearly not yet completed (**FIGURE 10**).

Over the period examined, almost all Member States have recorded absolute decoupling in industry, by reducing the total amount of $CO_2$ emissions while experiencing a growth in the value added of industry and the energy sector. The remaining countries have however still recorded relative decoupling, either because of absolute $CO_2$ emissions increasing at a lower pace than GVA (Spain and Austria) or due to $CO_2$ emissions reduction well above the contraction registered in value added, (UK, Italy and Germany). The only exception is represented by Cyprus, for which $CO_2$ intensity increased between 1995 and 2009.

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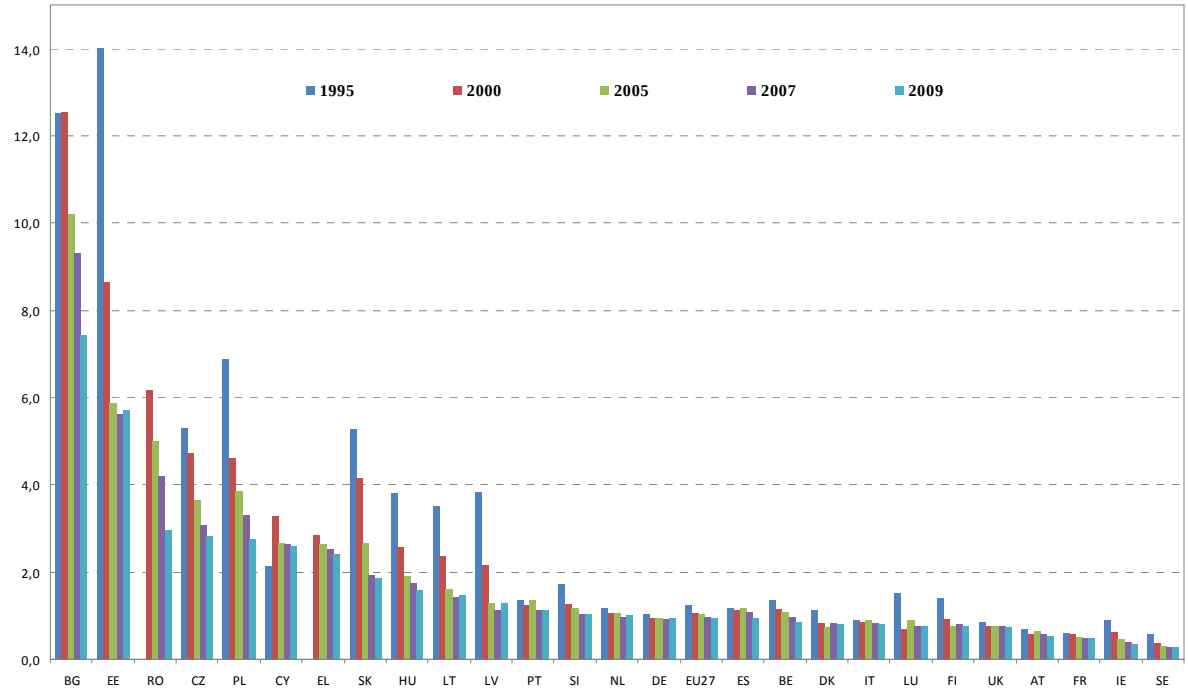
45 See footnote 23 above.

46 As reported in SEC(2011) 277 final, p. 10: "For some industry sectors, with the right technology and support, could make energy savings of around 20%. By changing certain production processes, energy savings of 30% and even up to 65% can be obtained".

47 See note 21.

**FIGURE 10: $CO_2$ intensity in industry (including construction, process emissions and solvent and other product use) and the energy sector, kg $CO_2$ per euro gross value added (reference year 2000)**




*Note*: Due to lack of data on gross value added, for Greece and Romania only the periods 2000-2009 and 1996-2009, respectively, could be covered by the analysis on $CO_2$ intensity. No data was available for Malta.
Source: Calculations based on Eurostat data. Countries are sorted by the level of $CO_2$ intensity in 2009.

### 3.2.4 Development of environmental industries

The development of eco-industries[48] inside the EU represents a key factor towards reaching the ambitious climate change and environmental targets set at the Union's level, by ensuring the availability of the wide range of goods and services needed for greening the economy while sustaining job creation and innovation. At the same time, it also implies great business opportunities and the possibility to strengthen the EU competitiveness on a world-wide scale.

All these aspects may be captured to a certain extent by the analysis of the share of environmental goods over the total flows of exports of goods. In 2010, such share for the EU 27[49] amounted to 0.76%, representing a significant increase compared to 2005 (0.28 %). The result can certainly be considered as extremely positive, although the situation remains highly differentiated at Member State level.

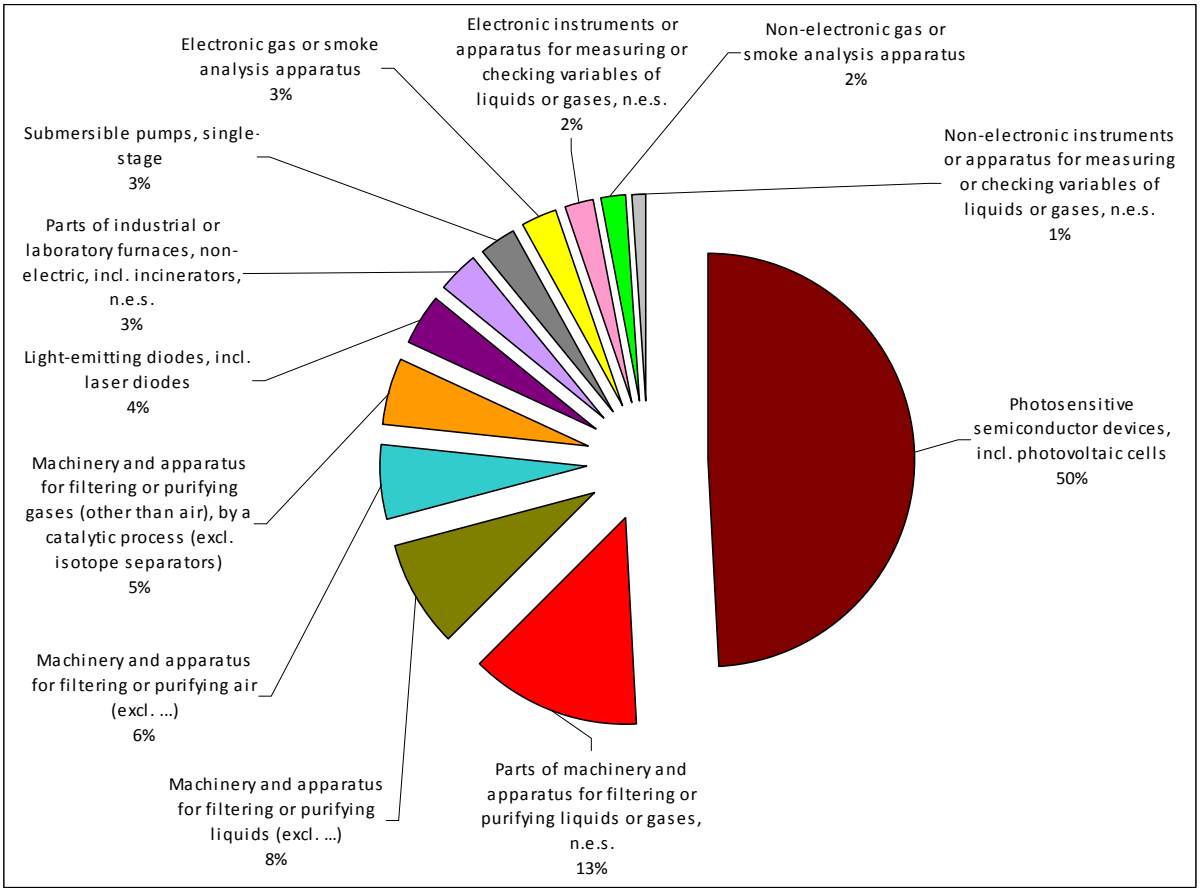
**FIGURE 11** reports the composition of environmental goods exports in 2010, when the group "photosensitive semiconductor devices, incl. photovoltaic cells" represented almost half of the total value, compared to less than 25 % in 2005. This is in line with the leadership achieved by the EU (and some of its countries in particular) at world level. An important share of exports is then absorbed by the groups of "machinery" or "parts of machinery for

48 The notion of "eco-industry" refers to sectors whose products measure, prevent, limit, minimize or correct environmental damage. The trade codes considered to cover eco-industry goods are those identified in the Ecorys study on the "Competitiveness of the EU eco-industry" (pages 190/191) of 22 October 2009, carried out for DG ENTR.

49 For the EU as a whole, the share was calculated by taking into account both intra- and extra-EU27 exports.

filtering/purifying liquids, air and gases, which all registered sustained growth rates over the five years examined.

**FIGURE 11: Composition of intra- and extra-EU 27 exports of environmental goods, 2010 (volumes)**




*Source*: Eurostat COMEXT.

Measures in favour of the development of environmental industries take various forms. Financial support to green innovation and environmental industries has been actively pursued by several Member States, such as Germany, Denmark, Finland, Ireland, Sweden, France and Portugal.

Concrete measures of a more sectoral nature have been taken by Germany ('Electro-Mobility' initiative adopted in 2011), Estonia, Portugal (MOBLE programme) and Spain (in the framework of the recent 2010 Industrial Action Plan) in designing strategies for the development of the market for electrical vehicles and related infrastructures, accompanied by demand side measures and setting of specific targets. In the same field of electro-mobility, also Romania has started preliminary discussions at ministerial level for implementation of ad hoc interventions.

An interesting and innovative action has been announced by the UK for supporting access to finance for green projects: the establishment of a dedicated green investment banks is indeed planned, by 2012 and with a provision of £ 3 billion as initial funding.

Specific attention towards SMEs and the need to foster the integration of environmentally compatible solutions in their business models can be signalled in Ireland, Lithuania and Greece where financial support schemes have been put in place also via the use of structural funds. In Austria, more focus has been devoted instead to the provision of energy efficiency consulting services to SMEs.

Green public procurement is gaining in momentum throughout Europe. A majority of Member States (21) have adopted specific national action plan on green public procurement or sustainable public procurement, which outline a variety of national actions and support measures. Most have set targets for green public procurement, either in terms of overall procurement, for different levels of public procuring entities or for individual product/service groups. Although the use of green public procurement criteria between and within Member States has been uneven, significant progress was achieved in all Member States in the last three years. Denmark, Germany, the Netherlands, Austria, Finland, Sweden, and the UK stand out as front-runners on green public procurement, with reaching on average over 50% of green purchasing contracts in ten priority product groups and services. These Member States have well defined green public procurement schemes, have developed their own criteria and made proactive capacity-building efforts. Belgium, France, Cyprus, Portugal and in particular some regions in Italy and Spain are also fairly advanced, with well-established and elaborate approaches to green public procurement. Progress has been achieved also by the rest of the EU countries, although they appear to fall noticeably behind the front-runners in terms of the communication, levels of support, uptake and institutionalisation of green public procurement.

Finally, an important development in 2010 is certainly represented by the design and submission by Members States of National Renewable Energy Action Plans, according to provisions set out by the EU Renewable Energy Directive (2009/28/EC) and providing detailed indication of the path to be followed in order to meet the legally binding 2020 national targets.

Besides the essential contribution of an increased use of renewable energy sources towards reaching environmental and climate targets, the promotion of renewable energy sources and the encouragement of bio-based products positively imply targeted support in favour of eco-innovation and environmental industries, while also contributing to the objective of increased energy security. At the same time, provided that a great majority of Member States has already implemented concrete actions in this field (mainly by adopting feed-in tariffs and subsidies schemes), particular attention should be paid to the rationalisation of national energy markets and to avoid further distortions in energy prices, as they have been registered in a number of Member States in recent years and which negatively affect final consumers, particularly SMEs.

In 2011, Germany decided on far-reaching changes in its energy policy, including a gradual phasing-out of nuclear energy production until 2022; measures to accelerate grid expansion and a more market-based development of renewable energies. Such a major strategic change could certainly further stimulate the demand for environmental technologies and services. At the same time, possible side effects should be carefully analysed and properly anticipated in terms of the expected evolution in energy prices and availability, in particular for industry, not only in Germany but in all neighbouring countries.

### 3.3 The business environment

An open, efficient and competitive business environment provides opportunities and incentives to improve performance throughout an economy and across borders by reducing unnecessary costs for enterprises and promoting business activity. Also, studies on the effects of foreign direct investment suggest that its contribution is most significant when domestic capability is high[50]. Capability is understood as a function of human capital, of the state of infrastructure, and of the institutional framework in which enterprises operate in the market.

According to the Ernst & Young Survey of 2011[51], the EU remains the largest regional destination for foreign direct investment[52], with a quarter of all consumption and investment taking place within its expanding borders. This remains a formidable advantage, but the EU must continue investing in its potential to lead by innovation and entrepreneurship in an increasing competitive world. Despite progress made over the last decade in the EU business environment, further improvements can still be achieved in terms of the quality of infrastructure, quality of legislation and the modernisation of public administrations.

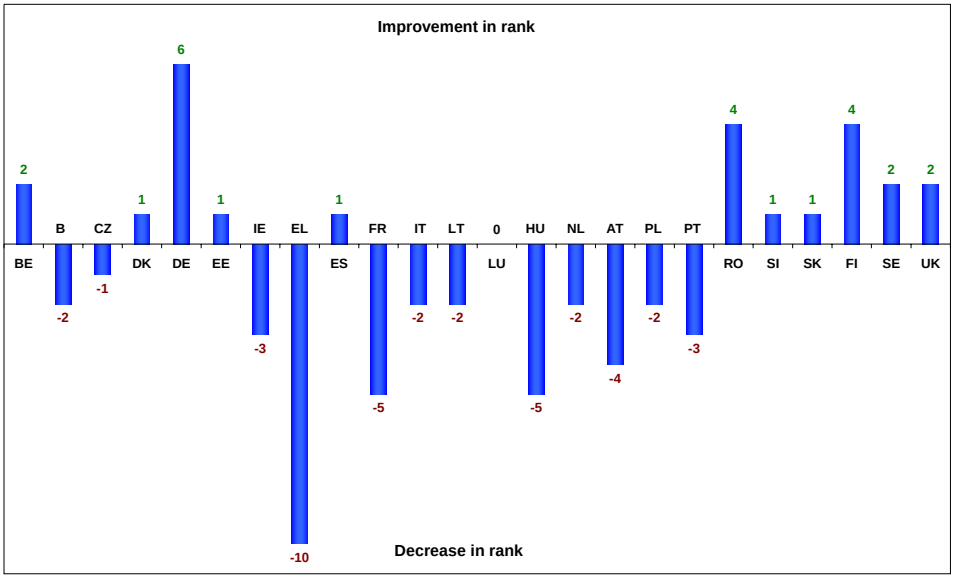
Indeed, the international rankings measuring the legal and regulatory framework for businesses like IMD competitiveness index, the World Economic Forum Global Competitiveness Report or World Bank Doing Business (see **FIGURE 12** and **FIGURE 13** below) show how half of the EU Member States included in the ranking have slid down since the previous year. This does not necessarily mean that the business environment has worsened in absolute terms in those Member States but rather that other countries in the world have progressed much faster in the improvement of theirs.

50 World Bank 2001, Building Coalitions for Effective Development Finance, Washington DC.

51 Ernst & Young: Restart, European Attractiveness Survey 2011, http://www.ey.com/Publication/vwLUAssets/Europe_attractiveness_2011_web_resolution/$FILE/Europe_attractiveness_2011_web_resolution.pdf .

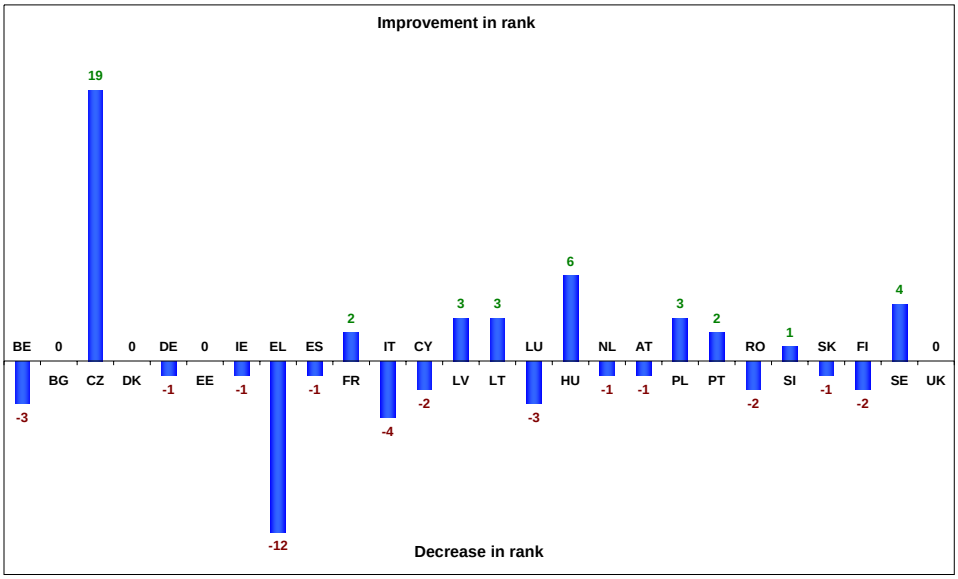
52 The United States, Germany and the UK remain the leading source countries for FDI projects in Europe. China and India provide 6% of all FDI projects in Europe, unchanged year on year, but fewer of the new jobs.

**FIGURE 12: Changes in rank of the IMD competitiveness index 2010-2011.**




*Source* IMD.

**FIGURE 13: Changes in rank of ease of doing business 2010-2011**




*Source*: World Bank.

### 3.3.1 Infrastructure

The quality and availability of both transport and energy infrastructure varies significantly across Member States. Effective transport systems are important for the EU companies' ability to compete inside the EU and in the world economy. Improvement of transport infrastructure is a major challenge in the new Member States and transport systems in rural areas is a general challenge throughout the whole EU. With the support of the Structural Funds, some of those Member States (e.g. Bulgaria, Estonia) have started important investments of

modernisation. The Commission has outlined recently a plan with 40 initiatives to upgrade the EU transport sector until 2050[53].

EU's energy infrastructure is outdated and poorly interconnected as it has been pointed out in a recent Commission Communication[54], although the situation varies across the EU. Developing EU's energy infrastructure will not only enable the EU to deliver a properly functioning internal energy market, it will also enhance security of supply, enable the integration of renewable energy sources, increase energy efficiency and enable consumers to benefit from new technologies and intelligent energy use. Also, decentralisation of energy infrastructure would make it more adapted and flexible to smaller energy-generation plants and reduce transmission losses for electricity.

### 3.3.2 Reducing administrative burden and improving the quality of legislation

Regulation is important and necessary, but implementation can also entail costs. Some of these expenses are linked to legal obligations to provide information either to public or private parties. These are called administrative costs. The Commission introduced in 2006 a distinction between administrative costs and administrative burdens: the latter designate costs specifically linked to information that businesses would not collect and provide in the absence of a legal obligation. It started a large-scale operation to reduce administrative burden in the EU. The EU Action Programme for Administrative burden reduction fixed a target of 25 % by 2012 and invited MS to set similar targets at national level. By October 2009, all Member States had adopted national targets for reducing administrative burden by about 25 %, with the exception of ES and LT which adopted a target of 30 % and five Member States set targets below 20 %. However, not all Member States have effectively started to measure the current administrative burden which is needed as a baseline against which its reduction can be monitored. Only 16 Member States have carried out measurement work by June 2011. Progress in simplification has been achieved in all sectors but agriculture, public procurement and company law are the areas where progress has been greater.

Substantive progress has been made regarding the Single Market for services. However it is not yet delivering its full potential. Intra-EU services trade lacks dynamism since it still represents only one-fifth of total intra-EU trade, a share that is modest compared with the presence of services in the economy. Since 2004, trade in services between the EU and the rest of the world has been growing faster than inside the Single Market. The Services Directive (Directive 2006/123/EC) has been a crucial milestone in improving the functioning of the Single Market. It has done so by removing unjustified barriers, simplifying the regulatory framework and helping modernise public administrations. Member States have done important efforts in the implementation of the Services Directive but it is still under completion in some of them. Moreover, the recent mutual evaluation process[55] has identified a number of areas in which work remains to be done with a subsequent proposal of actions to improve it.

Use of impact assessment in preparing legislation can also be an important tool in limiting the increase of administrative burden for enterprises. In the last months, progress has been achieved in some countries regarding the developing and implementing impact assessment

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53 Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system, COM(2011) 144 final.

54 Energy infrastructure: Priorities for 2020 and beyond COM (2010) 677 final of 17 November 2010.

55 Towards a better functioning Single Market for services – building on the results of the mutual evaluation process of the Services Directive - COM (2011) 20 final of 27 January 2011.

systems. Hungary has extended the areas to be examined in impact assessments, Slovakia has made it mandatory since July 2010 and the UK obliges an impact assessment for all policy proposals with potential policy or regulatory impacts as well as expressing costs and benefits in monetary values. Up to June 2011, impact assessments for new legislative proposals were mandatory in 18 Member States, although not all of them have a full coverage of all significant economic, social and environmental issues.

The early involvement of stakeholders in designing legislation is crucial for getting a significant impact on the quality of new legislation. Almost all Member States require a formal consultation of stakeholders for major policy proposals. There are diverse ways for these consultations. Some Member States have created institutionalised bodies (advisory boards) whereas others identify and then consult concerned parties. The minimum period of consultation also varies widely, from 10 days in Hungary and Lithuania, to at least 12 weeks in the United Kingdom.

### 3.3.3 Modernising public administration

A highly performing and innovative public sector, enabling the delivery of sustainable, modern and quality public services, is a prerequisite for economic competitiveness. The reform of public administration is high on the agenda of several Member States, and the area of e-government has taken special importance recently. E-government initiatives range from data centers and shared networks to unified service centers for the public.

Developing e-government could permit SMEs to spend less time on administrative procedures and to gain new business opportunities. In particular, a full switch-over to e-procurement, practical e-identification and e-authentication for cross-border services would open up numerous new business opportunities across borders. According to recent surveys[56] the e-government performance in the EU has greatly converged in geographic terms since the expansion of the EU in 2004 – there are both old and new Member States among the leading e-government nations. If we look at the different aspects of the service delivery by the public administrations, Ireland, Malta, Austria and Portugal are the top performing Member States in the EU, followed closely by Sweden, Germany and Italy.

Motivated by clear benefits of better efficiency and productivity, European administrations are accelerating their transition towards e-procurement. Indeed e-procurement is one of the high impact services representing a major portion of Europe's economy – in 2009, total EU procurement accounted for some EUR 2.1 trillion of public administration expenditure. Increasing the use of trans-EU procurement services can make Europe more competitive for particularly SMEs, and offers substantial efficiency gains.

Another reform among Member States to modernise the public administration is the creation of one stop shops. Besides the obligations of the Services Directive regarding the "Points of Single Contact" to allow businesses to get all relevant information and complete procedures online, Member States have created one stop shops, either physical or virtual, to carry out many other integrated functions, like business registration, licensing, investment, completion of company taxes, etc. Creation of one stop shops does not necessarily require big spending or legal changes and entrepreneurs and citizens see immediate benefits. Single interfaces not only save time and money but they also increase transparency.

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[56] Digitising Public Services in Europe: Putting ambition into action, 9th Benchmark Measurement. December 2010, prepared by CapGemini.

### 3.3.4 Market functioning and competition policy

A well functioning Internal Market results in increased opportunities for business and ultimately improves competitiveness of European industry. Recent initiatives like the proposed Regulation on European Standardisation[57] can help to boost EU companies' export activities and competitiveness. Moreover, the contribution of information and communication technologies to this objective is not trivial. Lowering barriers to internet take-up and acceleration of the delivery of the Digital Single Market[58] will help kick-start GDP growth, enhance Europe's competitive edge and create new jobs and businesses.

In order to exploit the Internal Market's full potential the legislation needs to be timely and correctly transposed into national law and properly applied by all Member States. Despite the current economic difficulties, Member States have maintained a satisfactory rate of transposition of internal market directives into national law. The latest Internal Market Scoreboard, published in March 2011, shows that, at 0.9 %, the percentage of non-transposition of legislative texts for which the deadline has passed remains just beneath the 1 % limit set by the heads of state and government in 2007. Twenty Member States meet the 1 % deficit target, with Malta the top performer with only two directives awaiting transposition. A year ago, the Member States took an average of nine months to transpose EU directives. This has been brought down to 5.8 months, an improvement of nearly 40 %. Seven Member States - Austria, the Czech Republic, Estonia, Cyprus, Hungary, Poland and Italy - are still above the 1 % transposition target.

The number of infringement procedures related to the Internal Market still remains high but has decreased, with taxation and environment the biggest areas of infringements. In recent years, the Commission has introduced a number of alternative problem solving and complaint handling mechanisms that have had a considerable influence on the decrease. Belgium continues to account for the highest number of infringement proceedings, followed by Greece and Italy.

The level and quality of state aid granted by national governments has a significant impact on the functioning of the Internal Market. State aid should not distort competition and trade inside the Internal Market. To this end, Member States committed to reduce the general level of state aid and to shift the emphasis from supporting individual companies or sectors towards tackling horizontal objectives, environment, SMEs or training. The 2011 spring State Aid Scoreboard shows that state aid to support expenditure in research, development and innovation has steadily increased in the last 10 years to support job creation and increase Europe's competitiveness. R&D and innovation state aid stood at 0.09 % of GDP in 2009, the last year for which figures are available, against 0.05 % in 2005. In this period, more than half of the total EUR 46.5 billion of R&D and innovation aid was spent by two Member States: Germany (29 %) and France (22 %) while five other Member States accounted for another third of the total: Italy (11 %), Spain (9 %), the United Kingdom (7 %), Belgium (5 %) and The Netherlands (4 %). In 2009, EUR 13.2 billion of state aid was granted in the EU for environmental objectives, either as direct aid or through tax reductions and exemptions. Germany accounted for half of this. Regarding support exclusively for SMEs, the vast

[57] Proposal for a regulation of the European Parliament and of the Council, COM (2011) 315 final, 01.06.2011

[58] The Digital Single Market could deliver 4% extra GDP growth over the next ten years. Monti Report 2010

majority of support between 2004 and 2010 concerned risk capital measures, with Germany, the UK and Italy accounting for more than half of these measures.

## 3.4 Entrepreneurship and SME policy

### 3.4.1 Entrepreneurship in the EU

The Small Business Act for Europe (SBA) Fact Sheets 2010/2011[59] provide a detailed analysis of the structure of small and medium-sized enterprises (SMEs) and provide indications for both economic and societal environment for entrepreneurship in the EU. The results vary considerably among Member States and reveal different attitudes towards self-employment, different reasons for becoming an entrepreneur, but also different perceptions about the feasibility of starting a business under the current conditions.

The results indicate that on average about 45 % of the adult population in the EU generally preferred to be self-employed. In countries such as Cyprus (66 %), Greece (60 %), Romania (52 %), Portugal (51 %), Bulgaria, France or Italy (50 % each), this preference was pronounced even stronger than the EU average. However, in countries such as Belgium (30 %), Czech Republic, Denmark or Sweden (32 % each), as well as Malta (36 %) for example, respondents were more reluctant in this respect.

According to the survey, 11 % of the adult population in the EU had concrete intentions to start a business over the next three years. In countries such as Latvia (21 %), France or Hungary (14 % each) for example, this figure exceeded the EU average. However, in countries such as Italy (4 %), Austria or the UK (5 % each), Denmark, Finland, Germany, Ireland, the Netherlands or Spain (each 6 %), the intention to become an entrepreneur was less pronounced.

The results also illustrate very different reasons for becoming an entrepreneur. Opportunity-driven entrepreneurship (EU average 55 %) was more pronounced in countries such as Denmark (81 %), the Netherlands (78 %), Belgium (72 %), Finland (71 %) or Sweden (69 %) for example. By contrast, it was a less important factor in countries such as Estonia (36 %), Bulgaria (38 %), Greece (39 %), Latvia (41 %), Cyprus (42 %) for example. Hence, in these countries, a larger share of entrepreneurial activities was triggered by necessity and lack of other alternatives.

Also in respect to the perceived feasibility of starting a business, the results varied considerably across Member States. Overall, 28 % of the respondents in the EU believed it was feasible to become self-employed under the current circumstances. Becoming self-employment was perceived as being more difficult in countries such as Belgium (13 %), the Netherlands (15 %), Portugal (18 %), Hungary or Malta (19 % each) for example. By contrast, respondents were generally more optimistic in their assessment in countries such as Poland (36 %), Cyprus or the Czech Republic (37 % each), Finland (45 %) or Sweden (49 %).

[59] SBA Fact Sheets 2010/2011, European Commission, DG Enterprise & Industry, http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/index_en.htm#h2-2

### 3.4.2 Policy measures to promote entrepreneurship

Many Member States have made substantial progress over the last years in promoting the sense of initiative and entrepreneurship[60]. Some have introduced programmes aimed at raising awareness particularly among young people but also among adults by integrating the subject into school and university curricula as well as by organising targeted awareness-raising projects.

However, Member States have made variable progress in facilitating entrepreneurship education. Some countries (e.g. Belgium, Denmark, Finland, Lithuania, the Netherlands, Portugal, Sweden, the United Kingdom) have set up strategies dedicated to entrepreneurship education while others are planning to do so (e.g. Austria, Estonia, Ireland, Malta, Poland, Slovenia and Spain).[61]

The majority of Member States has launched initiatives aimed particularly to increase the share of female entrepreneurs, for example by supporting female entrepreneurship ambassadors and networks of women entrepreneurs. A number of Member States have also intensified support dedicated to entrepreneurship among migrants and ethnic minorities (e.g. Belgium and Denmark). Belgium has been particularly active in promoting entrepreneurial activity after having fallen considerably behind the EU average in this field. Examples include projects to enhance entrepreneurial education, support for the temporary replacement of entrepreneurs, the introduction of a platform to facilitate business transfers, the introduction of a specific company statute for business starters etc.

Finally, in order to stimulate the creation of micro and small enterprises, several governments have also permanently reduced or abolished the minimum capital requirements to set up a company (e.g. Belgium, Estonia, Germany, Netherlands, Latvia, Luxembourg). In France, the Independent Contractor Limited Liability Statute was adopted in January 2011, which allows individual entrepreneurs who own or who are starting a business in any sector of activity to separate the business assets from their personal assets regardless of the turnover, and thus ensure the protection of any personal assets.

### 3.4.3 Challenges faced by SMEs

SMEs perform a critical role in the European economy. Despite their small individual size, they are the most important source of employment in the EU. Some 23 million SMEs provide about 90 million jobs (or 67 %) within the private sector in the EU, thereof about 30 % deriving from micro enterprises, 20 % from small enterprises and 17 % from medium-sized enterprises. Until 2008, the number of jobs in SMEs increased by 1.9 % annually, while the number of jobs in large enterprises increased by 0.8 % annually. Moreover, among high-growth firms, as measured by employment expansion rates, small firms exhibit higher net job creation rates than larger ones.

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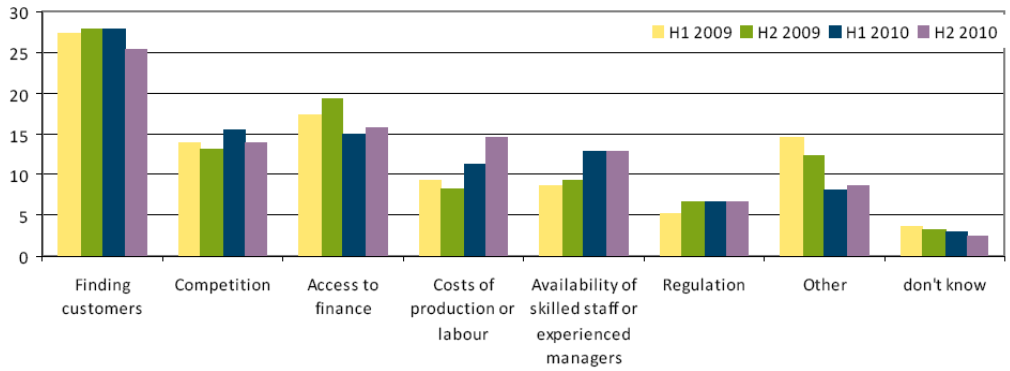
60 Progress towards the Lisbon objectives in Education and Training. Analysis of implementation at the European and national levels. European Commission, 2009, pp. 66 http://ec.europa.eu/education/lifelong-learning-policy/doc/joint10/sec1598_en.pdf

61 'Towards Greater Cooperation and Coherence in Entrepreneurship Education, Report and Evaluation of the Pilot Action High Level Reflection Panels on Entrepreneurship Education initiated by DG Enterprise and Industry and DG Education and Culture', A report by ECOTEC, 2010. Available at http://ec.europa.eu/enterprise/policies/sme/promoting-entrepreneurship/education-training-entrepreneurship/reflection-panels/files/entr_education_panel_en.pdf

SMEs account for nearly 59 % of the value added produced in the EU and they are also an important driver for innovation and economic growth. However, due to their smaller size and limited resources, SMEs face a number of particular challenges which can have a negative impact on their profitability. **FIGURE 14** provides an overview of the most pressing problems reported by SMEs.

**FIGURE 14: The most pressing problem faced by euro area SMEs (percentage of respondents)**




*Source:* ECB, April 2011.

While some of the problems faced by SMEs are due to general market developments such as increasing competition and finding customers, which are beyond the scope of direct public intervention, other problems such as access to finance or the complexity of regulation can and should be addressed by EU and national authorities. Addressing these challenges will improve the growth prospects of all enterprises, whether industry, services or socially oriented. As it is the second most pressing problem, the issue of access to finance is explored in more detail in the following section.

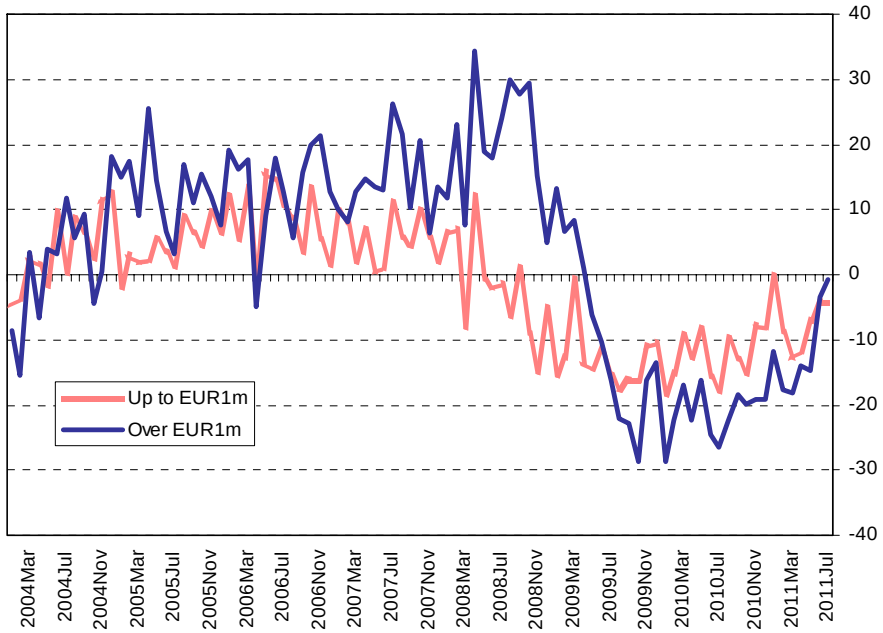
### 3.4.4 Access to finance

Access to finance has become an important challenge for many SMEs since the beginning of the financial and economic crisis, as SMEs have been particularly affected by tightening credit conditions. As a response to the financial and economic crisis, most Member States have adopted measures to enhance SMEs' access to finance, especially bank lending, through advantageous subordinated loans, loan guarantee schemes or microcredit programmes.[62] Member States also increasingly use parts of their EU Structural Funds to support SMEs' access to finance, including through financial instruments available under the 'Joint European Resources for Micro to Medium Enterprises' (JEREMIE) managed by the European Investment Fund. However, the use of financial instruments for SMEs could be further intensified, including in particular in the areas of innovation, business modernisation and energy efficiency.

With the gradual economic recovery, there have been signs of improvement compared to the previous year, when the effects of the crisis were still felt acutely and – with very few exceptions – conditions for bank loans to businesses remained tight. The following chart gives an overview of the significant decline in new corporate loans below and above EUR 1 million during the period 2004 – 2011 in the euro area.

62 Review of the Small Business Act for Europe, COM(2011)78, 23.2.2011, http://ec.europa.eu/enterprise/policies/sme/small-business-act/index_en.htm

**FIGURE 15: Change in new loans to firms**




Note: Year on year change; data up to July 2011. Source: ECB

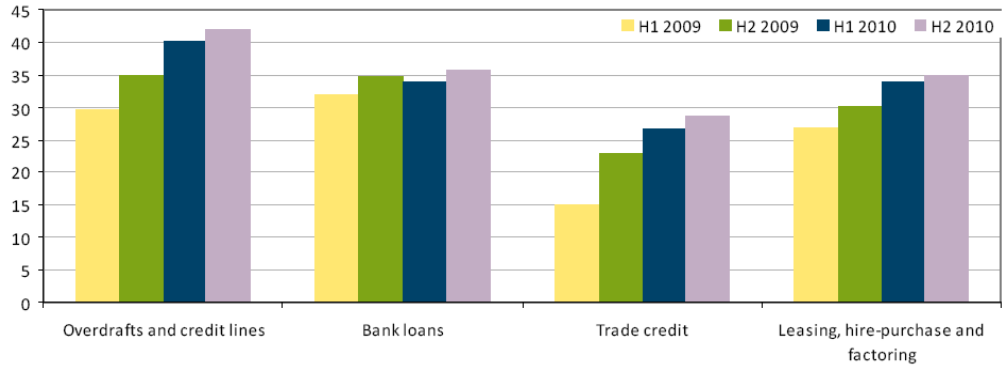
The results of the latest ECB-Commission survey on access to finance of SMEs[63] indicate that access to external financing – and in particular bank loans – continued to improve, albeit moderately. However, there is considerable variance across the EU. SMEs in Spain, for example, have continued to report significantly lower success rates when applying for a bank loan (about 50 %, compared to 66 % in the euro area). By contrast, the success rate of German firms has increased substantially (from 69 % in the previous survey to 79 %). SMEs in Germany and Italy are generally expecting the availability of bank loans to improve, which is not the case in Spain or France. Despite improvements in several Member States, access to finance therefore remains an important obstacle for SMEs in many countries.

Moreover, SMEs still face more difficult financing conditions than large enterprises. 16 % of SMEs identified access to finances as their most pressing problem according to the ECB-Commission survey (**FIGURE 14**). By contrast, access to finance is considered as the most pressing issue by only 10 % of large enterprises. In the second half of 2010, SMEs assessed the availability of external financing still negatively, but the situation had improved since the first half of 2010. By contrast, large enterprises generally reported positive developments in the availability of external financing. About one quarter of SMEs applied for a bank loan between September 2010 and February 2011. In 63 % of the cases, the firms received the full amount they had applied for. The rejection rate for SMEs remained essentially unchanged at 11 %, compared with about 2 % for large enterprises. More than half of the SMEs reported increases in interest rates charged and other costs of financing (charges, fees and commissions) while there was a small improvement in the requirements related to collateral and loan covenants.

In line with the recovery in economic activity, SMEs increasingly need external sources of finance. Increases have been noted in particular regarding overdrafts and use of existing credit lines, trade credit, as well as leasing, hire-purchase or factoring (**FIGURE 16**).

63 ECB-Commission survey on the access to finance of SMEs, http://www.ecb.int/stats/money/surveys/sme/html/index.en.html

**FIGURE 16: Sources of external financing of euro area SMEs**




Note: Over the preceding six months; percentage of respondents.
Source: ECB, Survey on the access to finance of SMEs in the euro area, April 2011.

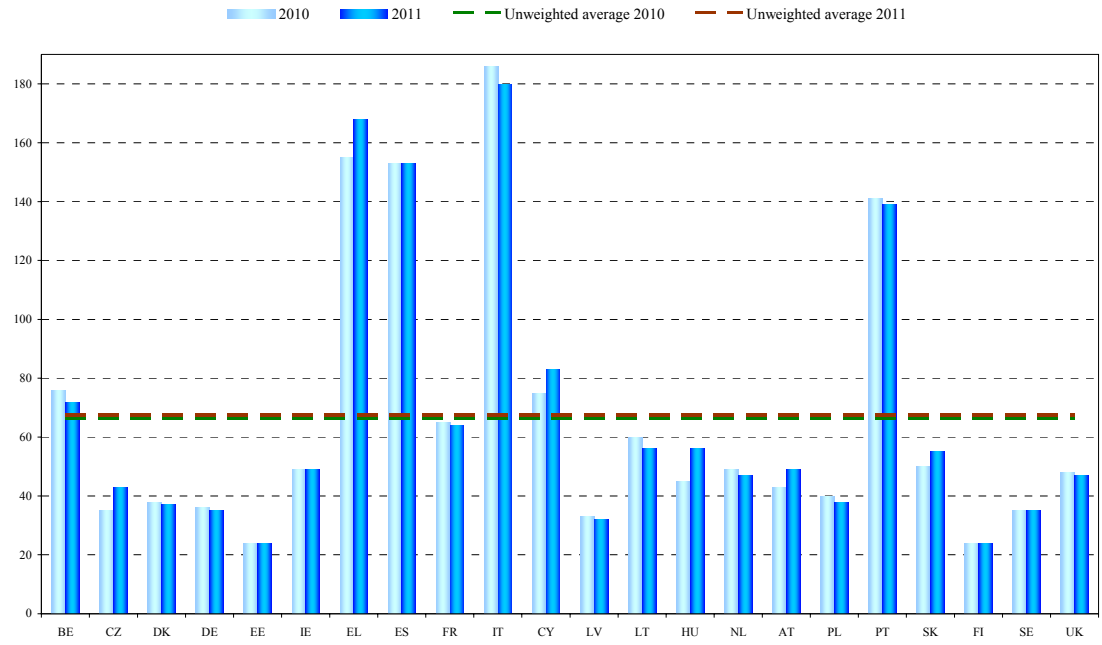
Looking forward, SMEs expected the availability of internal funds to slowly improve, while the availability and conditions for bank loans and trade credit was still expected to further deteriorate. Larger enterprises, on the other hand, were clearly more positive in their assessment and expected an improvement for all sources of finance.[64]

The results of the SME survey also correspond with the latest ECB Bank Lending Survey[65], which confirmed a further slight tightening for loans to SMEs and a continued widening of margins on loans for SMEs compared to large enterprises. Looking forward, the Euro area banks expected a further moderate tightening of their credit conditions in 2011, primarily affecting long-term loans. They also expected a moderate increase in demand for corporate loans, relating to both SMEs and large firms.

The average payment time also has an important impact on the financing needs of SMEs. According to the 2011 European Payment Index, about 25 % of all bankruptcies in Europe are due to late or non-payment of outstanding invoices, and 28 % of companies stated that late payments posed a threat to their survival. Moreover, almost half considered that late payments were detrimental to their growth[66]. In 2010, the average payment delay for firms in the EU was 54 days. However, the differences across Member States are significant. Countries which considerably exceeded the EU average in 2010 included Cyprus (73 days), Portugal (97 days), Spain (104 days), Greece (107 days) and Latvia (117 days). By contrast, the situation was better in countries like Finland (23 days), Estonia (26 days), Germany (32 days), Ireland (33 days) or Sweden (33 days) for example.[67] Regarding the public sector, not much progress has been made to further reduce late payments and in some Member States, the situation has even deteriorated (including Czech Republic, Greece, Cyprus, Hungary, Austria and Slovakia). **FIGURE 17** illustrates the average payment time in the public sector.

64 ECB-Commission survey on the access to finance of SMEs in the euro area, April 2011
65 ECB Bank Lending Survey, July 2011, http://www.ecb.int/stats/money/surveys/lend/html/index.en.html
66 European Payment Index 2011, Intrum Justitia
67 SBA Fact Sheets 2010/2011, European Commission, DG Enterprise & Industry, http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/index_en.htm

**FIGURE 17: Payment times for public authorities**




*Source:* European Payment Index 2011, Intrum Justitia.

By far the largest scope for improvement can be found in countries such as Italy (180 days), Greece (168 days), Spain (153 days) and Portugal (139 days). The late payment directive adopted by the Council in January 2011 requires payments by public authorities to be processed within 30 days. Meeting this objective will be a challenge for many Member States, but at the same time, a further reduction in late payments by public authorities could contribute significantly to easing the financing needs of enterprises and in particular those of SME.

### 3.4.5 Internationalisation of SMEs

According to a recent study on opportunities for the internationalisation of SMEs[68], about 29 % of SMEs in the EU 27 are engaged in importing and about 25 % are engaged in exporting, both referring to EU and non-EU markets. Hence, the business activities of the bulk of SMEs are concentrated on their domestic market. Moreover, the survey indicates that only 2 % are investing abroad and 7 % have technical cooperation with partners abroad. From those SMEs which are involved in international business activities, about 46 % are active only within Europe, 45 % are active both within and beyond Europe and 9 % are active only outside the EU. About 23 % of SMEs which are active abroad are engaged in key target markets including Brazil, China, India, Japan, Russia, South Korea and Ukraine. On average, however, internationalised European SMEs still generate only a relatively small percentage of their total turnover from international business activities (less than 20 % from other EU countries and about 10 % from third markets).

According to the study, payment risks, difficult bureaucratic procedures and lack of financing have been identified as the most important barriers to international business activities beyond the Internal Market.

68 "Opportunities for the internationalisation of SMEs", forthcoming, EIM Business & Policy Research

Most Member States support the internationalisation of SMEs, both financially but also by providing information and support on market access and regulation or the organisation of trade fairs. During the crisis, many Member States intensified their efforts in this field, particularly regarding export credit, export insurance and bank loan guarantees. Interesting recent measures in this field include for example the launch of a mentoring scheme, whereby big companies support the internationalisation of SMEs, which is currently being piloted in France. Another interesting example is Estonia, which has launched a training program for potential export sales manager, which can benefit from training over a period of one year and which are matched with companies which intend to expand their international activities.

The study provides some surprising results regarding the awareness and the effectiveness of public support measures in this field. Only about 27 % of internationalised SMEs stated they were sufficiently aware of existing public support measures and only 7 % stated they actually used public support for their international business activities. This figure was slightly higher among the subgroup of enterprises with business activities in non-EU countries (12 %). Nevertheless, among those SMEs which used public support measures to develop their international business activities, nearly 60 % were quite positive about the effects (3 % stated the support increased their international business activities, 9 % reported they started their international business activities earlier because of the support, and 12 % stated they would not have engaged in international business activities without the public support). This discrepancy might be explained to some extent by the fact that the majority of entrepreneurs (60 %) consider it too difficult to get an overview of existing support for business activities in markets outside the EU. At the same time, an equally large share of SMEs thought that the existing support measures were not easily accessible.

In view of the general positive assessment by those enterprises which use public support to internationalise their business, the results seem to suggest that the awareness and accessibility of public support in this field could be further improved. The Commission will present in autumn 2011 a Communication for a coherent approach on supporting EU SMEs in their attempts to develop business internationally.

### 3.4.6 Implementing the Small Business Act (SBA)

The Small Business Act for Europe (SBA), adopted by the Heads of State and Government in 2008 and reviewed in 2011, recognises the important role of SMEs in the economy and aims to promote SMEs' growth by helping them tackle barriers that hamper their further development. The SBA consists of ten principles which should guide the conception and implementation of policies both at EU and national level. The aim is to create a level playing field for SMEs throughout the EU and to improve the administrative and legal environment so that these enterprises can realise their full potential.

The results of the SBA Performance Review, published in February 2011[69], recognise that considerable progress has been made in a number of areas. For example, a recent survey suggests that SMEs experience fewer administrative burdens when accessing public procurement and have better opportunities for joint bidding[70]. Another example includes the new SME Centre in China launched in November 2010, which helps SMEs accessing the Chinese markets. As part of the SBA Review, the Commission invited Member States to

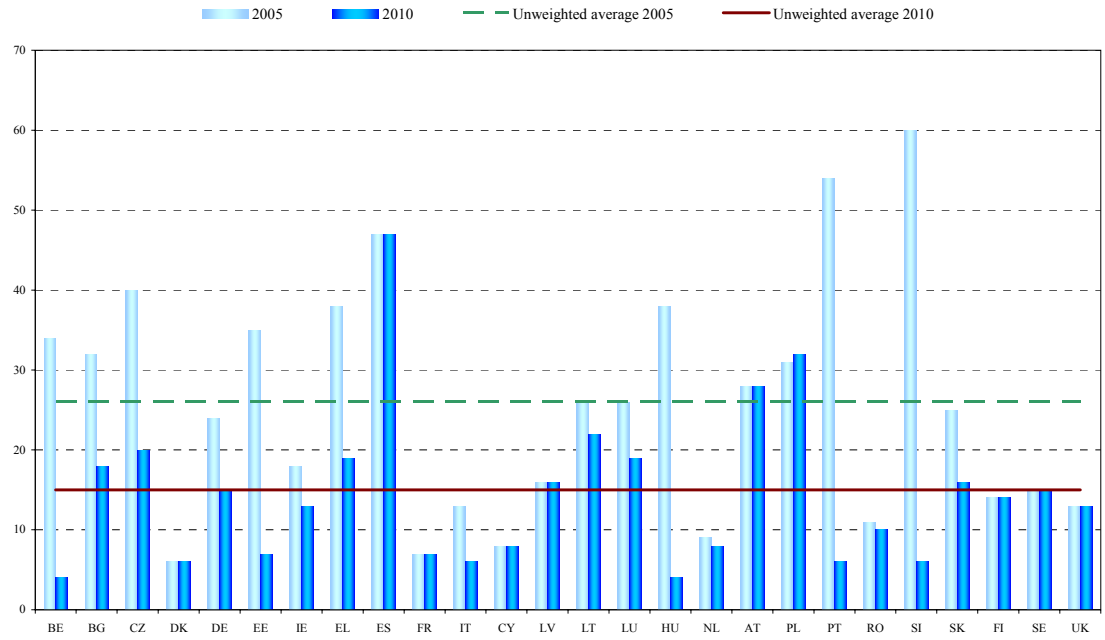
[69] Review of the Small Business Act for Europe, COM(2011)78, 23.2.2011, http://ec.europa.eu/enterprise/policies/sme/small-business-act/index_en.htm

[70] http://ec.europa.eu/enterprise/policies/sme/business-environment/public-procurement/index_en.htm

nominate a national SME Envoy to complement the role of the European Commission's SME Envoy. Together with representatives of SME business organisations, the Network of SME Envoys will make up an SBA advisory group.

Considerable progress has also been made over the last five years to reduce the average time and cost required to start a business (FIGURE 18).

**FIGURE 18: Time needed to start a business (days)**




*Source*: World Bank, *Doing Business*, 2011.

The average time to start-up a company was 15 days in 2010 according to the World Bank.[71] Recent good examples include Italy, where since April 2010 it has been possible to register a company in one day. The Companies Register in Italy submits the data also to other relevant bodies like tax and social security offices. Another good example is Greece, which has launched a new Commercial Electronic General Registry. This allows the registering of a business in one day and considerably reducing the related cost.

Despite noticeable progress in a number of areas, the results of the SBA Performance Review, published in February 2011 also point out that the approach taken and the results achieved vary considerably across Member States. For example, while most Member States have adopted national targets for reducing administrative burden, not all of them have effectively reduced it.

Several Member States have already integrated an SME Test into their national decision-making approach (including Austria, Denmark, France, Finland, Germany, Hungary, Latvia, Luxembourg, Netherlands, Romania, Sweden and the United Kingdom). Malta, Slovenia and the Slovak Republic are in the process of setting it up. Among those that apply the SME test there are, however, disparities in practical terms. Only half of those Member States systematically consult SME stakeholders as part of the SME test. Most of these countries

[71] World Bank, Doing Business 2011; see http://www.doingbusiness.org

target a mix of SME organisations, individual SMEs and public authorities working on SME-related issues in their consultations.

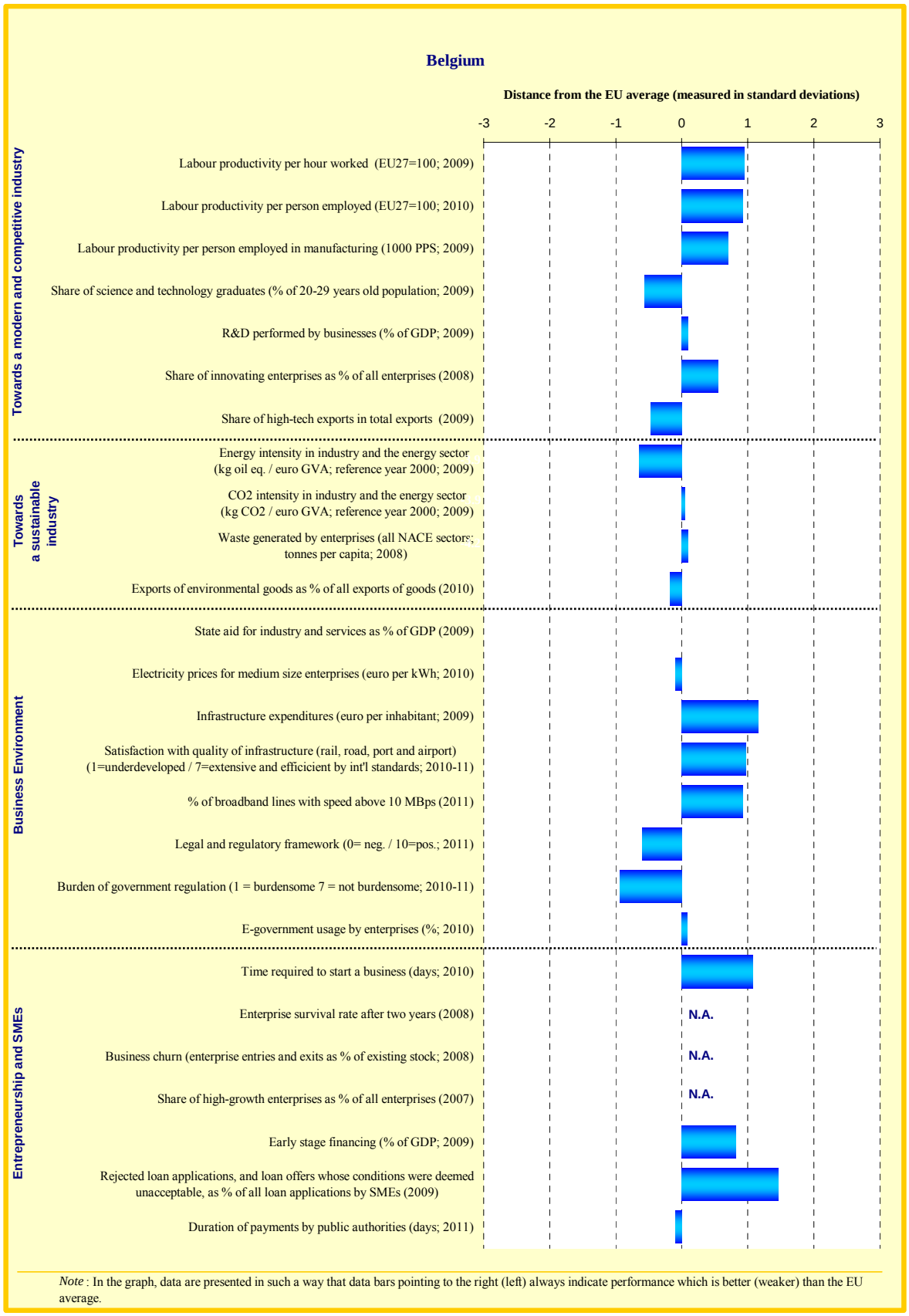
Some Member States have started to promote the European Code of Best Practices in order to facilitate SMEs' access to public procurement (Austria, Cyprus, France, Germany, Hungary, Ireland, Lithuania, Poland, Portugal, Sweden and the United Kingdom). In the majority of Member States, SMEs' access to public procurement is not subject to a specific strategy or policy. The most widespread SME-friendly measures in this area remain cutting tenders into lots, whenever possible, and facilitating access to information through centralised websites, interactive web pages, and other e-procurement developments.

Finally, there is still scope to further shorten the time needed to wind up a business in case of non-fraudulent bankruptcy. So far only five Member States (Belgium, Finland, Ireland, Spain and the UK) comply with the recommendation to complete all legal procedures to wind up a business in the case of non-fraudulent bankruptcy within a year.[72]

[72] Review of the Small Business Act for Europe, COM(2011)78, 23.2.2011, http://ec.europa.eu/enterprise/policies/sme/small-business-act/index_en.htm

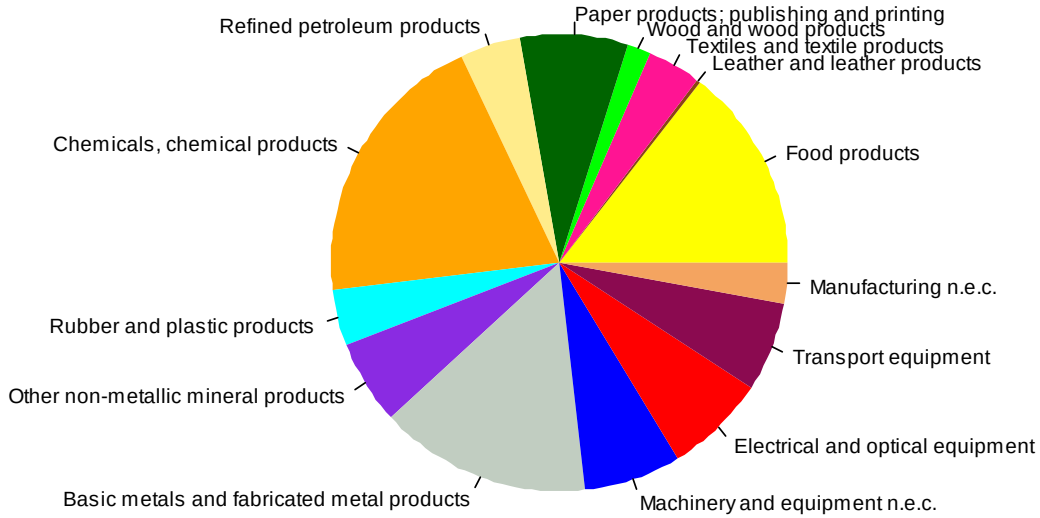
# 4 COUNTRY CHAPTERS

## 4.1 Belgium




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Belgium (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

### 4.1.1 Introduction

*Trade and industry specialisation*

Manufacturing contributes 14 % to Belgium's total value added against 14.9 % for the EU in average (2009). At the detailed manufacturing industry level, Belgium is specialised in capital-intensive industries, such as iron processing, basic chemicals and man-made fibres. At the more aggregated sector level, Belgium is specialised in sectors featuring medium-high educational and innovation intensity, such as chemicals, coke and refined petroleum, but also textiles.

Belgium's sectoral R&D and export quality performance are positive: R&D intensity is above the EU average given its industrial structure. The shares in the low price segments of exports are below the EU average, in high price segments above the EU average, indicating that Belgium is high up on the quality ladder.

Most prominent sectors in Belgium

**Highest relative value added (2007)**
Coke, refined petroleum and nuclear fuel
Chemicals and chemical products
Textiles and textile products

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Coke, refined petroleum and nuclear fuel
Water transport
Tobacco products
*Decreasing specialisation*
Electricity and gas
Inland transport
Recycling

*Structural change*

In terms of change, Belgium has considerably increased its specialisation in higher quality market segments. It has increased its sectoral R&D intensity and its relative share of value added in high education intensive sectors such as computers and business services, and the share of technology-driven industries in exports, such as

pharmaceuticals and pesticides. It has decreased even further its share of labour intensive industries. Manufacturing production in Belgium has recovered relatively fast from the crisis, reaching in March 2011 its previous cyclical peak.

Nominal unit labour costs have increased in Belgium by 23% between 2000 and 2010, which is slightly higher than the average increase in the EU27 and the Euro area (14% and 20% respectively). Estimated labour productivity per hour worked has declined over the last decade, indicating a gradual loss in productivity as well as cost and price competitiveness. However, labour productivity is still about 34 percentage points above the EU27 average and about 20 percentage points above the Euro area average.

### 4.1.2 Towards an innovative industry

According to the Innovation Union Scoreboard 2010, Belgium is an innovation follower. It has a low share of new science and technology graduates and a low share of high-tech exports in total exports.

Business R&D is highly concentrated in a few large companies and multinationals. A large majority of these firms are in the chemicals, pharmaceuticals and biotech sectors, thus giving Belgium a specialist profile for these sectors. The increasing importance of the service sector, growing at a faster rate than manufacturing, would also justify specific measures to improve the knowledge intensity of this sector over time.

Increased tax credits for R&D have been introduced and there are also plans to provide suitable incentives for setting up and developing new science-base companies spinning out of large enterprises or spinning off from research institutions is foreseen.

All Belgian Regions/Communities are drafting strategic innovation plans covering all major elements of an innovation strategy. Flanders is planning a new Innovation Pact, while Wallonia, the Brussels Capital Region and the French-speaking Community are contemplating a joint research strategy. Most actions are at Regional/Community level, although federal research covers 25-30 % of total public research expenditure mainly due to space research (a remaining federal competence).

In the Walloon Region the focus has been on the implementation of the so-called "Marshall plan" with a stronger focus on competitiveness clusters (les pôles de compétitivité, a cluster approach). Various initiatives are developed in order to strengthen the competitiveness clusters and business networks: creation of a 6th cluster focused on environmental technologies (February 2011), higher involvement of SMEs, closer collaboration between regional, national and international clusters, opening up to companies from neighbouring regions, launching a call for sustainable development projects, boosting the funding and the training component and fostering the development of spin-off (specific R&D grants, support from public equity funds, financing of experts). The overall objective of the competitiveness clusters policy is to strengthen the specialisation of the regional economy in key sectors. In this regard it can be considered as a "smart specialisation" strategy.

In 2010, more focus was placed on fostering innovation and creativity with the so-called "Creative Wallonia" Action Plan. Some innovative measures were implemented within this framework such as grants to support commercialisation of prototypes developed by SMEs or allowing SMEs to undertake an audit of their innovation potential.

The "Marshall plan" has also a strong focus on the implementation of a new culture intending to increase public private partnerships. European Structural Funds are being substantially used in establishing partnerships and networks between large firms and SMEs and financing innovation in SMEs.

In Flanders, cluster policy is also part of the innovation strategy mainly for green and sustainable development. Societal challenges are the main drivers, leading to a shift towards new fields. The Science and Technology Council identified six priority areas: regulation and education in general; framework conditions for private R&D; a model for mobilising industry towards the factory of the future; the role of infrastructures in supporting intelligent networks; the role of industrial innovation with risk funding; and the role of human capital and social innovation. In the scope of networking and facilitating cluster formation, there is the Flemish Innovation Network (VIN), whose main task is to stimulate knowledge transfer and intensify cooperation between companies and knowledge institutes. As difficult access to capital is often a bottleneck for innovative entrepreneurship, the governmental authorities provide some instruments in support of innovation initiatives, such as Vinnof, PMV Innovation Mezzanine, ARKimedes (Activating Risk capital) and win-win loans. In the future, Flanders seeks a higher international profile and wishes to position itself as an innovative region.

In the Brussels Capital Region, strategic platforms

are being or will be launched in three innovative sectors: information and communication technologies (ICT) in 2010, the life sciences in 2011 and the environment in 2012. It is worth mentioning that about 90 % of the research is concentrated on ICT and ICT services. The government foresees greater assistance to smaller innovative companies and more resources for European and international cooperation.

### 4.1.3 Towards a sustainable industry

The higher energy intensity in the Belgian industry and energy sector is to some extent explained by the industrial structure of the country. Nevertheless it represents a potential disadvantage due to overexposure to energy and $CO_2$ price volatility.

On the energy and climate fronts, key measures of Belgium stem directly from the implementation of the Energy & Climate package. Some other measures that will be applied by the federal authorities are an adjustment to the tax cuts for energy saving investments for achieving maximum efficiency, and specific integrated procedures for obtaining permits for new energy production facilities and electricity and gas transmission systems that could provide energy savings in the case of generation and transmission. In 2003, Belgium adopted a law that provides for a gradual nuclear phase-out between 2015 and 2025.

There is a wide variety of actions put forward by the three Belgian regions. A main policy orientation of Flanders concerns energy efficiency in buildings: the Flanders region tightened up and stringent energy standards for new construction and imposed a minimum share of renewable energy for new buildings.

Flanders also focuses on green growth. In order to speed up its greening process, Flanders has developed a plan to establish a system of green guarantees and a green investment fund. Flanders also promotes green jobs. In the scope of the Employment and Investment plan (WIP) the VDAB (Flemish Service for Vocational Training and Employment) organises training programmes through outsourcing for vulnerable groups. VDAB further consults with the sectors, employer organisations and companies about training paths that can be arranged within the provided WIP funds. Further to the above mentioned priority measures, the realisation of the '20-20-20' objectives will also be supported by sustainable measures in the area of mobility and transport (e.g. e-mobility; mobility plan Flanders; general reform of traffic taxes), in terms of governmental actions (sustainable living and building; Flemish action plan on sustainable public procurement) and in terms of agricultural production (attention will focus on self-sufficiency and competitive strength of agricultural businesses).

Key measures of the Walloon Region are applicable both to the energy performance of buildings, support for controlling energy consumption (of the corporate sector through second generation sectoral agreements, and to consumers through continuing actions concerning social energy guidance), and sensibilisation via the public social assistance centres. An overall objective of the first Employment-Environment Alliance, part of the Marshall 2 Green Plan, is to improve the quality of Walloon buildings and their energy performance, while organising the construction industry according to a sustainable approach and increasing the level of employment in that industry. The role of the public authorities as an engine for sustainable development has been strengthened. In the case of industrial policy and innovation, an environmental technologies competitiveness cluster has been created and the environmental dimension is reflected in all competitiveness clusters. New "sustainable innovation grants were also launched to help SME to develop eco-innovative products or services and a strong focus has been put on supporting the development of Walloon expertise in the area of sustainable vehicles, especially electric cars. Finally, a research programme on energy efficiency and renewable energies has been launched.

Energy efficiency in buildings is also a main policy orientation for the Brussels region. An Employment-Environment Alliance is seeking to ensure the availability in the construction industry of a series of local companies capable of meeting the challenge set by the new energy requirements for buildings. The Iris2 Plan aims to reduce the traffic load by 20 % in 2018 relative to 2001, thereby helping to cut greenhouse gas emissions and other pollutants generated by the transport sector.

### 4.1.4 The business environment

Belgium presents a mixed picture regarding the business environment as negative perceptions about the legal and regulatory framework and administrative burden coexist with good performance on specific issues such as regulation of business start-up.

Belgium scores above the EU average concerning the availability of high-speed broadband lines. However, prices for many goods and services are generally higher than in other Member States, reflecting weak competitive pressures, especially in the retail sector and network industries.

In the retail sector, barriers to entry have been reduced but some operational restrictions remain, especially in terms of specific (zoning) regulation of large outlets and the regulation of shop opening hours. While measures to make regulations less stringent in some areas and to reduce the administrative burdens involved in opening new shops, have been taken in the retail sector - under the new law on "Market Practices and Consumer Protection" (WMPC, 2010) and the "Ikea law" (2004) - Belgium still has economic and social regulations that aim to allow fair competition between all forms and types of shops. A recommendation on this subject has been made by the Council in its Council Recommendations of 12 July 2011 (2011/C 209/01).

Despite liberalisation, prices in many network sectors (electricity, gas and telecom) are higher in Belgium than in other Member States. A common competition problem in the network sectors in Belgium is the strong position of the incumbent and the high entry barriers compared to other Member States, meaning that former monopolists in these sectors can still reap higher profits by charging higher prices than a competitive market would allow.

Belgium's business environment in general is characterised by an administrative burden resulting from procedures and administrative obligations at regional and local levels.

Specifically, the administrative landscape in Flanders has a multitude of governance levels and rules and regulations. The result is insufficient synchronisation of the different levels or departments of the Flemish administration. Administrative simplification and faster delivery of permits can help create the conditions for a good business climate. The long term programme ‘Decisive Governance’ includes four strategic objectives and twelve key projects to enhance the efficiency and effectiveness of the Flemish authorities, and commits to a more efficient government administration vis-à-vis the business sector (e.g. the establishment of a one stop shop for entrepreneurs in Flanders, the further development of e-procurement, etc.).

The Walloon Region established the Plan 'Ensemble Simplifions' (Let's Simplify Together Plan) 2010-2014 and the Industry Action Plan: the aim is to minimise administrative complexity and reduce administrative burden affecting all users of public services, particularly companies, and the public services themselves. Adopted in February 2010, the Plan 'Ensemble Simplifions' will be applied during the 2010-2014 period as part of the European objectives of achieving a 25 % cut in administrative burden by 2012. Adopted in September 2010, the Industry Action Plan seeks to identify industry's general demands and rapidly eliminate specific obstacles restricting industrial activities.

In November 2009 the Government of the Brussels Capital Region has approved the Brussels plan for administrative burden. The goal is to reduce the administrative burden by 25% by the end of 2012. To succeed in this goal the government approved a first list of 11 projects. While some of the projects aim to prevent administrative burden in future legislation, some other projects aim to reduce existing administrative burden through renewing existing processes. The focus is mainly on businesses, for example an E-procurement system has already been introduced. Furthermore, consultants are currently screening existing economic legislation which will lead to proposals to reduce administrative burden.

#### 4.1.5 Entrepreneurship and SME policy

The SME sector in Belgium has a similar structure as that of the EU: the percentages of micro, small and medium-sized enterprises and their contributions to employment and value added are on a par with the European averages. Concerning general SME policy, the federal government adopted in 2008 an action plan inspired by the European "Small Business Act" (SBA) comprising 40 measures. An "SME test" is also in preparation. Most of the actions have been initiated or implemented; however some difficulties still exist, such as for example the long payment delays by public authorities to enterprises. Wallonia also intends to launch before end 2011 a regional framework to strengthen the SBA implementation at regional level. This approach will complement the “Pacte de soutien à l’initiative” (part of the Plan Marshall 2.green) which is currently the framework for SME policy in Wallonia.

Initiatives have been undertaken to stimulate entrepreneurship in education (Unizo Enterprising School in Flanders, Boost your Talent in Brussels region or starters grants by Agence de Stimulation économique wallonne). In 2006, the Flemish government approved the ‘Ondernemend Onderwijs’ plan, the Flemish Entrepreneurial Educational Action Plan. The objective was to give each child a sense of entrepreneurship and to put any interested children on the road to starting their own business.

Platforms for mediating business transfers have been set up in Flanders (Unizo), Brussels region (BruTrade) and Wallonia (SOWACCESS). A special tax regime for succession has been put in place to allow smooth transfer of family businesses between generations. At the federal level, a Family

Plan to improve the social conditions/situation has been put in place as well as special measures for female entrepreneurs on maternity leave. A register for replacing entrepreneurs has been set up for entrepreneurs who want to suspend their activities temporarily while ensuring their business to continue. Other measures include advisory for young entrepreneurs and a special type of company statute for starters (SPRL - Starter - BVBA) with limited capital requirements (the limited capital may however lead to difficulties when obtaining bank loans). A federal network of female entrepreneurs from Belgium in being put in place. Some more measures were mentioned indicating that this area has got wide attention.

Enterprises welcomed the anti-crisis measures put in place at federal level, such as easier access to finance and the credit mediator (CeFiP – KeFik). Also the system of temporary unemployment (extended for employees) was very effective for companies as it allowed them to keep staff on board and restart business activity very quickly.

Concerning access to credits, in particular for SMEs, federal and regional governments have taken measures to reinforce the capital of SMEs and other structural or short-term measures: for instance creation of a credit ombudsman (such as Conciléo in Wallonia), the export credit guarantee scheme Belgacap, steps to reduce public payment delays and a system for cash advancements on outstanding payments for SMEs (Casheo). Loan guarantee schemes have been put in place in cooperation with banks (for example Microcrédit PME in Wallonia, PMV Flanders or BruStart/BruSoc in Brussels region).

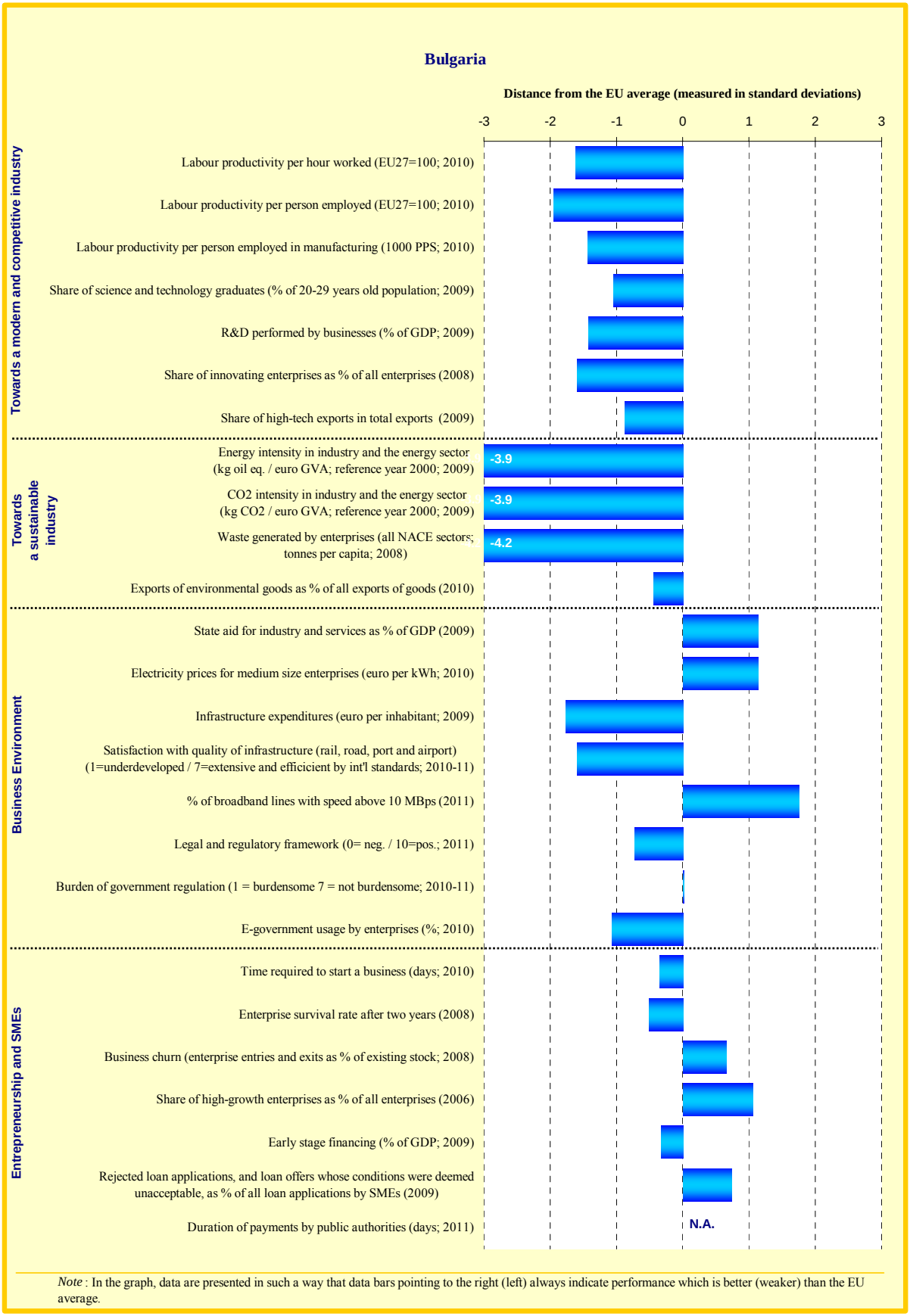
New programmes (some of them being financial engineering instruments co-financed with ERDF' resources) have been put in place to support and stimulate innovation for SMEs by means of subordinated low interest loans for innovative projects (for example "Novallia" in Wallonia) and funds to stimulate the economic tissue towards innovative sectors of activity (for TINA fund in Flanders).

#### 4.1.6 Conclusion

In terms of change, Belgium has increased its specialisation in higher quality market segments in a few specific sectors (e.g. pharmaceuticals) and it has decreased further its share of labour intensive industries. Manufacturing production in Belgium has recovered relatively fast from the crisis notably as a result of the favourable economic situation in Germany. The impact of the crisis in terms of structural change was rather limited.

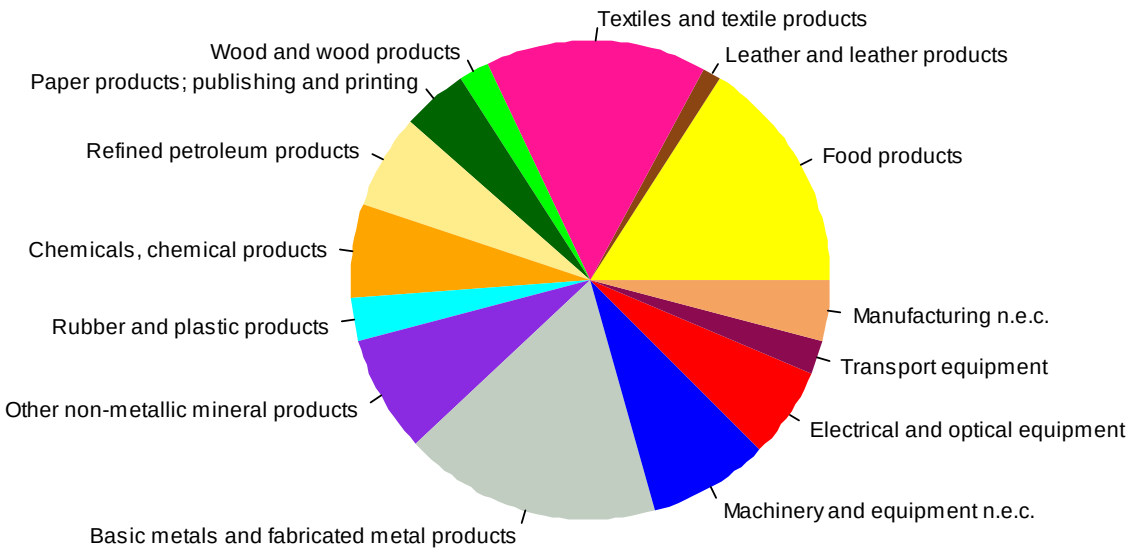
As Belgium has a low share of new science and technology graduates and a low share of high-tech exports in total exports, there is room for improvement of innovation policy. The energy intensity of the industry could also be improved. Notwithstanding the fact that the higher energy intensity in the Belgian industry and energy sector is to some extent explained by the industrial structure of the country, it represents a potential disadvantage, and further action on the energy and climate fronts will be important to reduce the energy intensity of the industry and energy sector. Finally, administrative simplification and faster delivery of permits can help create the conditions for a good business climate.

## 4.2 Bulgaria




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Bulgaria (2006)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

### 4.2.1 Introduction

*Trade and industry specialisation*

Manufacturing contributes 18.6 % to Bulgaria's total value added against 14.9 % for the EU as a whole. At the detailed manufacturing industry level, Bulgaria is specialised in labour-intensive industries (manufacture of knitted and crocheted articles), in capital-intensive industries (manufacture of cement, lime and plaster) and in marketing-driven industries (manufacture of grain mill products). In the top 5 industries, mainstream manufacturing industries (such as the manufacture of batteries) can also be found. At the more aggregated sector level, Bulgaria is characterised by strong trade specialisation in sectors with a low intensity of innovative activity and low educational intensity, such as wearing apparel and recycling. The high share of high growth enterprises in the population of active enterprises indicates that Bulgaria is catching up.

Bulgaria's R&D intensity is below the EU average given its industrial structure. The share in low price segments of exports by technology driven industries are above the EU average, while the shares in high price segments are below the EU average, indicating an unfavourable position on the quality ladder. Overall, Bulgaria is a typical member of the group of countries featuring relatively lower income levels and specialisation in labour-intensive industries.

Most prominent sectors in Bulgaria

| |
|---|
| **Highest relative value added (2007)** |
| Wearing apparel, dressing and dyeing of fur |
| Tobacco products |
| Recycling |
| **Change in the relative value added (1999/2007)** |
| *Increasing specialisation* |
| Recycling |
| Wearing apparel, dressing and dyeing of fur |
| Non-metallic mineral products |
| Decreasing specialisation |
| Water transport |
| Tobacco products |
| Water supply |

*Structural change*

In terms of change, Bulgaria shows a different picture to its current position, almost the flip side. It has increased the relative value added share in high education sectors (such as in computers and software), and exports in technology-driven industries (such as the manufacture of radio and TV

transmitters). However, its specialisation in labour-intensive low-skill industries (such as in the manufacture of wearing apparel) has also continued to increase.

Bulgaria has improved its export quality strongly, it has increased its share in high-price exports and decreased export share in low-price segments considerably. However, the sectoral R&D intensity has decreased relative to the change of the EU average; a positive change in sectoral R&D intensity was recorded in machinery and software.

Manufacturing production fell dramatically during the crisis (-35 %). It has rebounded moderately since then (8.5 %) but in April 2011 was still lower by 16.7 % from its previous cyclical peak. The crisis seems to have accelerated Bulgaria's structural change towards more advanced and knowledge-intensive industries and sectors, as demonstrated by the sizeable gains in exports by technology-driven and mainstream manufacturing industries.

Bulgaria has experienced a strong appreciation of the real effective exchange rate over the last decade (55%, compared to 21% in the EU27), indicating a loss in cost and price competitiveness. Here, the increase in nominal unit labour costs (73%) between 2000 and 2010 played a significant role. While labour productivity per hour worked has gradually increased over the last years, it is still about 58 percentage points below the EU27 average.

Overall, Bulgaria can be seen as catching up with respect to competitiveness, in particular as regards specialisation and the quality ladder, but not with respect to R&D.

### 4.2.2 Towards an innovative industry

Bulgaria is one of the catching-up countries with an innovation performance well below the EU average. The industrial R&D activity essentially takes place in the sectors of information and communication technology, electronic equipment and machine building. The development of adequate human capital, well-established clusters and technology centres would help for the innovation capacity of Bulgarian companies in the long term.

The national target in the National Reform Programme of 1.5 % GDP spending in R&D by 2020 has mainly been based on future increases of the private R&D investments[73]. Although the R&D expenditures in Bulgaria are increasing, they are still much lower than the EU average level. The structure of R&D expenditure remains strongly imbalanced and the share of public sector financing is double that of businesses.

The current policy support system is fragmented and uncoordinated and is unsuited to the implementation of the coherent and coordinated science, technology and innovation policy. The Bulgarian Innovation Strategy, which was adopted in 2004, will be updated. It is mainly implemented by the Operational Programme "Competitiveness 2007-2013" funded by the European Regional Development Fund (ERDF)[74] and the National Innovation Fund. However, the Fund has not been operating for the past 2 years as there were no new calls for proposals. Moreover, the peer evaluation of the Fund has been continuously postponed due to lack of funds.

The Ministry of Economy, Energy and Tourism works on a proposal for a new law on innovation to set appropriate framework for the private sector. Such a law will try as well to address among other the lack of appropriate funding instruments to support the national innovation policy. The Bulgaria Academy of Sciences increasingly works with enterprises in order to support its research activities as there are planned only a few calls in 2011. However, there is still no officially adopted national strategy for R&D by the National Assembly.

### 4.2.3 Towards a sustainable industry

Although the sustainability indicators continue to improve, the Bulgarian industry lags behind the EU average in terms of energy intensity, carbon intensity, waste generation by enterprises and exports of environmental goods. The decrease in foreign direct investments due to the economic crisis has slowed the process of catching-up in this area. The industry is particularly vulnerable to energy price shocks and stringent environmental and emissions obligations because of the high level of energy intensity and Bulgaria's dependency on limited number of foreign energy suppliers.

The increase of the energy efficiency should be a key priority, as the industry still remains several times more energy-intensive than the EU average.

[73] Private R&D investments stood at LEVS 30 million in 2002 and they were already LEVS 108 million in 2009. R&D increased 7 % only in 2009.

[74] EUR 250 million have been earmarked for innovation and R&D by the end of 2015.

The Energy Efficiency Strategy has to address the bottlenecks in the area of industrial sectors.[75]

At the same time, the compliance with the environmental and climate requirements will require significant financial efforts from industrial enterprises in order to improve their processes, know-how and technologies. Therefore, the increased use of EU Structural Funds will be crucial to support important investment projects in the field. The ERDF earmarked via the Operation Programme Competitiveness EUR 206 euro for SMEs and enterprises for projects in these fields, which have to be implemented by the end of 2015. The achievement of the renewable energy targets[76] will mainly depend on the successful implementation of the Renewable Energy Action Plan. The adoption of a National Climate Change Action Plan[77] has been delayed.

A System for Certification of Green Jobs is operational since January 2011. It is a measure to promote green jobs in which eligible companies receive public support. The companies need amongst other to put in place an environmental management system in place such as ISO 14001[78] and EMAS.

Operational Programme "Environment" for the period 2007–2013 (EUR 1.5 billion envisaged) and the pre-accession programme ISPA are the main instruments for the development of environmental infrastructure. This concerns the reduction of water basins contamination by untreated municipal waste waters, improvement of the quality of drinking water, and development of regional waste management systems. Timely implementation and the design of quality projects, although challenging, can help fostering the development of related industries, mainly in the field of water and waste management.

### 4.2.4 The business environment

The indicators regarding business environment show a mixed picture of Bulgaria. On one hand, it scores above average regarding the availability of broadband infrastructure or prices of electricity for businesses. On the other hand, Bulgaria scores below average in the availability and quality of infrastructure and the legal and regulatory framework.

The implementation of the Programme for Better Regulation 2008-2010 has somewhat enhanced the business environment. Measures include the abolishment of 112 illegal municipality regimes, reduced minimum paid-in capital for registration of a company, and the removal and/or facilitation of 32 licensing regimes. The 2nd Programme for Better Regulation 2010 – 2013 has been in force since 1 June 2010 and sets again concrete actions to further improve the regulatory and administrative environment. The complete implementation of the Programme is expected to have a positive impact on the business environment.

However, challenges remain, both at local and state level. These include the alleviation of regulatory regimes/permitting (e.g. construction, chemistry and pharmaceuticals); simplification and decrease of administration fees, implementation across the board of the practice of silent approval[79]; significantly increasing the provision of e-government services; development of the one-stop shop practice; improvement of the public procurement framework, better contract enforcement.

It should be stressed that the progress of the key initiatives for better regulation and e-government has been rather slow and irregular. In 2010, the usage by enterprises of e-government services still stands below the EU average.

The actions, in the spheres of improving the functioning of the judicial system and fighting against corruption and organised crime, could be further strengthened in order to address their negative impacts on the economic and social development as well as on the implementation of EU funds. In the long term Bulgaria needs to build up more stable and efficient institutions as well as to increase their capacity to support the business environment.

The absorption of EU funds is low because of low administrative capacity and lack of support by commercial banks. The administrative procedures are complicated and, at the same time, the enterprises do not find the needed co-financing for

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75 The European Regional Development Fund earmarked via the Operational Programme Regional Development approximately EUR 200 euro for municipal and educational buildings.

76 16 % of renewable energy sources in final energy consumption and a 10 % share of renewable energy in the transport sector by 2020.

77 135 installations in Bulgaria are covered by EU Emissions Trading System.

78 In Bulgaria, around 700 enterprises are certified with ISO 14001.

79 If a business does not receive a reply to its request from the administration within a certain time period, this means that its request has been approved.

the projects. EU funding does not seem riskless to banks because there is a chance of suspension of funds (e.g. corruption, fraud) or liquidity problems due to delayed payments by the administration. The administrative reform has only been focused at the reduction of administration staff costs without improving the capacity for effective policy implementation[80].

The modernisation of the transport infrastructure is a major challenge after years of underinvestment in important core areas such as highways, ports, and rail. The better usage of European structural funds will be a prerequisite for the successful completion of these projects as Bulgarian public funding is limited. The current efforts to accelerate the construction of important infrastructural projects (e.g. Trakia highway, Sofia subway) will have positive effects on the business environment in terms of putting in place new key transport infrastructure.

### 4.2.5 Entrepreneurship and SME policy

The Operational Programme "Competitiveness 2007-2013" envisages special support to export oriented SMEs equal to EUR 40 million. The support includes encouragement of SMEs to benefit from the growth of the markets, support for participation in international economic, trade, investment and innovation events, creation of electronic portals and increase of export training.

However, Bulgarian small and medium enterprises still face many obstacles to benefit from internationalisation as they experience pre-export financing problems which are not properly addressed by the current export framework. The support institutions (e.g. trade representatives) do not always provide useful practical information for companies and export guidance seems to be rather outdated. A better support is crucial for the further internationalisation of Bulgarian SMEs via available, regularly updated, commercial statistics and data, export guarantees, and pre-export financing.

The access to finance for SMEs has become difficult and often impossible as there has been a substantial slow-down of bank lending to businesses, in particular, to young and innovative enterprises. SMEs face severe credit conditions with excessive interest rates and requirements for collateral. This hinders the SMEs from matching EU Structural Funds and as a result such funding is lost.

Private capital finance is undeveloped and has insignificant share in the market. Commercial banks rarely finance start-ups and there is no integrated venture capital framework setting the conditions for financing start-ups. Concrete examples of active venture-capital entities such as business angels can be found in the field of information technologies (e.g. software for mobile phones, video games), however, these are rather exceptions than common practice and the invested amounts are below EUR 100 000. There is need to intensify and expand financial engineering instruments for SMEs also in the area of innovation, business modernisation and energy efficiency.

The recently agreed JEREMIE financial instrument managed by the European Investment Fund (EIF) will cover a significant part of the needs of the market. EUR 200 million have been earmarked for venture capital, seed capital, equity and mezzanine funds as well as guarantee fund to be allocated by 2015 via the Operational Programme "Competitiveness".

The education system does not fully reply to the market requirements i.e. it does not provide all the necessary qualifications for the businesses. Primary and secondary education lacks dedicated training for entrepreneurial skills. Existing business and management training and other related subjects in tertiary education do not sometimes prepare entrepreneurs with the needed skills to success in highly competitive market. Concerning different crafts, there are no sufficient technological learning programmes and adequate practical training courses. Finally, wage differentials within the EU as well as social systems benefits (e.g. pensions, medical cover) mainly explain the lack of qualified workers and employees.

### 4.2.6 Conclusion

Bulgaria faces some important challenges on its way to improve its competitiveness such as cutting red tape at different levels of the state and local authorities, fostering innovation in view of increasing productivity, improving the energy efficiency across all sectors of the economy and developing the transport infrastructure. In the short term, absorption of structural funds which is crucial in supporting these undertakings remains dramatically low. A proper implementing mechanism for management and control of the funds can help remedy that situation, in particular the EU co-financed programmes.

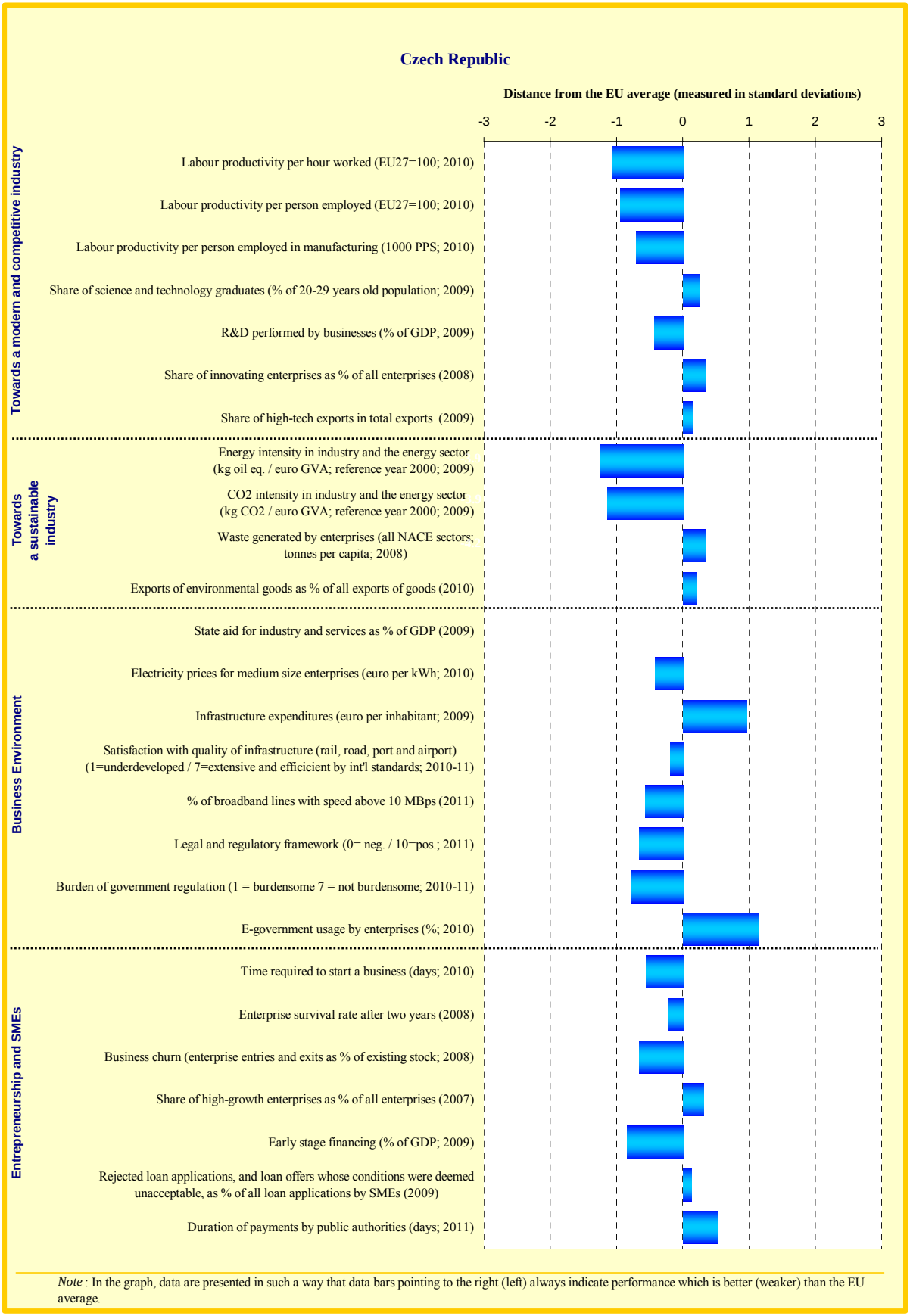
Cooperation and coordination between research institutions and businesses is still limited. The implementation of the measures of the existing

[80] An average 12 % cuts of the number of civil servants in the administration was reported in February 2011.

innovation and R&D programmes is rather slow and there is lack of large flagship projects of excellence in the field. Bulgaria needs to improve its administrative capacity and simplify existing rules and procedures in order to accelerate the absorption of funding in all sectors.

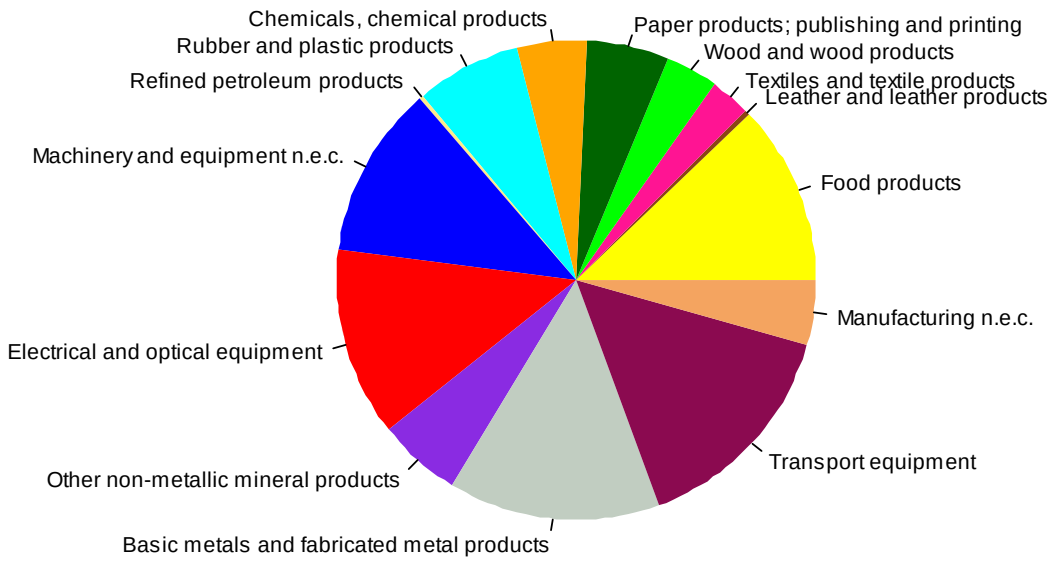
In the short term, high loan interest rates, required collateral and securities and government arrears remain a significant burden to business.

## 4.3 Czech Republic




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Czech Republic Cyprus (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.3.1 Introduction

*Trade and industry specialisation*

Manufacturing plays an important role in the Czech economy, contributing 23.6 % to total value added (EU 14.9 %) in 2009. At the detailed manufacturing industry level, the Czech Republic is specialised in capital-intensive industries (parts and accessories for motor vehicles), mainstream manufacturing (manufacture of rubber products), and labour-intensive industries in terms of value added. At the more aggregated sector level, the Czech Republic is specialised in sectors with high innovation intensity, such as electrical machinery, but also medium-low innovation sectors (such as printing and publishing). Trade specialisation is to some extent different to industry specialisation in terms of being more tilted towards knowledge-intensive sectors, with the Czech Republic specialising in technology-driven industries (such as computers), a defining characteristic of the group of countries with lower income levels and trade specialisation in knowledge-intensive sectors. However, the relatively large share of high-tech exports (mostly related to electronics and telecommunications) has also coincided with a large share of high-tech imports, resulting in only small value added in these sectors.

The Czech Republic could benefit from increased specialisation in those sectors where educational intensity is high, both in trade and industry, such as in financial services or research and development. Its R&D intensity is also below the EU average, given its industrial structure. The export quality performance is characterised by low share in high price and high shares in low price export segments, indicating an unfavourable position on the quality ladder.

Overall, the Czech Republic is a typical member of country group 3, where trade specialisation in advanced manufacturing industries and sectors and relatively low R&D activity reflect these countries' position in the international value chain, i.e. they are more focused on assembly and production, whereas innovation and R&D are more likely to be done in the group of countries with higher income levels and specialisation in knowledge-intensive sectors (group 1). In contrast, educationally intensive service sectors are underrepresented, as there is less scope for the international division of labour.

| Most prominent sectors in Czech Republic |
|---|
| **Highest relative value added (2007)** |
| Motor vehicles, trailers and semi-trailers |
| Rubber and plastics |
| Electricity and gas |
| **Change in the relative value added (1999/2007)** |
| *Increasing specialisation* |
| Rubber and plastics |
| Air transport |
| Motor vehicles, trailers and semi-trailers |
| Decreasing specialisation |
| Wearing apparel, dressing and dyeing of fur |
| Coke, refined petroleum and nuclear fuel |
| Recycling |

*Structural change*

In terms of change, the Czech Republic shows similar behaviour to its country group. The relative export and value added share in labour intensive industries (such as the dressing and dying of fur) and low innovation intensity sectors (such as wearing apparel) have decreased, while they have increased in high innovation and high education sectors as well as in technology-driven industries, (such as the manufacture of radio and TV transmitters and receivers, or computers). The quality ladder and the R&D indicators show strong improvement. Overall, this points to a positive outlook in terms of competitiveness and catching up potential to group 1.

Manufacturing production fell by 23 % during the crisis but has mostly recovered, reaching in April 2011 a level 3.4 % lower than its previous cyclical peak. The impact of the crisis on structural change in the Czech Republic was very limited, as no major change in specialisation patterns occurred.

The Czech Republic has experienced a strong appreciation of the real effective exchange rate over the last decade (62%, compared to 21% in the EU27), indicating a loss in cost and price competitiveness. In spite of this, the Czech export performance has improved, as growth in real exports has averaged 11.8% between 2000 and 2008 and the balance of trade has improved. Nominal unit labour costs have increased by 34% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. While labour productivity per hour worked has gradually increased over the last years, it is still about 38 percentage points below the EU27 average.

### 4.3.2 Towards an innovative industry

According the Innovation Union Scoreboard 2010, the Czech Republic is moderate innovator. A major challenge for the Czech research and innovation system is to increase domestic private research and innovation investment. While in 2009, the level of business enterprise expenditure in R&D rose to 0.92 % of the national GDP, one of the highest in Central and Eastern Europe, a large share of this investment was carried out by multi-national corporations. Indigenous firms, especially SMEs, have not engaged yet in boosting its technological and innovative capacity and to a large extent the majority of Czech firms still compete internationally in costs, instead of differentiation through innovation. Concerning the indirect support of private R&D, the existing fiscal incentive scheme falls short of its objectives: While it allows the Czech enterprises to deduce their R&D expenditures from the tax base, they can do so only for R&D carried out in own premises. The ongoing revision of the tax scheme aims at rectifying this situation and including the purchased R&D into deductible items. It is planned to be finalised in 2012.

The low share of private contribution to the university and public research organisations´ R&D (below 1 %), and the low number of public-private co-publications evidence the relative weak linkages between science and industry.

A strategic document in the area of R&D and innovation in the Czech Republic is The National Research, Development and Innovation Policy of the Czech Republic 2009-2015. Its revision is foreseen for end 2011, by when the results of an ongoing international audit of the R&D and innovation system in the Czech Republic will be known. An innovation element is elaborated separately in the recently tabled Czech International Competitiveness Strategy prepared by the Ministry of Industry. The objective of the strategy is to promote the Czech Republic amongst the first twenty most competitive economies in the world. Besides innovation, it includes another eight key pillars for reform: Effectiveness of the goods and services markets, financial markets, labour market, education, healthcare, macroeconomics, infrastructure and institutions. It is linked to the Czech Cohesion policy and the forthcoming Pro-export Strategy for 2012-2020.

The Operational Programme Enterprise and Innovation (OPEI) includes support for increasing the innovative performance of firms (innovation of products, processes, organisation and marketing), as well as for improving access to finance for new and developing SMEs, stimulating cooperation between the science and industry and developing high quality services for business. Four of the programmes within the OPEI support explicitly innovation: Innovation (innovation projects and

protection of IPR), Potential, Prosperity (centres for technology transfer, business incubators, business angels) and Cooperation (technological platforms and clusters).

The recently established Technology Agency in charge of applied and collaborative research launched in 2011 its first R&D support programmes focused on advanced prospective technologies and on the stimulation of cooperation between R&D institutions and industry in sectors such as transport, energy or environment. Alongside its programmes ALFA, BETA and OMEGA, the so called Competence Centres programme supports the creation and operation of research, development and innovation centers with strong application potential. It is expected that around 35 centers, each including at least 3 enterprises and one public research organisation, will be supported in the period from 2012 to 2019. This entails a budget amounting to CZK 6 billion for the whole period and CZK 366 million for the first call.

Two voucher programmes supporting cooperation of SMEs and universities or research institutes currently exist at the regional level (South Moravia and Hradec Králové). The subsidies reach up to CZK 150 000 per voucher with a ceiling of 75 % of the project's value. The South Moravian Innovation Centre (JIC) launched the first call in the Czech Republic in summer 2009. So far, more than 90 vouchers worth more than CZK 12 million were distributed among Czech companies with the first payment made in February 2010.

Within the specific programme of the Ministry of Industry and Trade, called "TIP", 423 projects were approved in 2009; 118 in 2010 and 192 in 2011. The programme supports industrial applied research and experimental development in the areas of new materials and products, new progressive technologies and new information systems. The overall budget is CZK 11.2 billion for the period 2009-2017.

Besides a higher mobilisation of resources for research and innovation, the challenge remains to ensure the efficiency of these investments, in particular by enhancing the creation of linkages between science and industry. In this respect, a stronger reflection of the innovation aspect in the forthcoming revision of national Research and Innovation Policy 2009-2015, together with the inclusion of a multiannual funding framework, would be desirable.

### 4.3.3 Towards a sustainable industry

The Czech Republic is one of the most energy intensive countries in the EU, mainly due to high intensity of its industry (such as metallurgy, steel and coal). In parallel, potential of cleaner technologies remains largely untapped. Interestingly, the share of environmental goods in the exports of Czech enterprises is high (the Czech Republic scores as the fourth in the EU) and they generate comparatively low volume of waste.

Electricity and gas markets are still dominated by incumbents and the Czech Republic has one of the highest electricity prices for businesses in the EU. The Government intends to continue using a system for the operational support of electricity production from renewable energy sources in the form of guaranteed prices. Although the Czech National Reform Programme 2011 envisages a modification of the RES targets if needed, it does not analyse any impacts of the RES support, particularly linked to the state of the infrastructure, electricity prices and subsequently the competitiveness of businesses.

The Energy Efficiency Action Plan of the Czech Republic sets an indicative energy savings target for 2010 of 3 573 GWh, i.e. 1.6 % of the volume of average energy consumption in 2002–2006. Although the Czech National Reform Programme 2011 acknowledges a need to reduce the consumption of primary energy sources, it foresees that the Czech Republic will set an indicative target only once a thorough feasibility analysis is carried out. Ongoing and foreseen measures improving the energy intensity focus on thermal insulation of buildings and improvement of efficiency of district heating networks, reduction of energy intensity in industries, public transport and railways in particular, improvement of conditions of energy performance contracting and energy services in general. However, these measures are not foreseen to bring about any absolute reduction of primary energy consumption.

So far, there has been little progress in implementation of the 2009 Programme for support of environmental technologies, particularly in prioritising R&D across the sectoral research programmes. A new research programme is therefore being prepared, focusing on energy resources and creation and protection of environment (renewable resources of energy, protection of ecosystems, environmentally friendly technologies). It will be implemented by the Technology Agency under its programme ALFA.

The Rules of the application of environmental criteria in public procurement and purchases of government and public administration are binding since 30 June 2011 for seven product groups. So far, the progress seems to be limited to the two originally selected product groups (office and computer equipment), with 31 manufacturers of

furniture holding the eco-label "Ekologicky šetrný výrobek". For the office equipments, hundreds of models already comply with the stipulated methodology.

An important incentive for investment in clean technologies could be seen in a set of proposals currently in preparation, embedding the polluter pays principle in the sectoral regulation on water, air and waste. Concretely, in the area of air pollution the draft proposal foresees a substantial increase of all fees related to certain pollutants (i.e. TZL, NOx, SO2 and VOC) as of 2016 while focusing on the largest sources of pollution. The preparation of the new Water Act will be launched in 2013.

While the new Waste Act is in preparation and should be submitted to the Government by September 2011, the Waste Management Plan is scheduled only for two years later. The aim of the Waste Management Plan will be to set long-term priorities for the management of municipal and hazardous waste, the prevention of the generation thereof, and the obligation to return products, appliances and packaging.

Despite past efforts and ETS, the Czech Republic remains one of the most energy intensive countries in the EU, which in combination with the high electricity prices poses a significant burden for its businesses. Developing additional measures promoting take-up of energy efficient solutions, especially in private and public buildings and energy-intensive industries is therefore a key, in particular in light of the current Czech projections which do not foresee any decrease of the Czech primary energy consumption by 2020. At the same time, the challenge for the Czech Republic is to ensure that the capacity and performance of the transmission and distribution network enables the implementation of the Czech RES target while safeguarding that electricity prices do not hamper the competitiveness of businesses.

#### 4.3.4 The business environment

The Czech Republic ranks significantly below the EU average concerning the quality of its legal and regulatory framework: Business regulatory environment remains subject to frequent changes, often adopted without a thorough analysis of their impacts and notably impacts on SMEs. Such a regulatory management policy increases the complexity of business environment and imposes unnecessary burdens on businesses. Combined with the lack of transparency and credibility of public procurement rules, it significantly reduces the overall investor confidence.

Concerning the availability of high-speed broadband lines, the Czech Republic belongs to the weakest EU countries. On the other hand, the usage of e-government services by the Czech enterprises seems to be well above the EU average despite delays hampering the full launch of those services. The Czech Republic also provides relatively high levels of state aid (0.5 % of GDP in 2009).

The progress on the better regulation agenda has been made in implementing the Action Plan for Reducing Red Tape: Until the end of 2010, 15.6 % of reduction was already achieved, which corresponds to CZK 11,541 billion. The Government has set a new administrative burdens reduction target of 30 % in 2020 compared to 2005. By the end of 2012, the reduction of administrative burden is expected to reach the intermediate target of 25 %. While the reduction measures undoubtedly facilitate doing business in the Czech Republic, they remain to be of an ex post nature and do not prevent new unnecessary burdens being imposed on businesses in the course of the legislative process.

In its decision of 16 February 2011, the Government took account of the deficiencies of the existing impact assessment system and of proposals for its improvement to be delivered by 30 September 2011. A crucial element of the reform will be to ensure an adequate quality control of regulatory impact assessments and to define the status of the Board for Regulatory Reform and Effective Public Administration vis-à-vis the Legislative Council. Unfortunately, the proposal fails to address the unequal treatment of stakeholders during open consultations and to promote the Methodology on public consultations among mandatory provisions on impact assessments.

The Czech government adopted in May 2011 a revised version of the Public Procurement Act with the aim to increase the efficiency of the public expenditure and the transparency of public procurements by using the IT tools. While notable progress has been achieved in publication of information on ongoing tenders and their results, several electronic auction tools seem to being developed in parallel. For the tenders of low amount, an electronic market place is being developed.

An important measure to increase the efficiency of public administration is the introduction of the e-government. It has been launched on the basis of the recently revised Smart Administration Strategy (December 2010) and financially supported by the ERDF Integrated Operational Programme. Despite the fact that the strategy defines the priorities and time schedule for the introduction of e-government

in the Czech Republic, its implementation remains hampered by insufficient legal framework for accessing and interlinking public databases and issuing electronic certificates, weak coordination of individual projects and unstable public administration.

The data boxes (electronic delivery system destined for the sending and receiving of documents relating to the public authorities) were launched on 1 November 2009 and so far have not lead to a noticeable reduction of administrative burden – their usage remains limited, they are used only passively for obtaining documents while it is impossible to communicate/send documents. Therefore, in the future, new functions of the data boxes will be introduced (e.g. link to the bank account of users by end 2011).

The main part of the e-government measures represent the so called basic registers which, once operational, will significantly reduce the administrative burden for both citizens and enterprises. Contracting procedure for them has been launched and they are foreseen to become operational as of July 2012.

Discussion is also ongoing on the extension of the scope of the Czech Points ("all in one place points", where the citizen can obtain all the information on the data kept about him or her by the state in its central registers), such as the possibility to access the Czech Points from home or to link them with data boxes.

A new broadband strategy "Digitalni Cesko" was approved by the Czech government in January 2011. It specifies individual tools to reach the strategy, the deadlines and responsible bodies. Among others, the strategy sets a target to ensure the availability of access to high-speed Internet in all populated areas of the Czech Republic with a minimum transmission speed of at least 2 Mbps (download), and in cities of at least 10 Mbps by 2013. By the end of 2015, the Czech Republic aims to have eGovernment services used by at least 50 % of the population and 95 % of businesses (89 % in 2010 according to EUROSTAT). The main tools are: establishment of development criteria (preference of areas not yet covered by the internet), reduction of costs of frequency, use of the Structural Funds for building high speed internet infrastructure.

A major challenge for the Czech business regulatory framework is to reduce the frequency of legislative changes and to promote evidence-based policy making. The progress achieved so far in increasing the transparency of public procurements needs to be sustained and possible non-compatibility of several electronic auction systems avoided. In order to alleviate the burden of public administration processes for businesses it is important to complete and increase the efficiency of the e-government services.

### 4.3.5 Entrepreneurship and SME policy

The Czech Republic is placed well below EU 27 average regarding the share of people expecting to start a business, their desire to become self-employed and the degree to which school education helped to develop an entrepreneurial attitude (the second worse performer in the EU). Access to finance remains extremely difficult for SMEs, especially in the early stage of financing. Concerning bankruptcy procedures, it takes the longest time in the EU to wind up a business (2 years in the EU on average versus 6.5 years in the Czech Republic). Czech businesses also face higher cost to start a business and it takes them longer to register a property that the EU average. The cost of enforcing contracts is the most expensive in the EU.

Despite the fact that the curricula in general secondary education already includes essential competences for entrepreneurship, it is not implemented on a systematic basis and remains at the full discretion of teachers. Businesses in the Czech Republic consider the lack of entrepreneurship education as one of the main barriers in creating start-ups jobs and expanding in third country markets. Becoming an entrepreneur is seen too risky to try and becomes only the last resort solution. From this perspective, it is no surprise that very few export oriented Czech SMEs are willing to open subsidiaries companies in third countries.

The national scheme of guarantees for SMEs expired in 2010 as it was seen only as one of the anti-crisis measures. Guarantee and loan schemes under the Operational Programme Enterprise and Innovations are not sufficient to substitute the national scheme from the magnitude perspective. Several other temporary measures supporting businesses were discontinued in 2010 but so far, no evaluation of their efficiency has been made available.

Financial instrument focusing on early stage financing is still missing in the Czech Republic. The Operational Programme Enterprise and Innovations includes a commitment to implement a pilot project of the venture capital in the current programming period so that the instruments of financial engineering can be used for the support of the SMEs more widely after 2014+. The concept of the venture capital fund co-funded from the Operational Programme Enterprise and Innovations

was finalised in March 2011 by the Ministry of Industry and Trade. The legislative proposal should be finalised in the autumn 2011 so that the holding fund implementing the venture capital can launch its activities during 2012.

A special "Entrepreneurship Council" gathering officials, business and employees stakeholders is meeting at least three times a year to discuss and assess new legislation having a direct impact on business environment.

Given the export orientation of the Czech economy, an increased attention is being paid to the pro-export measures. Work is ongoing on the new Czech Export Strategy for 2012-2015, the Government operated also a special green line for export companies, which since 2006 provided over 8 400 answers to interested SMEs. The so called "Export Academy" delivered complex export education for SMEs with sectoral and territorial focus. A number of thematic seminars and workshop was planned for 2011 focusing on the following markets: Turkey, South Africa, Russia, Argentina, Australia, and New Zealand.

It is still to be seen if the revised Act on Insolvency facilitated the restructuration and/or shortened the bankruptcy procedure of insolvent companies.

The main challenge for the Czech authorities remains to establish the venture fund as soon as possible and to explore all existing funding possibilities available under the EU Operational Programmes to support SMEs. A particular attention should be paid to enhancing entrepreneurship education.

#### 4.3.6 Conclusion

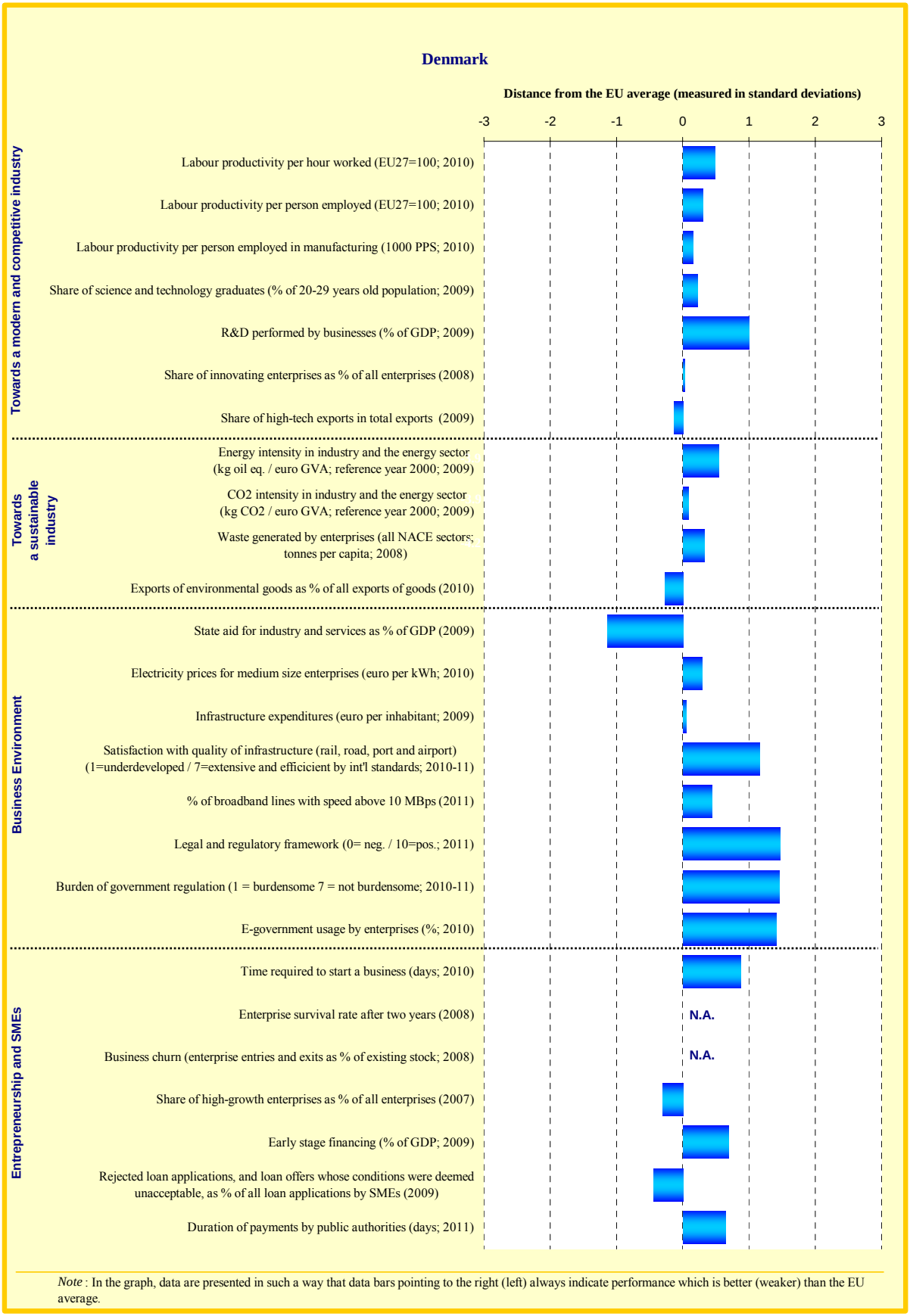
In line with the relatively low R&D intensity, the majority of Czech firms compete internationally on costs, instead of differentiation through innovation. Alongside a need to mobilise and coordinate resources for research and innovation, the challenge is to ensure that the scientific output corresponds to the industrial need. The foreseen revision of the tax scheme has a potential to boost private research and innovation.

Developing additional measures promoting the take-up of energy efficient solutions is desirable, particularly in the light of the current projections foreseeing an increase of the Czech primary energy consumption by 2020. In this respect and given the fact that the Czech Republic is one of the most energy intensive countries in the EU, electricity prices may hamper the competitiveness of businesses.

The Czech business environment is an important bottleneck to economic growth and investor confidence. In the absence of evidence-based policy making, it is subject to frequent legislative changes increasing uncertainty and imposing unnecessary burdens on businesses. The progress achieved so far in increasing the transparency of public procurements needs to be sustained. It is similarly important to complete and increase the efficiency of the e-government services.

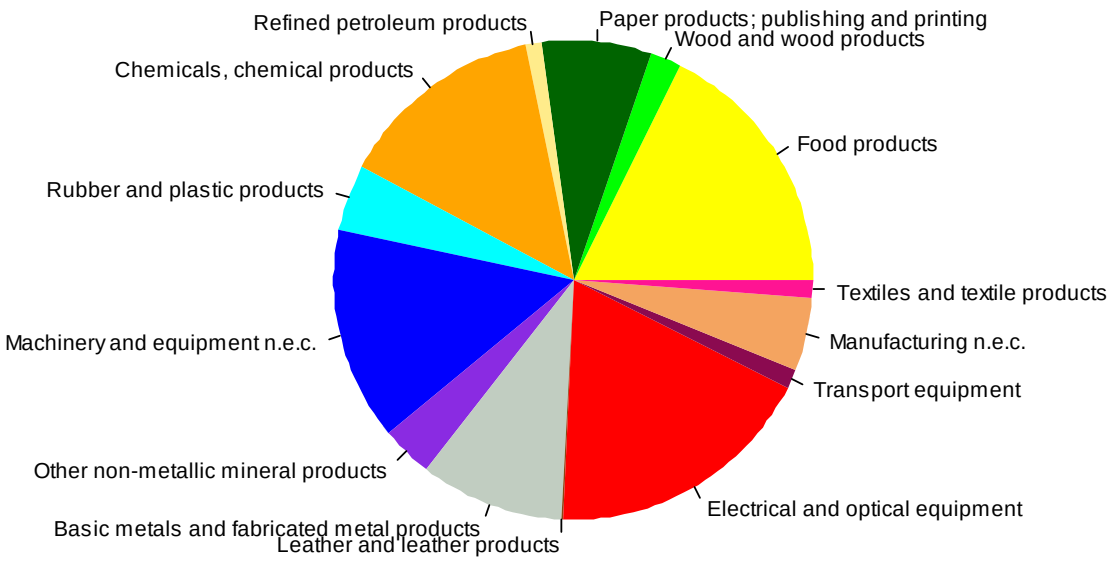
Improving access to early stage financing has become a matter or urgency, particularly in relation to the development of the venture capital fund. The fact that the school education in the Czech Republic does not help students to develop an entrepreneurial attitude will deserve closer attention. However, the Czech International Competitiveness Strategy could be an important step forward in developing the longer term vision of the Czech economy and society.

## 4.4 Denmark




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Denmark (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.4.1 Introduction

*Trade and industry specialisation*

Manufacturing plays a smaller role for Denmark than for the EU in total (13.2 % vs. 14.9 % of value added in 2009). At the detailed level of manufacturing industries, Denmark is specialised in mainstream manufacturing industries (electric motors, generators and transformers), and in marketing-driven industries (the manufacture of games and toys, or meat and fish products). In addition, in exports Denmark is also specialised in labour-intensive industries (the manufacture of builders' carpentry and joinery). At the more aggregated sector level, Denmark features value added specialisation in sectors with high innovation intensity (machinery), and with low innovation intensity (water transport). In exports, Denmark is strongly specialised in sectors with low innovation and medium-low education intensity (again, water transport). Overall, Denmark's specialisation profile is strongly driven both by intangible assets (marketing-driven industries such as games and toys), but at the same time by natural endowments (agricultural products, sea,...), explaining its bipolar specialisation in both innovative and less innovative sectors.

Denmark's business R&D intensity is above the expected level given its industrial structure, and its quality indicators are above average (with the exception of the high price segment in labour-intensive industries) and indicate a favourable position on the quality ladder. This explains how Denmark manages to sustain competitiveness in sectors characterised by low innovation intensity.

Most prominent sectors in Denmark

**Highest relative value added (2007)**
Water transport
Real estate activities
Tobacco products

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Real estate activities
Electrical machinery and apparatus, nec
Tobacco products
Decreasing specialisation
Supporting and auxiliary transport activities; activities of travel agencies
Inland transport
Water transport

*Structural change*

In terms of change, Denmark has strongly increased its relative value added share in technology-driven industries such as in medical equipment as well as

in sectors with high educational and innovation intensity (electrical machinery e.g. wind turbines), while substantially reducing its specialisation in sectors with low innovation and education intensity (land and water transport). The change dynamics for exports have been somewhat different, with high education sectors having increased strongly (financial services) but high-innovation sectors (communication equipment) and technology-driven industries (aircraft and spacecraft) having slightly decreased.

Denmark's R&D intensity has risen considerably, while there has been little change in the quality indicators. At the sectoral level, Denmark has gained R&D intensity mainly in services sectors such as distribution, software and research and development, while decreasing R&D intensity in machinery and transport and communications. Overall, this points to a mostly unchanged positive outlook for competitiveness.

The impact of the crisis on Denmark's specialisation patterns was limited, with no clear overall direction of change in the crisis years. The impact on total manufacturing production was severe and its level was in April 2011 still 14 % below its previous cyclical peak.

Denmark showed an appreciation of the real effective exchange rate over the last decade by 22%, which is only slightly above the EU27 average (21%), indicating nevertheless a loss in cost and price competitiveness. Nominal unit labour costs have increased by 34% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. Over the last decade, Denmark's labour productivity per hour worked has remained relatively stable at about 18 percentage points above the EU27 average and 4 percentage points above the Euro area average.

### 4.4.2 Towards an innovative industry

According to the Innovation Union Scoreboard 2010, Denmark is one of the innovation leaders with a second place, well above the EU. While Denmark scores high in sub-indicators such as linkages and entrepreneurship and intellectual assets, output in terms of innovating firms is relatively low.

The innovation system is well functioning. Private investment in R&D has increased by 54 % over the last decade. The public part of the innovation system has been consolidated through institutional reforms and mergers the last years. More funding in fewer funds has yielded a more efficient funding system, and more risk capital and incubators have been put in place. The co-operation between public research and private sector has increased significantly the last years and is expected to result in higher productivity for the participating firms. In the June 2011 "Agreement of Denmark as a Growth Nation", the government launches several initiatives aiming at further strengthening the innovation system in Denmark by re-organisation of the research councils and research institutions.

The Business Innovation Fund ("Fornyelsefonden") was launched in 2010 for 2010-2012. A total of DKK 760 million was allocated to the fund with the purpose of promoting restructuring and renewal of especially SMEs in the area of green technologies and welfare solutions.

The Danish Government's *Globalisation Strategy* which expires in 2012 and corresponding and matching national policies in areas including innovation, education, energy and the environment, indicate how Denmark aims at being a country with industries able to be highly competitive.

The government published the innovation strategy "Strengthened innovation in businesses" in 2010. The strategy includes 37 initiatives aiming at strengthening the innovation capacities of Danish SMEs. Initiatives include activities promoting participating in cluster activities, subsidies for SMEs' R&D activities and a strengthening of the Industrial PhD programme.

Several initiatives aiming at strengthening the innovation capacity in the Danish economy are launched in the "Agreement of Denmark as a Growth Nation". These include tax deductions for firms' R&D expenditures up to 5 million DKK per year.

Though Danish innovation policy is modern and comprehensive, a number of challenges remain. Indeed, despite the growth-friendly business environment, there are concerns about the relatively limited innovation capacity. Despite impressive efforts to increase R&D and innovation, the results in terms of high-tech exports and high-growth enterprises are below EU average.

### 4.4.3 Towards a sustainable industry

The performance of the Danish industry can be characterised as rather strong. This relates to, for example, the relatively low energy and carbon intensity in the industry. In 2008 an Energy Technology Development and Demonstration Programme (EUDP) was established. EUDP supports the development and demonstration of new energy technologies that can contribute to the ambition of independency of fossil energy in 2050. An environmental technologies action plan,

launched in 2010, aims to promote new environmental technological solutions and foster growth and employment in the Danish industry. As mentioned earlier, in 2010 the government established the Business Innovation Fund ("Fornyelsesfonden") of DKK 760 million for the period 2010-2012 with the aim of supporting innovation and market maturity within the green and welfare areas to create growth, employment and export for Danish businesses.

The government presented the Energy Strategy 2050 in February 2011. The strategy aims at making Denmark independent of fossil fuels by 2050 and includes a number of initiatives targeted toward fostering new green solutions for business. Initiatives are planned for the wind area with opportunities for development of wind turbines, the biomass and biofuels area, the biogas area, development of smart grids and measures for energy savings aiming at further reducing the already low energy and carbon intensities in the Danish enterprises.

Danish industry has a clear advantage in exports of green-tech solutions. Exports of energy technologies and equipment goods made up 12 % of total Danish manufacturing exports in 2009, thereby doubling the share since 2000. As a comparison, energy technologies and equipment only constituted of some 6 % of EU-15 exports in 2009. Danish industry is particularly strong in the segment wind-turbine components, insulation materials and energy efficient pumps.

#### 4.4.4 The business environment

Denmark scores clearly above the EU average in all indicator categories with the exception of the level of state aid. Denmark ranks among Member States with the lowest burden of government regulation, with a legal and regulatory environment that highly encourages the competitiveness of enterprises.

Regulatory reform has been on the agenda of the Danish government for over two decades with the aim of modernising the public sector and promoting an efficient business environment. As regards the reduction of the administrative burdens for businesses, the Government's objective has been to achieve the target of 25 % reduction in 2010 relative to the 2001 level. Over the period 2001-2010, 24.6 % of the 25 % target has been achieved.

In the "Agreement of Denmark as a Growth Nation", the Government sets a new target of reduction of administrative burdens with another 10 % in 2015 relative to the 2010 level.
In January 2011 the Danish Parliament decided to complement the efforts of reducing administrative burdens by setting a target of 10 % reduction of the perceived burdens also to be reached by 2015.
From 1 July 2011, for a period of three years, start-ups and firms with less than 10 employees will be exempted from new burdens incurred by legislation.

The third strategic programme to develop eGovernment is focused on improving digital services, efficiency and collaboration across all levels of governments. It includes the ambitious objective of digitalising all relevant communication between government and business by 2012. In 2010, the online availability of public services was 95 % for enterprises, and eGovernment usage by business one of the highest in the EU. "Virk.dk", a business-to-government one-stop-shop, is a main initiative aiming at facilitating the provision of information to government authorities, including invoicing. Some 30 % of all information, which enterprises must report to government authorities, is sent via "Virk.dk". Denmark is one of the best performing countries regarding one-stop-shops. Virk.dk is fully operational and web based (Danish Commerce and Companies Agency, DCCA).

The recently adopted "Konkurrencepakke" is mainly targeting the construction sector, the retail sector and health services and the public sector /public services. Other sectors for which measures are considered include taxis, postal services and public transportation services. The question of liberalisation of the pharmacies sector will be investigated further before any measures will be implemented. This also concerns the question about allowing larger hypermarkets in the retail sector.

The market for construction materials will be addressed by measures announced in the "Konkurrencepakke". The measures aim among other initiatives at increasing imports of foreign construction materials. Increased imports of foreign building materials is likely to increase the supply on the Danish market and result in a downward pressure on the prices of building materials. Ownership of clinics for dentists and general physicians by others outside the profession will be opened up which may encourage establishment of larger firms on these markets.

The government has launched a strategy aiming at increasing competition for public services by gradually increasing public procurement in municipalities and regions. New target for municipalities: 31.5 % of all procurement shall be public in 2015. In the "Konkurrencepakke" it also announced that negotiations with the regions will take place aiming at increasing public procurement in the regions to 2015.

### 4.4.5 Entrepreneurship and SME policy

Danish SMEs constitute on average just as much of total enterprises as the EU-27 average. The Danish SME share of total employment is a bit smaller and the share of value added larger than the EU-27 average, indicating a higher productivity in Danish SMEs. Danish SMEs are a bit larger than the EU-27 average. Micro enterprises represent 87% of all SMEs in Denmark while the corresponding share in the EU-27 is 92%. As a consequence, small and medium-sized SMEs hold larger shares of all enterprises in Denmark than in the EU-27. Therefore the average SME size is larger in Denmark than in the EU-27, 5.6 employees per firm compared to the average EU SME which employs 4.2 persons.

Indicators, from the EU SBA fact sheets, reveal that the entrepreneurship rate is lower in Denmark than in the EU. Attitudes towards entrepreneurship and self-employment indicate that Danes are less prone than the average EU citizens to start their own businesses. On the other hand, Danish SMEs are more internationalised than the average EU SME.

Denmark has a high level of start-ups. The challenge is a low level of high growth firms. This underpins almost all policy measures in the SME area, e.g. the "Erhvervspakken" and the New firms package with measures aiming at providing funding and easing financial constraints for start-ups and SMEs.

Measures include; provisions of DKK 500 million to venture capital markets to be matched by private funding; a growth loan guarantee scheme of DKK 1.5 billion to small businesses with high growth potential as well as a strengthening of the loan guarantees and counselling for new and micro enterprises; also the Export Credit Fund was extended and introduced the SME guarantee, a new targeted scheme, of DKK 2 billion, which aims to facilitate export firms to gain new orders. With "Agreement of Denmark as a Growth Nation", it has been decided to provide an additional 600 million DKK to the loan guarantee scheme. The measure "Seed 2.0" is targeted specifically to start-ups and new firms and provides seed and pre-seed loan of 500 million to be matched by private funding up to DKK 1.5 billion.

Among other measures to facilitate exports for SMEs, in the Agreement of Denmark as a Growth Nation, the Export Credit Fund has been extended to 2015.

The New firms package was launched in late 2010 early 2011 and contains an agreement with pension funds which strengthens the market for risk capital with up to 10 billion DKK for entrepreneurs and SMEs with growth potential (25 % risk, 75 % loan). The scheme is guaranteed by the Growth Fund. Also a new fund "Dansk Vækstkapital" was established with the purpose of investing in private equity/venture capital funds focusing on SMEs with a growth potential. The government has also initiated analyses to explore possibilities to provide corporate bonds market for SMEs.

In order to ease financial constraints for start-ups and young firms, tax legislation has been amended in some respects. These amendments include corporate tax exemptions, under certain conditions, for return on investments in young unlisted companies, tax exemptions for savings by individuals who use the money to start a company ("Etablerings- og Iværksætterkontoordningen"). Non-financial measures include the initiative for easing transfer of business from retiring business owners to new owners. Some 16 000 firms are affected in the coming years. As a part of "Agreement of Denmark as a Growth Nation", a committee has been established with the task of investigating possible ways of reducing corporate taxes from 25 to 20 pct.

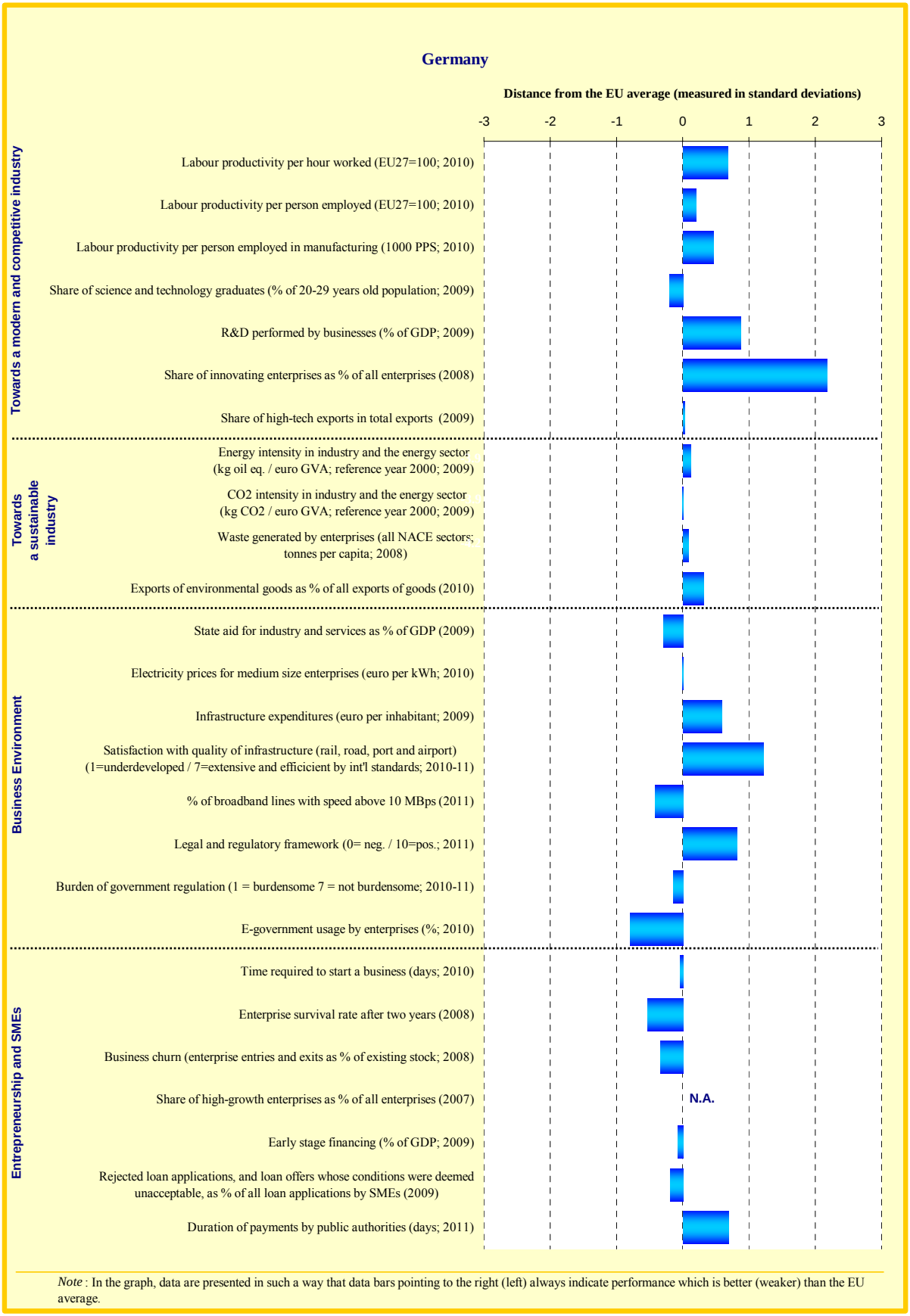
### 4.4.6 Conclusion

The main challenges facing the Danish industry remain the weak competition and low productivity growth, low shares of innovating enterprises, high-tech exports and high-growth enterprises. The limited innovation performance may be due to a combination of factors relating to a limited entrepreneurial culture, weak competition in especially the services sector and the fact that the results of reforms of the public innovation system have not yet showed up in the statistics. The increased co-operation between public research and private companies that have taken place during the last years, could lead to a better performance in terms of high-growth innovating enterprises exporting high-tech products in a near future. A number of measures addressing these problems were put in place during the last year with effects yet to materialise.

Further policy actions aiming at fostering competition could also spur innovation and increase the share of innovating enterprises. An especially important area is the service sector where there is a large number of SMEs who would benefit from more competitive service markets. The "Konkurrencepakke" was a first step in the direction of opening up public procurement for SMEs and increasing productivity in the service

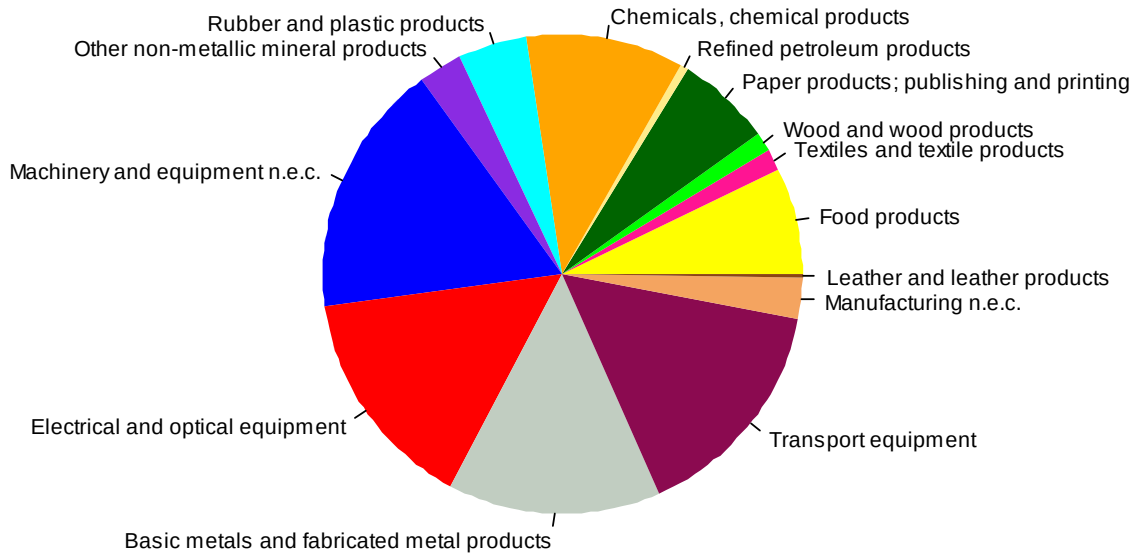
sector by liberalising some important sub-sectors.

## 4.5 Germany




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Germany (2009)**




*Note* : n.e.c. (not elsewhere classified)

*Source*: Eurostat

4.5.1 Introduction

*Trade and industry specialisation*

Manufacturing plays a bigger role for Germany than for the EU on average of value added (22.7 % against 14.9 % in 2009). At the detailed level of manufacturing industries, Germany is strongly specialised in technology-driven industries (manufacture of motor vehicles, electricity distribution and control apparatus), and less so in mainstream manufacturing, e.g. in the manufacture of transport equipment. Germany is also specialised in capital-intensive industries (e.g. the manufacture of parts and accessories for motor vehicles) in terms of value added but not in exports. The only labour-intensive industry in the top five industries is a high skill industry (machine tools). At the more aggregated sector level, Germany is specialied in high and medium-high innovation intensive sectors (motor vehicles, electrical machinery and medical, precision and optical instruments). However, Germany is not overly specialised in sectors with high educational intensity because of the relatively low value-added share in financial services and software. The share of exports by technology-driven industries going to the BRIC countries is very high, indicating further growth potential for Germany.

Germany's export shares in technology-driven and labour-intensive industries are extremely low in the low price segments, and in line with the average of the higher income, knowledge-intensive countries in the high price segments, indicating a strong position on the quality ladder. The R&D country effect is slightly negative, i.e. Germany's business R&D investments are below the expected level given its industrial structure.

Most prominent sectors in Germany

**Highest relative value added (2007)**

Motor vehicles, trailers and semi-trailers
Office, accounting and computing machinery
Electrical machinery and apparatus

**Change in the relative value added (1999/2007)**

*Increasing specialisation*

Office, accounting and computing machinery
Motor vehicles, trailers and semi-trailers
Radio, television and communication equipment

Decreasing specialisation

Renting of machinery and equipment
Air transport
Real estate activities

*Structural change*

In terms of change, Germany has further increased

its value-added specialisation in technology-driven industries and highly innovation-intensive sectors, e.g. in computers and electronic components. In exports, technology-driven industries have stayed stable, while highly innovation-intensive sectors have lost relative share (radio, TV and communication equipment). Interestingly, Germany has also considerably increased its relative share in low innovation sectors, due to a mix of several sectors (recycling, wholesale trade, water transport...). Germany's share in the high quality segments of technology-driven industries has decreased, as has its sectoral R&D intensity (R&D country effect) and its relative value added share of educationally highly intensive sectors. At the sectoral level, Germany's R&D intensity (i.e. R&D expenditure in relation to total value added) has decreased in motor vehicles, transport equipment, pharmaceuticals and communication equipment, while other sectors saw small increases (e.g. machinery).

Germany's manufacturing production rebounded fast after the crisis and was in April 2011 4.1 % below its previous cyclical peak. The impact of the crisis on Germany's specialisation patterns was limited overall, with technology-driven industries declining as compared with before the crisis.

Germany is among the few Member States which have experienced a depreciation of the real effective exchange rate during the last decade (-6%, compared to an appreciation of 21% in the EU27), indicating a gain in cost and price competitiveness. Nominal unit labour costs have increased moderately by 6% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. Germany's labour productivity per hour worked is about 24 percentage points above the EU27 average and 10 percentage points above the Euro area average.

Overall, Germany occupies a very favourable competitive position, which it could however strengthen even further by boosting sectoral R&D intensity.

### 4.5.2 Towards an innovative industry

The Innovation Union Scoreboard 2010 classified Germany among the innovation leaders in the EU. It belongs to those countries with the biggest research and development (R&D) capital stock, and the output of R&D and innovation activities in terms of patents, new products and high productivity is remarkable. German R&D intensity (percentage of GDP spent on research and development) is clearly exceeding the EU average, which was 2.0 % in 2009. With 2.8 % in 2009, Germany is already closely approaching the R&D target of 3 %. In order to move a step closer towards reaching the defined target, Germany invests an additional EUR 12 billion in education and research over the period of 2009-2013, about EUR 6 billion in research and EUR 6 billion in education and training.

Nevertheless, from a global perspective, Germany is still lagging behind major competitors such as Japan or South Korea, in particular concerning business R&D investments.

The measures to support innovation in Germany are described in the new high-tech strategy 2020, presented in July 2010, which continues a first initiative launched in 2006. The overarching strategy aims to foster cooperation between science and industry in key technology areas and lead markets and to improve the general framework conditions for innovation. The strategy focuses on R&D in priority areas such as energy and climate protection, health and nutrition, mobility, as well as security and communication. It also supports the development of key enabling technologies, which act as drivers of innovation and which build the basis for new products, processes and services, including for example optical technologies, materials technologies, biotechnology, nanotechnology, micro-systems technology etc.

The new strategy also includes SME funding via the Central Innovation Programme for SMEs (ZIM). In order to meet the challenges of global competition, SMEs are supported to enhance their research and innovation efforts and to intensify the development of new products, processes and services. The programme provides funding for cooperation and network projects and, since 2009, also for individual R&D projects. The planned annual budget amounts to approximately EUR 500 million. The strategy also comprises support to regional thematic clusters that bring together public research and enterprises to further develop high technologies in various areas.

In the long-term, one of the main challenges faced by Germany will be to avoid a systematic skill shortage in industry and academia, considering the emerging demographic challenge of the country (low birth rates and ageing society) and its relatively low availability of new science, technology and engineering graduates. The emerging shortage of skilled workers has already become an increasingly important obstacle to further growth in many industries. High skilled, professions – in areas such as Mathematics, Informatics, Natural Sciences and Technology – are particularly affected, though difficulties in the recruitment of skilled workers are also visible in other sectors, including health care and certain

crafts.

The imminent shortage of skilled labour in both academia and industry is recognised by the federal government in its initiative *"Konzept für Fachkräfte"*, launched in June 2011[81]. The federal government estimates that within the next 15 years, the German labour market could face a shortage of up to 6.5 million skilled workers, if no measures were taken. The Federal Ministry of Labour and Social Affairs expects that a large part of the additional skilled labour could be met by fully seizing the potential of the domestic labour market. The related measures are in particular aimed at increasing the number of students, reducing school drop-out rates and increasing the labour market participation of older workers and women. In particular regarding the latter, Germany performs considerably below the EU average, with only 55% of employed women working full time.

Germany has committed to spend 10 % of GDP on education and research by 2015, thereof 7 % on education and 3 % on research. Though the budget has already been considerably increased in this respect, further efforts will be necessary to meet the objective. According to the results of the first phase of the higher education reform package[82], progress has been made in certain fields, including in respect to increasing the number of study places and improving the quality of tertiary education. Nevertheless, further improving the quality of education and training will remain an important challenge.

In addition to strengthening the education system and the labour market, however, the German economy will also depend on better attracting skilled workers from other EU and non-EU countries. The initiative *"Konzept für Fachkräfte"* foresees a number of measures in this respect, including for example simplified procedures for recruiting engineers and doctors as well as easier recognition of foreign diplomas. While these initiatives go into the right direction, it remains to be seen whether they will be effectively implemented and whether they will be sufficient to address this increasingly important problem.

### 4.5.3 Towards a sustainable industry

Overall, the environmental performances of Germany's industry can be characterised as good. The energy intensity in manufacturing is below the EU average, the carbon intensity in the non-energy supplying industry is close to EU average, and in terms of waste generated by enterprises and exports of environmental goods, Germany scores better than the EU average. Germany also continues the trend of further reducing raw materials consumption while increasing industrial Gross Value Added (GVA). Moreover, the support to environmentally friendly technologies has been a focus of both Germany's structural reform agenda and its economic recovery packages.

The national "Energy Concept" presented in September 2010 outlines the country's path towards renewable energy in a long-term strategy up to 2050. In 2011, Germany has decided on additional far-reaching changes in its energy policy, including a gradual phase-out of nuclear energy production until 2022, measures to accelerate grid expansion, and a more market-based development of renewable energies. Germany intends to increase the share of renewable energy sources in the total energy consumption from currently 17 % to 35 % by 2020. Challenges remain particularly in ensuring the cost-effectiveness of renewable energy and in providing the required network infrastructure. Germany's interregional and international energy grids still need to be further enhanced in order to allow for a wide distribution and storage of energy produced from renewable sources. Several regulatory and non-regulatory measures, such as the "*Netzausbaubeschleunigungsgesetz*", are addressing this issue, but an effective implementation will be required in order to ensure the intended progress.

As part of the national "Energy Concept", the existing Energy Research Programme *("5. Energieforschungsprogramm")* has been extended and funds dedicated to research in the field of sustainable energy have been increased. For 2010/2011, EUR 1.27 billion are dedicated to R&D in modern energy technologies, including smart networks and energy storage techniques. In 2011, the German federal government also decided to launch a new Energy Research Programme *("6. Energieforschungsprogramm")*, which increases the financing for R&D in these areas using funds from the special "energy and climate fund". Between 2011 and 2014, about EUR 3.5 bn will be dedicated to energy research.

Initiatives to increase the share of electricity from renewable energy sources launched in recent years have been continued, including in particular the "Renewable Energy Law", which stipulates the guaranteed feed-in tariffs to be paid by network providers to producers of renewable energy. In 2011 feed-in tariffs for solar energy have been further reduced while incentives have been increased in other sectors such as off-shore wind

[81] Bundesregierung, *"Konzept für Fachkräfte"*, 22.6.2011

[82] Hochschulpakt

parks, geothermal and hydroelectric energy.

The automotive sector is of particular importance to Germany. In 2011, the federal government has adopted the initiative "Electro-mobility", which aims to establish Germany as the leading international market for electric vehicles. The target foresees that one million electric vehicles should be on German roads by the year 2020 and up to six million by the year 2030. The promotion of electric mobility needs to be coupled with the use of renewable energy in order to have a significant positive environmental impact. Given the importance of the automotive sector for Germany, progress in promoting electric mobility and renewable energies will be crucial for the competitiveness of its industry. The German federal government has allocated additional funding of EUR 1 billion until 2013 for this initiative and will establish a national project coordinator.

The public procurement system in general has an important potential to support the deployment of environmentally friendly products given its significant level of expenditure. Public procurement on federal and regional level in Germany has increasingly integrated sustainability aspects such as resource efficiency and emissions based on a life-cycle approach, though so far this was mainly based on individual initiatives rather than a systematic approach. The proposed legislative package foresees the introduction of legally binding energy efficiency criteria in the public procurement regulations to support the procurement of products and services complying with the highest energy efficiency standards.

### 4.5.4 The business environment

Germany offers a favourable business environment and successfully attracts foreign direct investment. It scores the highest among the 27 Member States concerning the overall satisfaction with the quality of infrastructure. However, it scores around average regarding the regulatory framework and administrative burden, as well as other related indicators.

Ex ante impact assessments are mandatory for initiatives of the federal government and also the *"Länder"* increasingly use impact assessments. Public consultation by the federal government is formally regulated by the Joint Rules of Procedures, which specifies that federal ministries must consult early with an extensive range of stakeholders, including SMEs.

The simplification of the regulatory framework and the reduction of administrative burden are crucial to strengthening investment and encouraging entrepreneurship. In this sense, the Bureaucracy Reduction and Better Regulation programme of the German federal government comprises a number of important measures to further reduce administrative burden in the business sector. A number of measures have been taken over the last years to further reduce reporting obligations in the business sector. By the end of 2010, the administrative burden associated with reporting obligations has been reduced by 22.6 % compared to the level of 2006 according to a report published by the federal government[83]. Continued efforts will be necessary in order to meet the defined target of a 25% reduction by 2012. The programme is currently being extended to address in addition to reporting obligations also other measurable compliance costs, based on a standard cost model. In 2011, a tax simplification act has been proposed by the federal government, which aims among others at introducing the possibility to submit income tax declarations every two years, simplifying the use of electronic invoicing and improving the electronic communication with tax authorities.

There is still potential to further stimulate competition in services. Regarding network industries, competition is still hampered as enterprises in these markets are still highly vertically integrated, although there are indications of some progress due to initiatives launched in recent years[84]. Improving the interregional interconnection might lead to an increase in competition in the future. In 2011, the federal government decided to further liberalise long-distance bus services within Germany, which could contribute to enhancing competition in passenger transport.

### 4.5.5 Entrepreneurship and SME policy

The share of large enterprises in Germany is higher than the EU average and also SMEs tend to be larger than their average EU counterparts. The SME sector accounts for 61 % of employment in Germany (EU 67 %) and generates 54 % of value added (EU 59 %). Large enterprises contribute 39 % to employment (EU 33 %) and generate 46 % of value added (EU 41 %). The contribution of micro-enterprises to employment is considerably lower than the European average (19 % vs. 30 %). Both the preference for self-employment and also the entrepreneurship rate are slightly lower than the EU average.

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83 "Bericht der Bundesregierung 2010 zur Anwendung des Standardkosten-Modells und zum Stand des Bürokratieabbaus", Dezember 2010

84 E.g. "*Kraftwerksnetzanschlussverordnung*" and "*Energieleitungsausbaugesetz*"

German SMEs perform particularly well in respect to innovation. The share of SMEs with activities in process innovation, product innovation, as well as marketing or organisational innovation is overall considerably higher than EU average. In the area of skills and training, however, the results are more mixed and the performance is much closer to the EU average.

The business environment is overall favourable for entrepreneurial activities and federal and regional programmes are in place to support the development of SMEs through a broad range of consulting and financing services. The well-developed network of chambers of commerce as well as other business and crafts associations also plays an important role in supporting SMEs and entrepreneurs.

The funds dedicated to providing SMEs with loans and guarantees have been significantly reinforced during the crisis, which has contributed to the fact that concerns of a credit crunch have not materialised in Germany. A number of these loans and guarantee funds were supported through ERDF resources. In view of the general economic recovery in Germany, the stimulus package *"Wirtschaftsfonds Deutschland"* was phased out at the end of 2010. Over 20 000 enterprises, in particular SMEs, have received credit funding or guarantees with a total amount of about EUR 14 billion.

In 2010 the Federal Ministry of Economics and Technology launched a start-up initiative *"Gründerland Deutschland"* comprising a broad range of programmes and activities. The aim is to raise awareness of entrepreneurship and self-employment, including among pupils, apprentices, students and adults.

Both in terms of average time and average costs required to start-up a limited liability company, Germany is placed clearly below the EU average and has further improved over the last years. However, an analysis performed on regional level highlighted considerable differences among individual *"Länder"* in respect to the time required for business and tax registration, which might indicate potential for further improvement.

In 2011, the Federal Ministry of Economics and Technology has introduced an "SME monitor" *("Mittelstandsmonitor für EU-Vorhaben").* The tool aims at identifying projects and legislative proposals on EU level that might be of interest for SMEs and at strengthening the participation of German SMEs and their representatives in the process of European decision making, including the participation in public consultations.

Considering their relatively larger size, German SMEs also tend to be more active in other EU and non-EU markets than their European counterparts. Information and support for SMEs including in respect to internationalisation, market access in third countries as well as intellectual property rights is particularly provided through the well developed international network of German Chambers of Commerce ("*Deutsche Auslandshandelskammern*") as well as the German economic development agency "Germany Trade & Invest". Regarding patents and the enforcement of intellectual property rights, costs for legal and tax advisory services often play a more important role than administrative costs. In particular in non-EU countries, the enforcement of intellectual property rights is an increasingly significant obstacle for SMEs, due to complex administrative procedures and high costs for legal advisory services.

Effectively addressing the challenge of a possible emerging shortage of high-skilled work force will be of particular importance to SMEs, as they are often in a weaker position to attract and retain high skilled workers compared to large enterprises, particularly in an increasingly competitive environment.

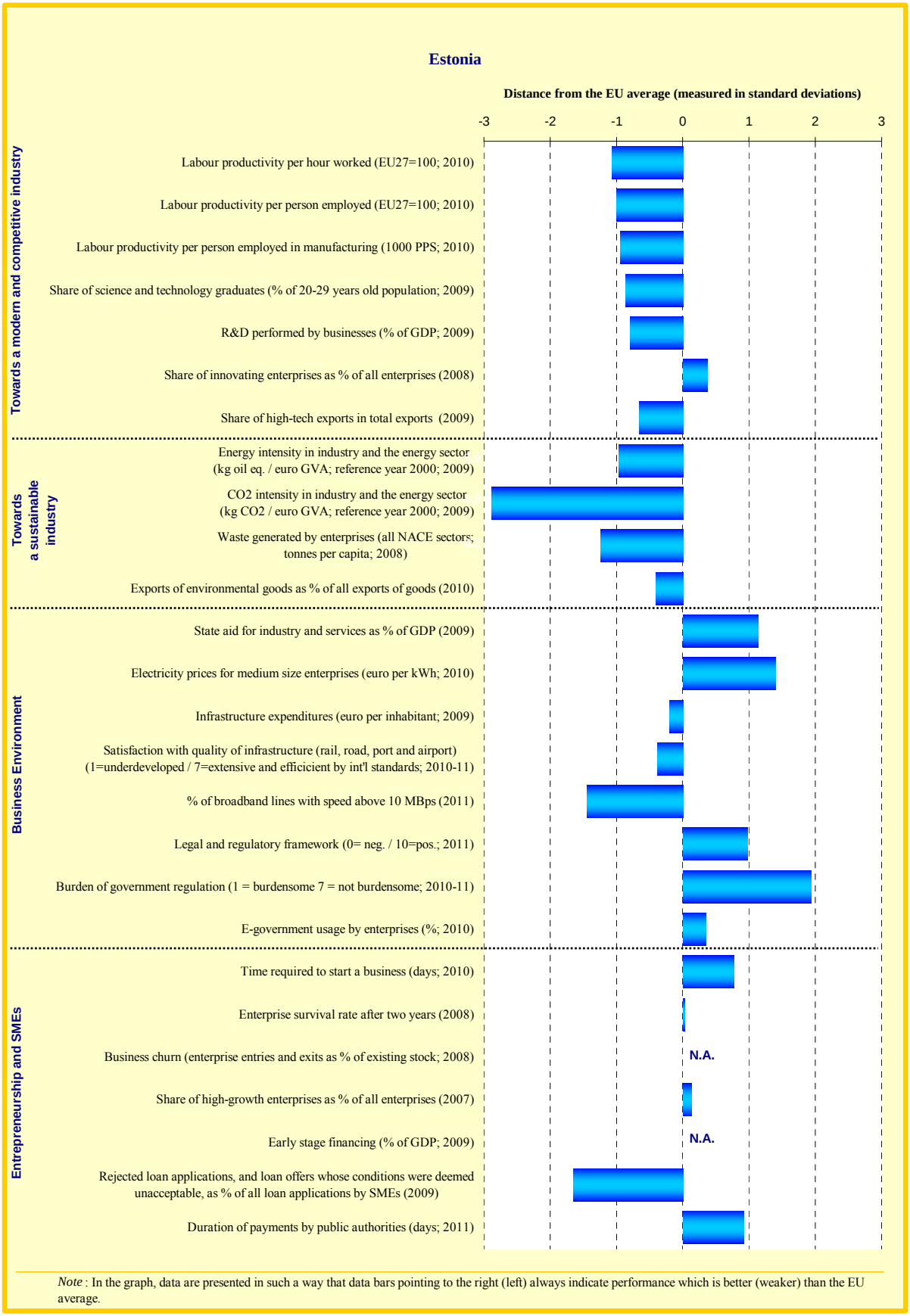
### 4.5.6 Conclusion

Overall, Germany enjoys a favourable position with respect to competitiveness. Its economy and industry benefit from framework conditions which are conducive to R&D and innovation as well as to the deployment of environmental technologies. With its specialisation in capital goods, the German export sector was particularly well placed to benefit from the increasing demand in emerging markets and the incipient global recovery.

The business environment is overall also favourable for entrepreneurial activities as SMEs and entrepreneurs have at their disposal a broad range of services provided by government authorities and the well-developed network of chambers of commerce and other crafts and business associations.

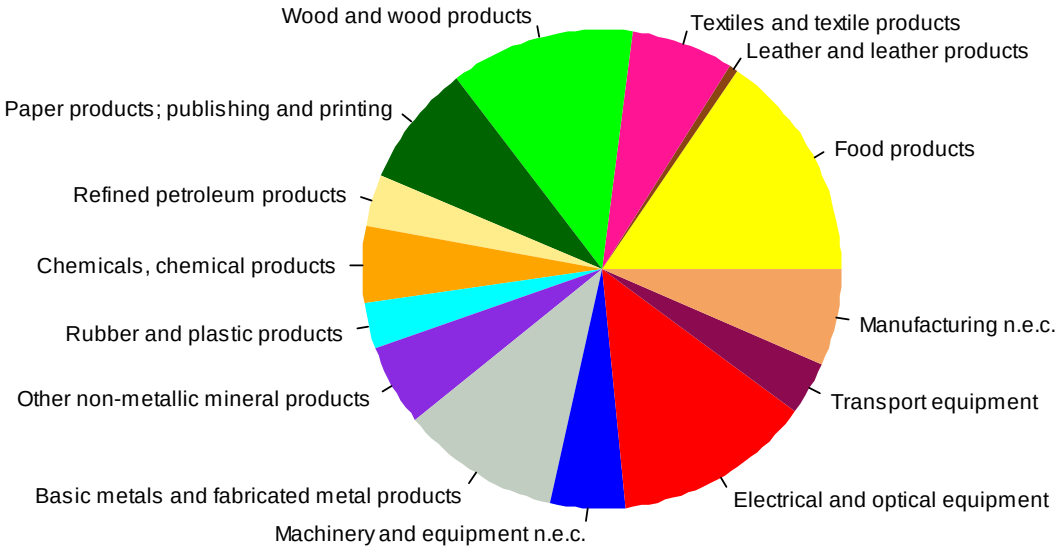
In the long-term, a major challenge will be to avoid a systematic shortage of high-skilled labour force by adapting both the educational system and the labour market to the changing requirements of technology and innovation. Overall Germany could benefit from further investment in R&D to remain at the technological frontier.

## 4.6 Estonia




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Estonia (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.6.1 Introduction

Estonia is one of the countries that are catching up fast: among the population of active enterprises, it has a high share of enterprises that are growing fast; manufacturing production has regained all the ground lost during the crisis, exceeding by 2.6 % its previous cyclical peak in April 2011. Estonia remains a typical member of the group of countries with relatively lower income levels and a predominant specialisation in labour-intensive industries. However, Estonia's R&D intensity is much higher than the average of this country group, even though it is below average when taking into account its industrial structure. Moreover, the share of labour-intensive exports is in decline, while the shares of capital-intensive products and (difficult to imitate) research-intensive exports is expanding. Overall, Estonia is improving its competitiveness and, if it keeps momentum, it will join the group of higher income countries that are specialised in labour-intensive industries.

*Trade and industry specialisation*

In 2009, the relative value added share of Estonia's manufacturing industry was close to the EU average – 14.3 % versus 14.9 %, respectively. The country's rapid recovery in industrial production has been driven by manufacturing of electronic products, fabricated metal products, motor vehicles, electrical equipment as well as machinery and equipment, with 70% of the whole manufacturing production sold on the external market. However, Estonia remains predominantly specialised in labour-intensive manufacturing industries, such as sawmilling and wood planning, carpentry and joinery and manufacturing of textiles. In terms of exports, Estonia is weakly specialised in capital-intensive industries, such as refined petroleum products. At the more aggregated level, Estonia remains highly specialised in sectors with low innovation and education intensity, such as clothing apparel and auxiliary transport activities, while the top sector – wood and wood products – is characterised by medium innovation intensity. Most trade happens with other EU countries, with Sweden and Finland being partner number one and two; however, as is the case for the other Baltic States and Finland, Russia is an important destination for Estonian exports. This explains Estonia's relatively high share in exports to the BRICs. While Estonia's share in the low price segment of exports is above the EU average, its share in the high price segment is below the EU average, thus indicating an unfavourable position. Nevertheless, Estonia has been climbing the technology ladder from low tech exports in the late

nineties to medium-to-low tech exports in the recent decade and the good dynamism of its medium-to-high tech exports augurs relatively well for future trade developments.

| Most prominent sectors in Estonia |
|---|
| **Highest relative value added (2007)** |
| Wood and products of wood and cork |
| Wood and products of wood and cork |
| Textiles and textile products |
| **Change in the relative value added (1999/2007)** |
| *Increasing specialisation* |
| Coke, refined petroleum and nuclear fuel |
| Wood and products of wood and cork |
| Electrical machinery and apparatus |
| Decreasing specialisation |
| Wearing apparel, dressing and dyeing of fur |
| Supporting and auxiliary transport activities; activities of travel agencies |
| Water transport |

*Structural change*

In Estonia, the crisis seems to have slowed down structural change, as the variations in relative shares have been much smaller than those for the entire period 1999-2010.

Estonia has increased its industry specialisation in sectors with high innovation and education intensity, such as electrical machinery. In addition, trade specialisation has decreased in labour intensive (e.g. textile weaving) and technology-driven industries (e.g. aircraft and spacecraft), while it has increased in mainstream manufacturing (e.g. manufacturing of electric motors) and capital-intensive industries (e.g. refined petroleum products, man-made fibres). In particular, Estonia has substantially improved the R&D intensity in the transport, communication and chemicals sectors. While the quality of technology-driven industry has stagnated, Estonia has climbed the quality ladder in labour-intensive industries.

Estonia has experienced a strong appreciation of the real effective exchange rate during the last decade (53%, compared to 21% in the EU27), pointing to a possible loss in cost and price competitiveness. The increase in nominal unit labour costs (66%) between 2000 and 2010 was significant, but wages remained largely below those prevailing in Estonia's main trade partners. Nevertheless, a loss of profitability and competitiveness hurt low-skilled and labour intensive sectors, such as textiles, and non-price elements were not always sufficient to maintain Estonia's market shares. While labour productivity per hour worked has gradually increased over the last years, it is still about 38 percentage points below the EU27 average.

### 4.6.2 Towards an innovative industry

The Innovation Union Scoreboard 2010 classifies Estonia as an innovation follower. It has been registering a rather good performance in as far as R&D and innovation are concerned: Investment in R&D reached 1.4 % of GDP in 2010. However, public funding for R&D has been decreasing in the last two years and European Regional development Fund has continued to be a very important source of financing in Estonia. To counterbalance this situation, the government is planning to increase public sector investments to reach 1.2 % of GDP in 2011, hoping that this will foster private R&D investment.

Even though the percentage of Estonian enterprises providing training to their employees is higher than the EU-average – 67 % versus 58 %, respectively, one of the main challenges of the Estonian economy is the shortage of skilled labour, in particular engineers, as identified in a 2010 survey on export obstacles by the Chamber of Commerce. According to the new Research and Development Organisation Act, in order to increase the number of high-skilled workers, the government is planning to offer state funding for university students taking classes in areas related to competitiveness and increase the number of PhD students by offering them an employment contract with appropriate social guarantees. It is worth noting that the Estonian Research, Development and Innovation Strategy 2007-2013 targets the areas of IT, biomedicine, and material sciences as having the highest potential for increasing competitiveness.

In addition, a program of studies fostering entrepreneurship as an elective will be introduced in secondary education as of 2013. A similar initiative – the 2010 Entrepreneurial Studies Promotion Plan – identifies the relevant concepts in the field of entrepreneurial studies, including potential problems and recommendations on how to solve them. Furthermore, by exempting work-related studies from the tax on fringe benefits, the government expects to encourage companies to invest in the improvement of employee skills. Once these measures are implemented, their effectiveness in improving the market of skilled labour will have to be assessed.

In order to improve the research and innovation capacity of enterprises, the government intends to create a financial instrument to support technology investments for manufacturers, offer venture capital to start-ups that innovate, improve the marketing of innovation output, but also attract more knowledge-intensive foreign investment. Further measures are envisaged to conduct design, IT and intellectual property audits, review public procurement

regulations to enable innovation, support creative industries and space technologies, and encourage the use of research infrastructure.

In order to support new innovative enterprises, encourage the commercialisation of business ideas and develop international networks, the Start-up Estonia Program has been allocated a budget of EUR 3.7 million. Moreover, a EUR 20 million new loan scheme for technology investments is being launched by the Ministry of Economic Affairs and will run until 2015. In addition, enterprises can now benefit from 'innovation vouchers' (up to 5 vouchers per enterprise, worth EEK 50 000 each) attached to R&D providers; the list of providers is currently under revision to include private R&D providers and creative companies. While 30 % of Estonian companies produce in-house innovations, the impact of these new measures needs to be assessed against the research and innovation performance of Estonian enterprises.

Estonia has been taking some initiatives aimed at improving the cooperation between business and academia. While Centers of Excellence, managed by the Ministry of Education, have been further developed to carry out research, Competence Centers, managed by the Ministry of Economy and responsible for applied research, have been multiplying. However, in order to increase their effectiveness, Competence Centers could be further integrated into clusters and linked to similar Centers in the Baltic region. In general, there is room for improving the knowledge transfer between universities and enterprises, such that R&D output could be efficiently produced and marketed.

Given its small economy, limited resources, and dependence on external trade, Estonia has to identify and prioritise knowledge-intensive sectors that are competitive internationally. This goes hand in hand with fostering a better cooperation between business and academia, increasing the number of high-skilled workers, and enabling the business sector to innovate and boost its research activity, including through the use of Structural Funds and support schemes.

### 4.6.3 Towards a sustainable industry

The energy intensity of the Estonian industry remains high, as over 90 % of electrical energy is generated from oil shale. However, the share of renewable energy has been growing in recent years, as a result of the 2007 support scheme and the 2010 Renewable Energy Plan, and is likely to increase, as a result of the production of wind energy and the use of wood. While there is a slight increase in the percentage of environmental goods exported, Estonia remains below the EU average in terms of export of goods from eco-industries.

In order to address the problem of energy efficiency, the government is considering the co-generation of electricity and heat, the reconstruction of plants that use oil shale, improved energy connections in the region, in particular with Finland, the development of an intelligent power grid and possibly the use of nuclear energy. In addition, attention is paid to reducing the size of individual cars, reinforcing the effectiveness of public transportation, in particular railways, and promoting the energy efficiency of households and public buildings. Estonia has a functioning environmental tax system and revenues from environmental taxes have been growing in recent years, from approximately 2.3 % of GDP in 2005 to around 3% in 2009, above the EU average. On sustainable tourism, Estonia cooperates with the Destinations of Excellence Program, but no particular investment measures are foreseen, as the infrastructure – i.e. hotels – is quite recent and considered to be energy efficient. In spite of these measures, energy intensity needs to be further reduced through the adoption of new technologies and green public procurement, which will have a positive impact on both the environment and the security of energy supply.

The sustainability of industry remains one of the main challenges in Estonia, which has been addressed so far only through piecemeal initiatives. As part of the 2008 Clusters Program, two eco-clusters – energy efficiency in construction and waste recycling – have been in operation since the end of 2009. In addition, a project enabling the use of electric cars has been developed, with the infrastructure – 200-300 chargers – being partially funded by the Japanese government; by the end of 2012 when the project ends, around 1 000 electric cars could be in use. Further, the National R&D Program on environmental issues has an energy technology component that has been operating for some time. Rather than tackling it through disparate measures, a comprehensive strategy for the decrease of resource intensity should be developed, including, among other things, additional infrastructure projects and the development of cross-border interconnections in the Baltic region.

### 4.6.4 The business environment

Estonia's business environment is relatively good and business-friendly. In terms of legal and regulatory framework and burden of government regulation, Estonia scores clearly above the EU average. While satisfaction with the quality of infrastructure did not change and remains below the EU average, there has been a significant

improvement in infrastructure expenditure and the currently planned infrastructure projects appear adequate. A similar improvement has been registered in the availability of high-speed broadband infrastructure, but the percentage of broadband lines in Estonia is well below the EU average.

Estonia is doing rather well in terms of the timeless of tax payment, the cost of enforcing contracts, property registration and transfer, as well as start-up conditions: the one-stop-shop to start a company is fully operational and the current state-funded start-up scheme stipulates further administrative simplifications. Further measures have been planned to identify and reduce the most burdensome obligations for enterprises and allow companies in financial difficulty to restart their activities faster. The 2010 amendments to the Public Procurement Act facilitate the participation of companies in tenders through: a web portal and the possibility of electronic submission of tenders, simplification of requirements for subcontractors and bidders, and faster procedures for signing contracts and solving disputes. Most basic public services – social contributions, corporate tax, VAT, company registration, customs declaration, environmental permits – are available online to businesses. The single contact point – the State Portal *www.eesti.ee* – has been improved to increase its user-friendliness and has been opened to companies from other Member States. In addition, the transposition of the Services Directive has been finalised and the single point of contact is already operational and being upgraded with more user-friendly applications. In spite of this progress, the participation of companies in public procurement is rather low and could thus be improved, and tendering could be accelerated and made more transparent. Since it is below the EU average, Estonia's e-commerce capacity and use of IT in sales could be further strengthened.

The Estonian government has made efforts to cut red tape by 20 %, as set in the 2007 Action Plan for Administrative Burden Reduction. The Economic Activities Code includes the target of reducing the number of economic activities requiring permits/licenses. In addition, by creating a one-stop-shop or simply consolidating existing procedures, Estonia has recently eliminated license renewal, some licenses deemed as unnecessary, as well as some burdensome steps for entrepreneurs requesting licenses; some other licenses will be replaced by simple notifications by 2014.

The reform of the impact assessment system has continued: new guidelines extending the scope of assessment beyond budgeting to aspects of policy analysis including economic, social and environmental impacts have recently been adopted and are to be submitted to Parliament for approval. Business organisations are confident in the improvements introduced by this reform, although they are rather satisfied with the current consultation system – i.e. the Advisory Council attached to the Ministry of Economy.

In order to further strengthen the infrastructure, the government is planning to continue investments in consolidating the secondary roads grid and extending airport runways and terminals, as well as to improve the quality of equipment and reinforce connection points between different transport means. Special attention is devoted to ICT infrastructure and the continuation of the large-scale broadband project. In terms of cross-border networks, there are plans to improve connections between Estonia, the Baltic region and the rest of the EU. In order to attract investors, the government intends to further develop the local government infrastructure, supply information materials in English and consolidate county development centres. However, the energy-intensity indicators in freight transport may be deteriorating. This, together with the declining investment and maintenance costs of rail infrastructure, requires to be monitored closely.

### 4.6.5 Entrepreneurship and SME policy

Compared to the EU as a whole, Estonia has a relatively lower share of micro-enterprises, but a relatively higher share of small and medium-sized enterprises, half of which are active in services. In general, the business environment is SMEs-friendly and fosters entrepreneurship.

Estonia has made progress in simplifying business conditions for SMEs. In order to facilitate the creation of start-ups, a 2010 amendment of the Commercial Code has eliminated the minimum paid capital requirement of EUR 2 500 for start-ups in their first year, unless debt is incurred. In addition, the Ministry of Economy is preparing a project allowing SMEs to do their book-keeping through an e-service platform. However, the business organisations are concerned that such an initiative might crowd out private enterprises offering accounting services. In addition, the Reorganisation Act has enabled the closing of non-fraudulent businesses in fewer months, such that enterprises in financial difficulty could restart their activities. In spite of this, business organisations complain that the conditions for accessing this scheme are too strict, which has resulted in a low number of applications in the first two years of operation (5 applications in 2009 and 10 applications in 2010); the government has promised

a future revision of the eligibility criteria.

Access to finance is getting easier due to initiatives taken to facilitate the availability of credit and equity for enterprises. Some measures like the Estonian Development Fund and the Large National Loan launched by the government are still operating. Start-up financing and venture capital are largely available in Estonia, although the lack of interesting investment projects is seen as a major bottleneck. In order to attract more capital and leverage the effect of public financing, Estonia could encourage a more extensive use of non-traditional funding mechanisms and financial instruments like JEREMIE or JESSICA of the Structural Funds, although business organisations tend to perceive the implementation of these instruments as too burdensome.

In order to increase Estonia's share in world exports, the government is planning to reinforce its support to entrepreneurs oriented towards external markets, to facilitate access to global venture capital markets, to encourage the participation of creative industries in foreign markets and to make better use of foreign representations and international fairs. The Export Revolution Program, initiated by Enterprise Estonia in February 2011, offers training to export sales managers and matches them with exporting enterprises: 25 potential export managers will benefit from training during an entire year, after which they will be matched with 25 companies interested to boost their exports. In addition, in July 2010, KredEx, a new state credit insurer, became the provider of export guarantees, thus enabling a more efficient issuing of medium and long-term export guarantees, covering both political and economic risks up to 90 %. Similarly, as a result of an additional capitalisation of the system, the Export Guarantee Act has increased the maximum allowed amount for state export guarantees, thus being able to cover higher amount transactions that take place on foreign markets.

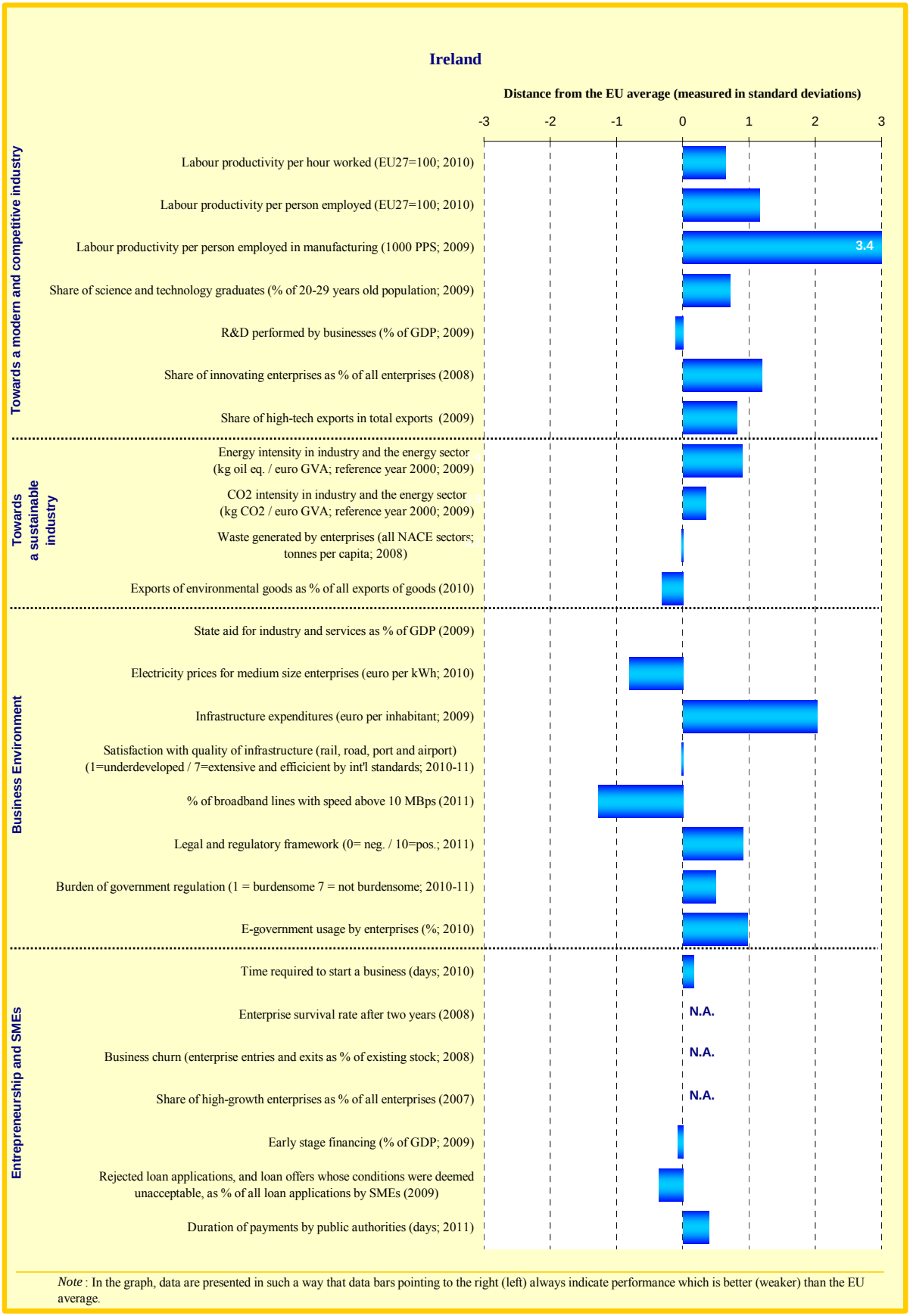
In order to promote a positive attitude towards entrepreneurship, the main body in charge of business support, Enterprise Estonia, has organised four project contests in the last year, focused on business development and raising business awareness. The target groups have included entrepreneurs and potential entrepreneurs, high school and university students, teachers and lecturers, as well as the wider public.

### 4.6.6 Conclusion

In order to continue its catch up with the average productivity rate in the EU, the share of higher value added products and services, in particular in exports, should continue to rise. Further policy efforts could be aimed at strengthening the contribution of capital to growth. At the same time, benefits would be available from reducing resource intensity, developing the infrastructure and fostering productivity by boosting R&D and innovation, identifying and prioritising knowledge-intensive sectors that are competitive internationally and enhancing human capital through a comprehensive education reform.

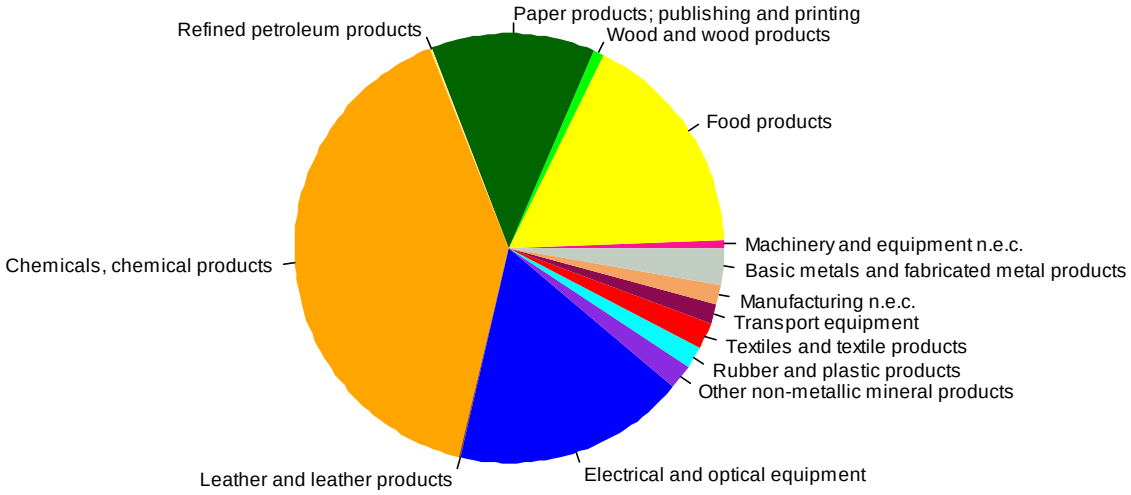
In particular, Estonia would benefit from an increase in the supply of high-skilled labour, enabling the business sector to innovate and to increase research activity. Here the use of Structural Funds could be envisaged, fostering better cooperation between academia and business, integrating research activities and exploiting cross-border cooperation opportunities in the Baltic region.

## 4.7 Ireland




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Ireland (2009)**




*Note* : n.e.c. (not elsewhere classified)

*Source*: Eurostat

### 4.7.1 Introduction

*Trade and industry specialisation*

Manufacturing plays a bigger role for Ireland than for the EU in total (24.2 % vs. 14.9 % of total value added in 2009). At the detailed manufacturing industry level, Ireland is highly specialised in technology-driven industries such as computers, pharmaceuticals and electronic valves. In valued added, Ireland is also specialised in capital-intensive industries (e.g. basic chemicals). At the more aggregated sector level Ireland is specialised in high and medium-high innovation-intensive sectors such as medical, precision and optical instruments and chemicals.

Ireland is characterised by a high share of exports in high price segments and low share in low price segments, indicating a position high up on the quality ladder. In contrast, its R&D intensity is far below the average given its industrial structure. Overall, while in specialisation and quality Ireland is a typical member of the group of higher income countries specialised in knowledge-intensive industries (group 1), its R&D performance is more similar to the group of lower income countries featuring trade specialisation in knowledge-intensive industries (group 3) which operate at the more production- and assembly-oriented segments of the value chain.

Most prominent sectors in Ireland

**Highest relative value added (2007)**

Office, accounting and computing machinery
Chemicals and chemical products
Medical, precision and optical instruments

**Change in the relative value added (1999/2007)**

*Increasing specialisation*
Air transport
Medical, precision and optical instruments
Renting of machinery and equipment
Decreasing specialisation
Post and telecommunications
Radio, television and communication equipment
Chemicals and chemical products

*Structural change*

In terms of change, Ireland has considerably increased the R&D intensity of its industry and climbed up the quality ladder although the overall R&D intensity declined. This overall decline is due to the reduced value added specialisation in high innovation sectors (communication equipment). At the same time trade specialisation in technology-driven industries (optical instruments, pharmaceuticals) has increased. The sector with most value added is air transport.

The crisis of 2009 had a moderate impact on manufacturing production which recovered in 2010, but has turned down again in 2011. In July 2011 manufacturing production was 6 % lower than a

year earlier. In general, the crisis seems to have hit capital-intensive and marketing-driven industries harder, while technology-driven ones have suffered less.

Ireland has seen an appreciation of the real effective exchange rate by 25% over the last decade (compared to 21% in the EU27), indicating a loss in cost and price competitiveness. Nominal unit labour costs have increased by 27% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. Over the last decade, Ireland's labour productivity per hour worked has remained relatively stable at about 23 percentage points above the EU27 average and 10 percentage points above the Euro area average. This means that despite the exchange rate effect, the outlook for Ireland's structural competitiveness position remains favourable (as opposed to the macroeconomic and financial problems). In line with many other countries, to preserve and heighten its advantage, Ireland needs to move further up the value chain to the knowledge-creating parts of the knowledge-intensive industries it is already specialised in.

### 4.7.2 Towards an innovative industry

According to the Innovation Union Scoreboard 2010, Ireland is an innovation follower. While foreign companies are expected to have reduced R&D outlays slightly in 2010 compared to 2009, Irish companies are expected to have increased theirs slightly. As a consequence, private R&D expenditures in Ireland have proven to be surprisingly resilient during the crisis. This is likely to be due to the tax exemption for small start-up companies and the R&D Tax Credit which contributed measurably to fostering R&D.

The new government has made the accounting treatment of the research tax credit regime more flexible to make it more attractive and accessible to smaller businesses.

The Irish government has proposed further actions in its services strategy to promote the continued development of the services sector. These actions include integrated inter-disciplinary education for service activities, dedicated business support measure to promote R&D and the use of public procurement to stimulate innovation in services. So far, however, public procurement rules, although in principle innovation friendly, seem to be applied even stricter to ensure that costs are kept low.

One of the main challenges for the Irish innovation system is the higher education sector. The sector received significant funds since 2000 but has now to cope with significant cuts. Given the budgetary situation, the focus of the government is on the deliverables from the previous investment in terms of products and services, which could be commercialised, and on setting priorities for future R&D spending. While the latter is clearly needed, scientific output in many fields has increased considerably in recent years and has placed Ireland in the top league of research. However, it should be noted that commercialisation of research is a time-consuming process and its use as a short-term benchmark may distort the assessment of the utility of research spending.

Another important challenge is to help medium-sized indigenous companies to increase their financial and managerial capacity to innovate and undertake R&D, including by closer cooperation between companies and institutions of higher education. It would now be important to use low-budget instruments such as "knowledge brokers" in order to facilitate closer cooperation with third-level institutions. Indeed, this would also offer new opportunities to commercialise research output and help universities to tap new sources of funding.

There are no indications that Ireland is currently suffering from significant skill gaps in any sector and, until the onset of the crisis, the Irish Diaspora has proved to be an important source of skilled workers. The share of science and technology graduates in Ireland is still above the EU-average. A key challenge for the years to come is therefore to ensure that spending cuts in the higher education sector will not translate into significantly lower numbers of STE students compared to arts and humanities graduates, whose education is usually less costly.

### 4.7.3 Towards a sustainable industry

The environmental performance of the Irish industry is broadly in line with EU trends. If anything, energy intensity is somewhat lower than on average in the EU, but this reflects the absence of heavy industry in Ireland rather than better performance. The relatively low share of environmental goods in total goods exports indicates in any case that Ireland does not yet fully benefit from the emergence of green markets. In fact, its position relative to the EU average has deteriorated in recent years although the share itself has somewhat increased.

Moreover, buoyant economic growth has led to significantly increased $CO_2$ emissions, in particular from transport, and the existing housing stock often suffers from poor thermal efficiency. These challenges provide an opportunity to reallocate the resources freed from the construction sector into sustained investment in transport infrastructure, and

can provide new markets for ways to increase the thermal efficiency.

Ireland has taken a number of policy measures and initiative to improve sustainability and to foster the development of a genuine environmental products and services sector. The Environment and Green Technologies Department of Enterprise Ireland offers a GreenTech Support scheme to its clients, particularly in the SME sector. The scheme is designed to help these companies take advantage of the opportunities presented by integrating environmental sustainability into their business. The Dublin Airport Authority is pursuing the establishment of a specialist 'Cleantech Incubation Facility' at the airport. It is intended to house up to 20 high potential start-ups' in a concentrated environment allowing research synergies, shared services and access to trade services to take place. Moreover, capital allowances of 100 % of the cost are available until 2014 to those companies investing in specific high energy-efficient equipment. The Better Energy programme, previously known as Home Energy Saving Scheme (HES), has also received additional funding. Together with lower individual grants, this means that more homes can avail of these incentives. The programme provides grants for retro-fitting insulation and other energy efficiency measures to housing stock built before 2006. The measure is thus likely to help the construction sector to reallocate resources towards more sustainable purposes.

The National Action Plan on Green Public Procurement which is currently subject to public consultation aims to harness public procurement to move the market in favour of eco-efficient goods and services. It puts forward seven priority product groups for which the public sector should have GPP criteria in all of their tendering processes. In view of the amount of government purchases, GPP has the potential to provide considerable leverage. It remains to be seen however how much fiscal leeway public authority will have to apply the criteria in practice.

The main issue for Ireland in the years to come is to grasp the opportunities a comprehensive greening of the economy is likely to offer. To ensure synergies and the efficient use of limited resources, efforts to prioritise R&D and strengthen innovation could be strengthened by taking into account the need to foster sustainability.

### 4.7.4 The business environment

Ireland is generally perceived as one of the most attractive business locations. For instance, it ranks ninth in the World Bank's Doing Business index, in the EU surpassed only by Denmark and the UK. Together with being an English-language location and due to historically close ties with the US, these factors have contributed to attracting a considerable amount of overseas FDI. Another important factor in this regard has been the availability of a well educated labour force increasingly fuelled by repatriates and thus a reversal of Ireland's traditional role as an emigration country.

Going more into detail, Ireland scores significantly above the EU average concerning infrastructure expenditures and clearly above average concerning the legal and regulatory framework and e-government usage by enterprises. However, Ireland still scores below the EU average concerning satisfaction with the quality of infrastructure and the availability of high-speed broadband lines. But while electricity prices for medium-sized enterprises were a matter of concern in the past, market opening and increased competition have been improving the country's ranking in almost all consumption bands since he second half of 2007.

Despite its all-in-all satisfactory position, Ireland has initiated over recent years a number of policy measures to further improve the business environment. Their track-record varies though. For instance, the government has initiated in 2010 the construction of a smart broadband network called the Exemplar Network that makes use of multiple colours of fibre to dramatically boost the speed of fibre-based communications. This network will go live for test and trial in the course of 2011. By contrast, the ambitious Transport 21 programme, whose implementation was well under way until 2008, and which had foreseen major investment projects for all transport modes, had to be reassessed in view of the budgetary situation. The original allocation for Transport 21 totalled about EUR 7 billion between 2008 and 2014. The capital review which is being currently carried out in order to establish a new capital investment framework for the period 2012-2016 is expected to be completed by the end of September this year, and will supersede Transport 21.

In particular infrastructure development did not always keep pace with high growth in recent years and may therefore lead to bottlenecks once growth picks up again. Against this background, the relatively high level of infrastructure expenditures for both transport and communications must be seen as an attempt to compensate for insufficient outlays in the past. The main issue is therefore that infrastructure investment in real terms is maintained at an adequate level.

Legal costs in Ireland are for quite some time being criticised for being both high and opaque. In an

effort to contribute to improved price competitiveness, the Irish government intends therefore to introduce legislative changes to remove restrictions to trade and competition in sheltered sectors, notably the legal profession, by establishing an independent regulator for the profession and implementing the recommendations of the Legal Costs Working Group and outstanding Competition Authority recommendations including the introduction of conveyors as a new profession. However, in spite of its good record, Ireland could strengthen the enforcement of its competition law by introducing effective sanctions for infringements.

Another key challenge in the years to come is to ensure that the current economic situation does not initiate large scale emigration as this would undermine Ireland's attractiveness as a key destination of FDI in Europe.

4.7.5 Entrepreneurship and SME policy

The economic significance of SMEs in Ireland is broadly in line with the European average. In terms of employment, the contribution of SMEs is slightly higher than the European average (68.5 % instead of 67.4 %) whereas in terms of value-added the share of SMEs is somewhat lower than the European average (51.7 % instead of 57.9 %).

In terms of the specific framework conditions for SMEs, Ireland scores slightly above the EU average for the payment duration by public authorities. Nevertheless, there was some criticism from businesses complaining about lengthening payment periods. As to financing, Ireland scores slightly below average concerning the rate of business bank loan demands rejected by banks or bank loan offers to companies that were rejected by the latter. As a consequence of the economic and financial crisis, however, there is now even more widespread concern about both access to finance and credit costs. Available statistics may indeed underestimate the problem as many businesses are reluctant to apply for credit in the first place or are given informal advice to abstain from a credit application.

Ireland has taken a number of policy measures which are of particular relevance for entrepreneurship and SMEs and which also address some of the aforementioned issues. As part of the anti-crisis measures, the government has reduced the payment period by central government departments to their business suppliers from 30 to 15 calendar days and other government agencies have been asked to do the same. A credit review system has also been set up to ensure that SMEs, sole traders and farm enterprises will have recourse to an independent, external review of bank's credit refusal decisions. In view of the limited success of this review system, the new government now intends to initiate a tendering process for the development of a temporary, partial credit guarantee scheme. The design of the scheme will draw from international experience to support new lending that would not otherwise have been extended by the banks. The scheme is intended to complement, rather than be a substitute for, existing lending activities by the main financial institutions. Its objective is to encourage banks to lend to new or expanding commercially viable SMEs so that they can grow their company, develop new products or expand into new markets. In addition, a Microfinance Start-Up Fund to provide loans to small businesses is being developed. In this context, a workable scheme and optimum delivery mechanisms are currently being considered and the work is to be finalised in time for the December Budget.

A three-year corporate tax and capital exemption for start-up companies was introduced in 2009. New guidelines for procurement practices have also been published by the Department of Finance. These guidelines encourage smaller lot sizes and "open" tendering procedures without pre-qualification of tenders. They aim to encourage greater SME participation in tendering for public contracts. A nation-wide one-stop-shop allowing entrepreneurs to carry out all the necessary procedures – including registration, tax, VAT and social security – at once and at one administrative point had been announced for December 2009 but is not yet fully functional.

Ireland does not face major challenges with respect to entrepreneurship and SME policies. However, to facilitate business creation and growth once economic growth picks up again, a timely and comprehensive implementation of the broad range of initiatives and measures which are currently on the agenda would be helpful.

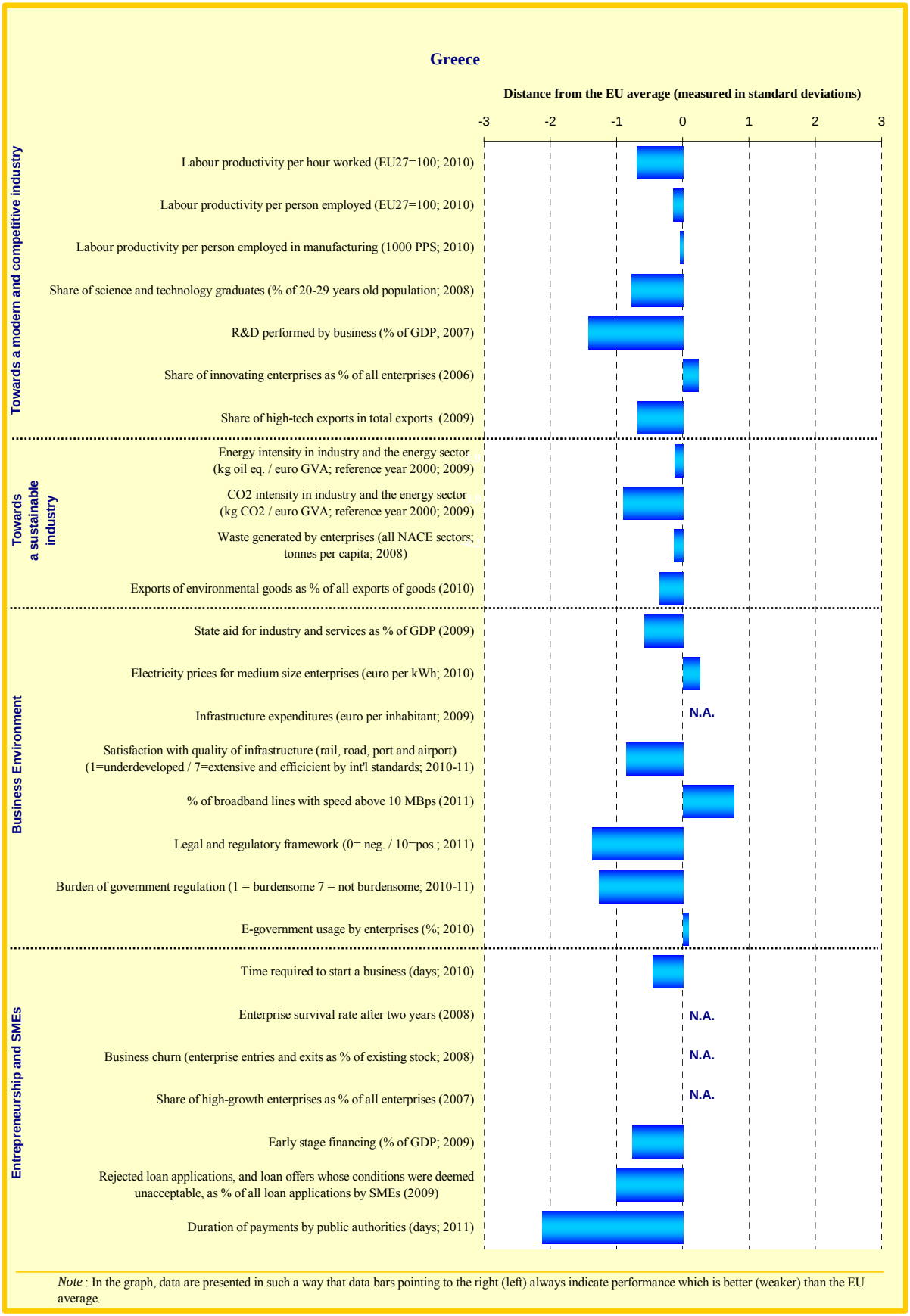
4.7.6 Conclusion

The main short-term challenge for Ireland is to return to a balanced growth path in line with the Council recommendations. At the same time, the undisputed need to consolidate public finances necessitates a careful review of spending and taxation priorities with a view to avoid the emergence of future bottlenecks to growth, in particular with regard to infrastructure and research.

Ireland's efforts to shift growth from foreign direct investment based on labour cost and construction to more innovative sectors and services had already born some fruit before the onset of the current crisis. Long-term efforts to provide incentives for

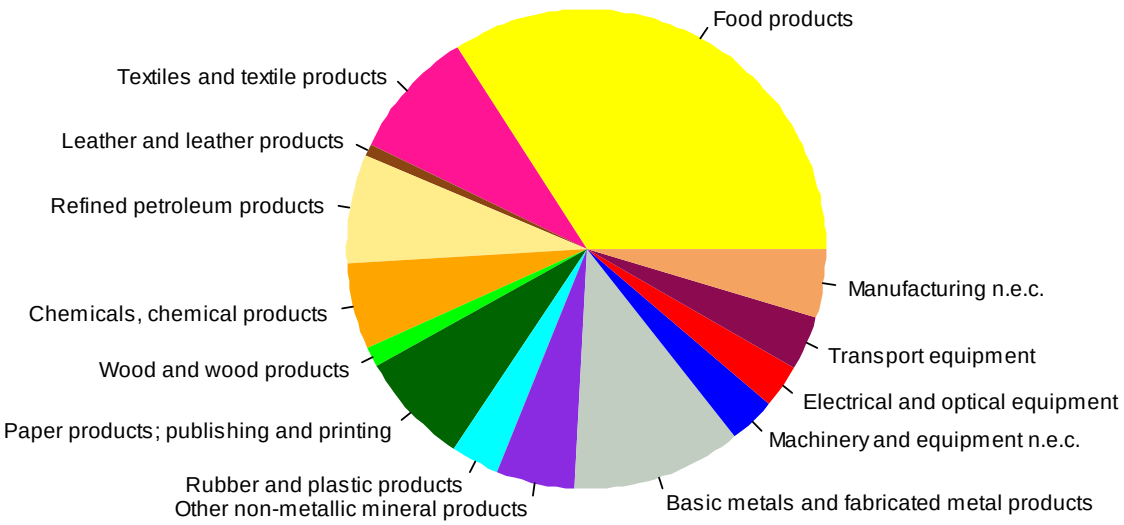
more sustainable growth also go in the right direction. In addition, Ireland scores significantly above the EU average on many aspects of its business environment and work force. The country is therefore relatively well-placed to overcome the crisis although some challenges remain. In particular the capacity of indigenous firms to innovate could be stepped up further, capitalising as much as possible on the increased investment in public R&D and the development of a green tech sector.

## 4.8 Greece




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Greece (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

### 4.8.1 Introduction[85]

*Trade and industry specialisation*

Greece belongs to the group of EU Member States characterised by higher income and a specialisation in technologically less advanced sectors (group 2). At the detailed manufacturing industry level, Greece features strong specialisation in marketing driven industries (manufacture of vegetable oils, processing and preserving of fruit and vegetables), as well as in labour-intensive (dressing and dying of fur) and capital-intensive industries (manufacture of cement, lime and plaster). At the more aggregated sector level, Greece is specialised in low and medium-low innovation and education sectors, such as wearing apparel and water transport. The shares of its exports to the BRIC countries are very low.

Greece differs from its group higher income countries specialised in labour-intensive industries through its tendency to compete in the low price market segments of labour-intensive industries; it is somewhat higher up on the quality ladder in technology-driven industries, but still below the EU average. The same holds true for its R&D intensity, which is below average given its industrial structure but above its group average.

Most prominent sectors in Greece

**Highest relative value added (2007)**
Water transport
Coke, refined petroleum and nuclear fuel
Wearing apparel, dressing and dyeing of fur

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Coke, refined petroleum and nuclear fuel
Tobacco products
Wearing apparel, dressing and dyeing of fur
*Decreasing specialisation*
Hotels and restaurants
Retail trade, except of motor vehicles and motorcycles; repair of household goods
Water transport

*Structural change*

In terms of change, Greece has increased the relative share of mainstream manufacturing (manufacture of batteries, accumulators) and technology-driven industries (electronic valves) in exports, while the relative share of the same

[85] For main sources used see the methodological annex. The cut-off date for all data and qualitative information is 31 August 2010.

industry types in value added (manufacture of electric motors, motor vehicles) has decreased. It has further increased its specialisation in labour-intensive industries. Moreover, Greece has considerably increased its relative share in highly innovation-intensive sectors – albeit from a very low level – (machinery, computers, instruments) and has decreased its relative share of low innovation sectors (hotels and restaurants, water transport). Greece demonstrates a mixed performance on the quality ladder, with some indicators improving and others deteriorating. Its sectoral R&D intensity has decreased relative to the average, with however increasing intensity in computers.

The crisis seems to have had a limited but visible impact on Greece's economic structure. Manufacturing seems to have reversed its declining trend while construction accelerated its decline in value added. Nevertheless, manufacturing production in March 2011 was 22.2 % less than its 2008 peak. Regarding exports, only marketing-driven industries fared clearly better during the crisis than before.

Greece has showed a moderate appreciation of the real effective exchange rate over the last decade (11%, compared to 21% in the EU27), indicating nevertheless a loss in cost and price competitiveness. Nominal unit labour costs have increased by 37% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. Labour productivity per hour worked is about 25 percentage points below the EU27 average and 39 percentage points below the Euro area average.

Overall, Greece is in an unfavourable competitiveness position, while the structural dynamics are mixed, showing improvement in some areas (from low levels) but deterioration in others.

### 4.8.2 Towards an innovative industry

According to the Innovation Union Scoreboard 2010, Greece is a moderate innovator. The structure of the Greek economy (specialisation in less technologically advanced sectors and predominance of micro to small, family owned enterprises) is not conducive to a strong R&D activity. Consequently, R&D investments in relation to GDP, particularly in the private sector, are amongst the lowest in EU and the innovativeness of the Greek economy depends heavily on imported technology and know-how. It flourishes thanks to organisational and marketing innovations and much less on the production and exploitation of new knowledge. EU programmes (the Research Framework Programme and the Structural Funds) play a major role in both R&D and innovation activity in Greece.

Private R&D projects are promoted through tax rebates and the new investment law which also provides grants for technology upgrading projects. The co-funded by the EU Structural Funds action *Collaboration 2011* (collaborative research projects between companies of any size and research institutions) of a total public expenditure of EUR 68 million has been launched in May 2011. Further actions are being planned regarding spin offs and spin outs (a similar action was completed in 2010), clusters (preliminary call for expression of interest published) and innovative SMEs (announcement made for a call for projects to open in July 2011, budget EUR 30 million). In addition, the Innovation Vouchers action launched in 2009 is still open (budget EUR 8.4 million).

Following the transfer in November 2009 of the Secretariat General for Research and Technology from the Ministry of Regional Development and Competitiveness to the Ministry of Education (on the grounds that the majority of research is carried out in Universities) the main research programmes suffered delays as the whole evaluation regime has been redrawn. It is now based on an electronic platform and is conducted entirely in English. However, in many instances this led to research proposals being re-written and re-submitted.

Producing new technology and transferring it to the market are both problematic. Bottlenecks are funding (R&D investments and early venture capital are too low) but also structural issues, since existing instruments do not seem to be very effective. This points to a need to improve innovation policy design and implementation, notably through evaluating and drawing lessons from past experience. However, improving drastically the business environment would probably do more for improving innovation performance as new investments will help bring about new process and product innovation.

### 4.8.3 Towards a sustainable industry

On the basis of existing indicators the environmental performance of the Greek industry can be characterised as rather poor. This relates to weaknesses in the regulatory and administrative environment (inspection and enforcement, absence of land-use codes, delays in delivering environmental permits) and to the absence of basic infrastructures (waste treatment facilities, but also, to a certain degree, organised industrial zones).

The main current funding instrument for environmental policy is the Operational Programme

*Environment and sustainable development* with a total envelop of EUR 2.550 billion (EUR 1.800 billion Community funds and EUR 450 million national participation) over 2007-2013. Some targeted actions focusing on businesses are also funded by the OP *Competitiveness and entrepreneurship*. Its two actions, Green Infrastructures 2010 (promoting SME investments in recycling, rehabilitation, waste collection, treatment and disposal) and Green Enterprise 2010 (encouraging investments of manufacturing SMEs aiming at reducing their environmental impact), have entered the payments phase in 2011.

An important institutional development in 2011 is the adoption of Law 3982/2011 simplifying the licensing of business parks (previously industrial zones). In parallel, work started for the rationalisation and simplification of procedures regarding environmental permits, notably by modernising the classification of installations according to the nuisances they produce and by introducing strict deadlines for reaction by licensing authorities, the principle of silent consent and standardised environmental impact assessments. The same action plan includes actions to make operational (i.e. adopt all remaining implementing regulatory acts) the specific regional planning framework for industry and integrate it in the regional plans under preparation as well as the revision of the national management scheme for hazardous industrial waste.

A consultation was launched to constitute an index of available products and services with a environmental label in order to determine the readiness of the domestic market for the introduction of environmental standards in public procurement.

Lengthy and opaque procedures for obtaining environmental permits and the absence of detailed and clear spatial planning codes are interlinked and constitute a major hurdle for investments of significant scale in Greece. Therefore, the efforts being deployed to rationalise, simlify and complete this framework are of major importance, not only from the sustainability point of view but also for the business environment in general.

Steps are being taken to adapt the regulatory framework and reinforce incentives towards bringing about a more sustainable industry. Timely and effective implementation, including through overhauling enforcement, will be crucial in order to improve the situation in existing enterprises and to create a viable market for eco-industries.

4.8.4 The business environment

Greece emerges from the various international benchmarking exercises as among the weakest EU countries. Also, the very low level of inward FDI bears testimony to its lack of attractiveness as a business location. In comparison with other EU or OECD countries, Greece displays a higher number of procedures and a higher cost –monetary or in time- in carrying out routine business operations while basic instruments, such as land use codes, are not operational. Moreover, slow (energy, port services) or inexistent liberalisation in some key markets (road haulage, professional services) contributes to higher costs.

In the May 2010 Memorandum of Understanding (MoU) between Greece on one part and the European Commission, the European Central Bank and the International Monetary Fund on the other, the Greek government committed itself to a number of important reforms relating to product markets which complement the actions relating to public finance and the labour market. These reforms target a number of well documented weaknesses of the business environment (business creation, licensing of activities, investment authorisations, deficient land use regime, administrative burden to exports, absence of a coherent Better Regulation policy) directly and detailed milestones for addressing them have been set out.

Further actions are being planned under the forthcoming *Action Plan for a Business Friendly Greece,* which focuses on the removal of the most important barriers to entrepreneurship over the period 2011-2012 by adddressing isssues related to company law, starting up, establishment and winding-up of a business, labour and insurance matters, transportation, market operating problems, transactions with the public sector and public procurement, taxation, absorption of the EU Structural funds etc.

Regarding business start-up, Law 3853/10 of 17 June 2010 on the simplification of procedures for the establishment of personal and capital companies became effective in April 2011 when the new Commercial Electronic General Registry (GEMI) started operating. The new one-stop-system made possible starting up new business in one day and reducing considerably related cost and will acquire additional functionalities in future, including on-line registration and facilitation of start-up of more forms of businesses.

A new law on fast-tracking the authorisation of large-scale investments was adopted earlier in the year. It was followed by Law 3982/2011 simplifying and accelerating licensing of manufacturing activities (installation and operation permits), adopted in June 2011. It simplifies

licensing, especially for lower nuisance activities and introduces strict deadlines for reaction by licensing authorities and the principle of silent consent, while at the same time it offers the possibility of licensing through certified chambers. Moreover, the new law modernises and simplifies the licensing of a series of technical professions in the context of the Services Directive. Additional measures to simplify environmental permits and make the land use codes operational (ref. supra) will contribute towards removing some of the main bottlenecks for investment.

With respect to product markets, new legislation strengthened the effectiveness of the Hellenic Competition Commission (HCC), essentially by increasing its independence and its autonomy in fixing its agenda through pre-set criteria. Another law targeted regulated professions, removing a number of restrictions regarding lawyers, notaries, engineers and certified auditors and outlawing horizontally a series of restrictive practices in other professions. Additional sector-specific restrictions were abolished in the framework of implementing the services Directive (retail trade, tourism and education services).

An effort to reform the central administration is ongoing under the MoU but is still at a preparatory phase, pending the realisation of a number of in-depth functional reviews. They should provide the basis for identifying actions to streamline public organisations so as to eliminate overlapping responsibilities. A major reform of territorial organisation and administration has been completed in 2010 and should reach steady state in 2011 with the final transfer of some key competencies. Plans to reorganise state companies (including those controlled by local authorities) proceed rather slowly.

A draft law on better regulation had been endorsed by the Council of ministers. In practice, all new legislation is the subject of public consultation and impact assessment analysis even though the quality of the latter is variable. The national plan for reducing administrative burden has suffered delays, especially as concerns measuring. However, in substance, measures such as those recently adopted on licensing of manufacturing and those linked to the services directive will achieve considerable regulatory simplification and reduction of administrative burden.

This situation has started to change with a number of laws adopted in 2010-2011 while many others are in preparation. They address some business environment bottlenecks identified over the years in Greece, such as excessive red tape and insufficient competition in the services sector. The reform of the Greek public administration remains a crucial undertaking, not only because it can raise the productivity of the public sector but also, and even more importantly, because it can contribute to raising the overall efficiency of the economy by improving the state's capacity to deliver the necessary policies and by reducing its burden on the business sector. Indeed, the main challenge in the immediate future is the effective design and implementation of the planned measurest through secondary acts.

Over the longer term, it would be useful to address also other determinants of the business environment, including reducing excessive delays in the judiciary and restoring stability in business taxation.

### 4.8.5 Entrepreneurship and SME policy

The SME sector in Greece is more prominent than in the EU as a whole, and dominated by micro enterprises, which account for 58 % of total employment, almost twice as much as in the EU on average. The total SME sector employment is also significantly higher than in the EU as a whole (85.7 % to 67 %). The preference for self-employment is much higher than in the rest of the EU but the entrepreneurship rate is average. The economic crisis has put Greek enterprises under considerable stress both through a credit squeeze and an internal demand shock.

The government has redesigned its instruments for providing targeted financial support to the business sector for fostering investment. The new Development law (national state aid scheme for investments) is marking a departure from grants towards tax rebates, with the exception of the measures in support of new enterprises. Contrary to the past, it is fully budgeted with periodic calls for investment projects of a pre-determined total amount. The first call, for projects totalling EUR 2.2 billion of tax rebates and EUR 800 million of grants run in April and May 2011. Another EUR 1.2 billion will be offered in the second half of the year, to which will be added the credits not absorbed in the first call. More specific calls, open all year, should be made later addressing youth entrepreneurship (EUR 150 million), clusters (EUR 50 million) and large projects.

Another new instrument, complementary to the investment law, is the National Fund for Entrepreneurship and Development (ETEAN - an instrument replacing and expanding the competencies of the ex-SME Guarantee Fund). ETEAN is financed by the EU Structural Funds (OP Entrepreneurship and Competitiveness) and its modus operandi is the creation of funds, together

with and under the management of commercial banks, destined to provide "softer" loans to enterprises, mainly SMEs. It launched in May 2011 a call[86] for bank proposals aiming at the creation of business loan portfolios totalling EUR 1.2 billion (EUR 800 million from the banks and EUR 400 million from ETEAN). The loans would be long term (up to ten years) and their interest rates would be subsidised. The beneficiaries should be SMEs. Half of this amount of loans is destined to facilitate the financing of projects submitted under the development law while the rest will concern projects linked to SME internationalisation, the development of alternative tourism and the green economy (RES, waste management and resource efficiency).

A similar approach is followed by JEREMIE, co-financed by the EU Structural Funds. It has launched three actions so far, targeting newly established enterprises (EUR 120 million), seed capital (EUR 60 million) and ICT projects (EUR 180 million, still pending).

From the facilities launched earlier by the ex-SME Guarantee Fund, the offering of guarantees to micro and small enterprises for loans to pay-out suppliers of a total around EUR 1 billion is still open until December 2012 and close to exhaustion.

With a view of supporting internationalisation, a co-funded action titled *Internationalisation and Competitiveness of SMEs* addressed to all enterprises was launched in March 2011 with a total budget of EUR 30 million, with a possibility to be modified reaching 55 million. Another action co-funded by the EU Structural Funds, which is currently in the phase of implementation, is *Manufacturing in new conditions* of a total budget of EUR 200 million.

The instruments and actions mentioned above support mainly new investment and, as such, do not address directly the liquidity problem. However, their quasi-simultaneous entering into operation lifts part of the uncertainty that clouds business prospects. In addition, there are press reports of plans to put in place a more massive injection of liquidity to the business sector in collaboration with the EIB but no details are available as yet.

With respect to entrepreneurship, the measures the referred to in the previous section on simplifying business start-up and licensing and removing restrictions in a large number of product markets should have a positive effect over the longer term. Of relevance in this context is also a partial revision of bankruptcy law that was announced recently, aiming at facilitating the surviving of over-indebted but otherwise viable businesses. In essence, the procedure of opening up consultations and negotiations between creditors and other stakeholders will become pre-bankruptcy, i.e. will take place before the opening of the bankruptcy process. Moreover, the agreement will also commit minority creditors (no need of having consensus) and there will be more flexibility on the modalities of negotiations. Additionally, a special liquidation procedure is introduced allowing for the sale of the undertaking either en bloc or partially, following the submission to the court of a business proposal.

The immediate challenge for the business sector is to survive the crisis, now in its third year. The liquidity problems are severe and since they also reflect a drop in internal demand of a more structural nature, policy – restricted by fiscal constraints - can only partially address them in the short run. Over the longer term, the real challenge will be to strengthen the structure of the productive base towards higher value-added and export-oriented activities. The financial instruments put in place, together with the measures to remove regulatory obstacles to growth and the reforms of the labour market should facilitate this structural change.

### 4.8.6 Conclusion

Apart from the short-term concerns related to the economic crisis, such as getting access to finance and adjusting to the internal demand shock, the main challenge facing industry, but also the real economy overall in Greece is a business environment that is not delivering optimally.

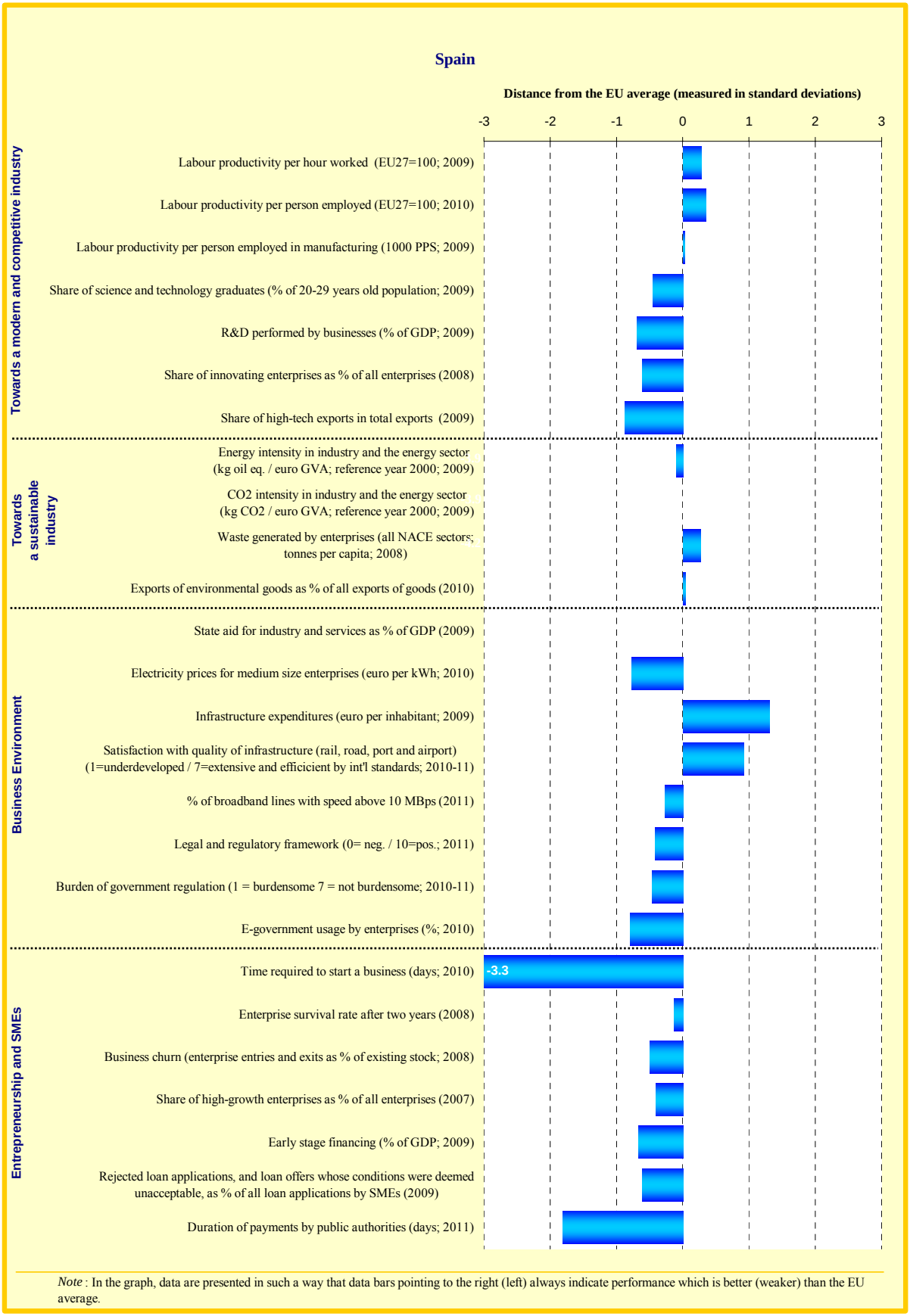
Improving the business environment through actions such as those planned in the MoU will contribute to growth by reducing the costs of doing business in Greece across the board, thus increasing productivity. However, there remains the structural problem of specialisation in less technologically advanced and low growth sectors. The policy response to this problem calls for actions to facilitate structural change, some of which, such as labour and product market reforms have been adopted or are in progress, and to raise the knowledge base.

The public administration constitutes an important bottleneck to economic growth, through its huge cost to the rest of the economy, both through its size and through its often ineffective functioning. In this area, as in the business environment, some progress has been made, mainly in the context of

[86] The programme is currently (July 2011) in the phase of the drafting of agreements for financing and co-investments with the selected banks.

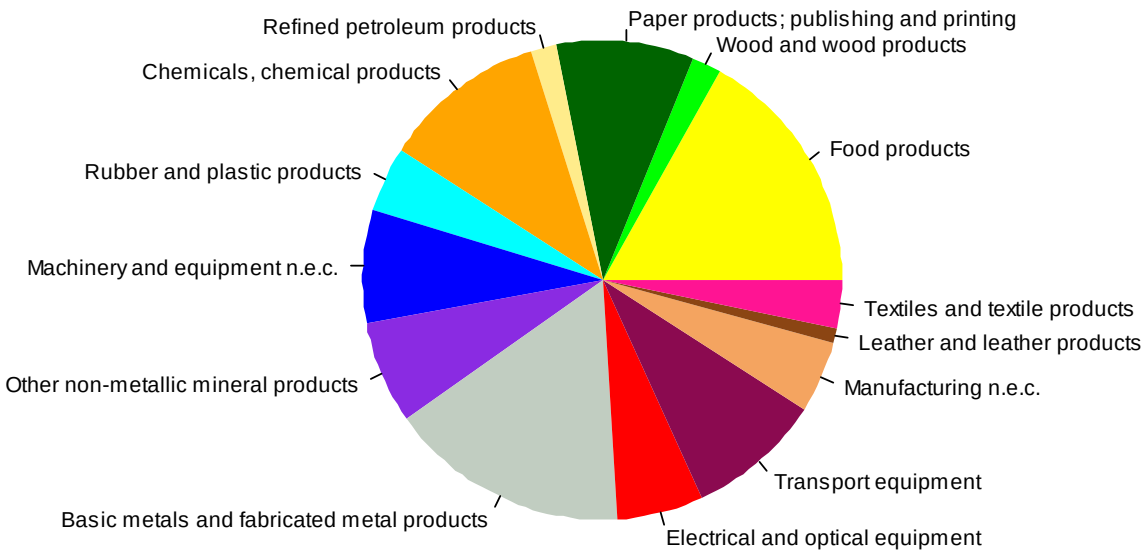
the MoU, but efforts will have to persevere over the medium term for setting in place the conditions for sustainable growth.

## 4.9 Spain




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Spain (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

### 4.9.1 Introduction[87]

*Trade and industry specialisation*

Manufacturing contributes less to Spain's economy than in the EU as a whole (12.7 % against 14.9 % in 2009). At the detailed manufacturing industry level, Spain is specialised in marketing-driven industries (particularly in exports, processing and preserving of fish and fruit, manufacture of vegetable oil), capital-intensive (ceramic tiles) and labour-intensive industries (cutting and finishing of stone). At the more aggregated sector level, Spain is specialised in low innovation and low education sectors (construction, wearing apparel), however in exports also specialises in medium-high innovation sectors such as motor vehicles and in low technology sectors such as non-metallic mineral products.

Spain has a high share of exports in the low price segment and a low share of exports in the high price segment, well below the EU average and its group of higher income countries specialised in labour-intensive industries. While its R&D intensity is below average given its industrial structure, it is close to the average and higher than its group average.

Most prominent sectors in Spain

**Highest relative value added (2007)**
Construction
Coke, refined petroleum and nuclear fuel
Non-metallic mineral products

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Coke, refined petroleum and nuclear fuel
Real estate activities
Recycling
Decreasing specialisation
Office, accounting and computing machinery
Wearing apparel, dressing and dyeing of fur
Leather, leather products and footwear

*Structural change*

In terms of change, Spain has increased the relative value added in high education sectors (software, businesses services) but has decreased it in high innovation sectors (computers), as well as in labour-intensive low-skill (dressing and dying of fur) and technology-driven industries (communication equipment). Export specialisation

[87] For main sources used see the methodological annex. The cut-off date for all data and qualitative information is 31 August 2010.

in marketing-driven and labour-intensive industries (wearing apparel, knitted and crocheted articles) has increased further.

The impact of the crisis on the Spanish industrial structure seems to have been limited overall, with technology-driven industries suffering and all the other industry types gaining relative shares in the crisis. However, manufacturing as a whole suffered considerably, production being still at 21.6 % less than its previous peak.

Spain experienced an appreciation of the real effective exchange rate by 16% over the last decade, which is slightly below the EU27 average (21%), indicating nevertheless a loss in cost and price competitiveness. Nominal unit labour costs have increased by 29% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. Over the last decade, labour productivity per hour worked has gradually increased to about 10 percentage points above the EU27 average but still about 4 percentage points below the Euro area average. However, along 2010 and in the first months of 2011, Spanish exports have shown a relative strength, compared to the average of the EU27, which may mean competitive gains beyond prices.

Overall, Spain is in an unfavourable competitiveness position with mixed signals as to change dynamics. Spain's public efforts to boost R&D have been rather unsuccessful until now and a recently adopted innovation strategy reflects those concerns and the need to a change of approach.

### 4.9.2 Towards an innovative industry

Spain is considered as a moderate innovator in the Innovation Union Scoreboard 2010 which is partly based on the fact that R&D performed by businesses in 2009 was still below the EU average, accounting for only 0.72 % of GDP.

After strong increases in public funding for research and innovation until 2009[88], public investments in R&D have decreased slightly in 2010. In 2011 R&I investment has been protected from the cuts compared to other budgetary expenses. CDTI's (*Centro para el Desarrollo Tecnológico e Industrial*) budget has managed to grow substantially in the last four years and continues supporting R&D and innovation projects with new programmes like INVIERTE, for high risk-high return projects.

There are two recent major milestones in the Spanish innovation policy, the Innovation Strategy (*Estrategia Estatal de Innovación e2i*) and the new Science and Innovation Law (replacing the previous law of 1986), adopted in May 2011. This new policy proposes a structural and comprehensive approach which complements the funding-based strategy prevalent up to now.

The new innovation policy focuses on enhancing public procurement for innovation, increasing funding for innovative SMEs and for risk capital, improving knowledge transfer by changing the legal possibilities for public researchers to start work on the commercialisation of scientific inventions, and by using the Technology platforms and boosting the science and technology parks.

Another priority area is human resources for science and innovation, strengthened also by the new legal framework provided by the Spanish law for science. This new law also proposes to restructure the funding system with a structure around two agencies: *Agencia Estatal de Investigación* and *Centro para el Desarrollo Tecnológico Industrial* (CDTI). The former focuses on research and the latter organisation (which already exists) on innovation.

The size of the skilled force in Spain has been undermined in recent years by the still high level of early school leaving, one of the highest in the EU. The Law on Sustainable Economy adopted on 15 February 2011 includes measures aiming at increasing the quality and quantity of human capital through education and vocational training.

The current main challenge for Spain's research and innovation policy is to ensure knowledge transfer and public-private cooperation, and in parallel increase the research activity of the business sector. These are also areas of priority for the Spanish policy in the broader context of a structural change to a more knowledge-intensive economic and industrial structure.

### 4.9.3 Towards a sustainable industry

Spain scores below the EU average on several sustainable industry related indicators and in particular the Spanish industry is still more energy intensive than the EU average.

As a follow-up of first Energy Saving and Efficiency Plan 2008-2011, Spain has adopted the second National Energy Efficiency Plan for the

[88] The Spanish Government Budget Appropriations or Outlays on R&D have increased steadily with an annual growth rate of more than 14% between 2004 and 2009.

period 2013-2020 on the 30 of June 2011. This plan aims at fostering energy savings both in the end-use consumption of energy as well as in the transportation chain since generation to transmission. The Law on Sustainable Economy (Law 2/2011 of 4 March) also contains relevant measures addressing energy efficiency.

Another priority of the Spanish government continues to be renewable energy and as a result Spain has adopted its new Renewable Energy Plan for the period 2011-2020 (*Plan de Acción Nacional en materia de Energías Renovables* - PANER). The PANER includes the development of new technologies such as geothermal and wave power in response to commitments assumed by Spain in the Energy and Climate Change Package for 2020.

The Industrial Action Plan for the next 10 years (PIN 2020) adopted in 2010 aims at increasing the size of the industrial sector in the Spanish economy, raise its level of internationalisation and guarantee its long term sustainability. The Plan identifies some priority sectors (automotive, aerospace, pharma-health, ICT, agrofood, renewable energies) with a number of actions on greening the industry, like the development of the electric vehicle with the ambitious goal of 250 000 electric vehicles in 2014.

4.9.4 The business environment

Spain has recently implemented significant regulatory changes but the business environment in Spain is still more burdensome than the EU average according to international indexes such as the Global Competitiveness Report or IMD. That is especially relevant regarding entry and exit conditions of firms and the lack of competition and high regulation in some professional services.

The Spanish government is continuing efforts to reduce existing administrative burden for enterprises over the last months in order to achieve its target of 30 % set in its Action Plan for Administrative Burden Reduction of 20 June 2008 and, ultimately, the 50% administrative burden reduction target set for 2020 as part of the Strategy for a Sustainable Economy, approved by the Council of Ministers in 2009. Since last year the government has passed a substantial number of initiatives in different sets, being some examples the Sustainable Economy Law and the RD 13/2010. The estimate burden reduction is approximately 2.000 million Euros, of which firms' savings are expected to be 1.400, with another 500 million Euros expected to benefit both firms and citizens. However, increasing overlapping regulation emerging from lower levels of the Administration over the last years due to a lack of coordination between Administrations is offsetting in part the reduction of red tape and is having pernicious effects on innovation and productivity of enterprises. A key element to obtain effective administrative simplification is greater administrative cooperation between the 3 layers of public administration (national, regional and local).

Progress has also been achieved regarding impact assessments. Regulated by RD 1083/2009, all new legislation has to include an Impact Assessment since 1 January 2011. The quality of Impact Assessment can still improve and efforts to change the administrative culture of officials are being done by the Ministry of Public Administration in that respect. Draft laws which are not accompanied by impact assessments are simply stopped by the State Secretary of Public Administration and sent back. A regular cooperation and dialogue of the Administration with the business organisations before drafting new legislation seems to be effective in that respect.

The transposition of the Services Directive, that has implied the amendment of a considerable number of laws and decrees at national and regional level, has led to important reduction of administrative burden (estimated at around 1,700 million euros) and liberalisation of certain services, namely retail, tourism, industrial services and services of the regulated professions. However, some professional services still present high regulation by the means of both reserves of activity and obligation of membership of a professional association (*colegio profesional*). The government is working on a new Law on Professional Services that could be adopted before the end of of 2011. The new law intends a substantial reduction of the mentioned obligations to keep only those for services performed in the general interest or those requiring maximum protection of the citizen (i.e.: doctors). The new law may have an important impact in reducing prices, improving quality and creating more opportunities for employment due to the economic dimension of the sector. Indeed it is estimated that only the professional services requiring membership of a *colegio profesional* are estimated to contribute 8.8 % to the Spanish GDP.

Spain has addressed the lengthy delays regarding business start-up by adopting Royal Decree 13/2010 of 3 December 2010 which aims at reducing time to register an enterprise to up to 5 days as well as at reducing the notary and registrar costs involved to up to 250 euros. The Sustainable Economy Law has also contributed to the simplification of the start-up process by reforming the operating licenses and permits system with the introduction of ex-post controls, positive silence of the Administration and electronic processes. These measures, included in Royal Decree Law 8/2011 of

1 July, still need further implementation by regional and local authorities. The city of Madrid has started to subcontract the management and approval of operating licenses with an acceleration of processes.

A series of measures have been taken to simplify insolvency and bankruptcy, via supporting greater use of court settlements (Royal Decree Law 3/2009) and the reduction of the cost of judiciary officials (RDL 5/2010). A new draft Insolvency Law which is in its final stages will introduce some simplification measures. The Law gives a greater impulse to extra-judiciary agreements (out-of-court settlements), provides greater guarantees for any additional funds that may be re-injected into the company as a result of a re-financing agreement and develops a new abbreviated and simplified procedure. These measures should result in easier firm restructuring.

### 4.9.5 Entrepreneurship and SME policy

Spain has a high share of micro enterprises compared to the EU average and those micro enterprises employ significantly more people than their counterparts in other Member States, being consequently their contribution to the economy also higher than in the EU. This may be explained by the sectoral distribution of SMEs in sectors with smaller average enterprise size such as services and construction. Promote these enterprises to grow would contribute to increased levels of innovation and productivity in the economy.

Access to credit continues to be one of the main concerns of Spanish enterprises. During 2011, ICO lines of credit have been reformed in order to improve the availability of financial resources to SMEs and self employed workers (e.g.: by implementing new credit lines such as ICO-liquidez and ICO-directo). The Government is working to develop the non-traditional funding mechanisms, like venture capital and business angels, which is still underdeveloped compared to other major European economies. A new fund to support intermediary organisations of this type has been launched in 2010 with the aim of carrying studies, seminars and dissemination. Also, Royal Decree 8/2011 establishes tax exemptions for the acquisition of shares of new enterprises under certain circumstances. The CDTI is also working with other Member States with the aim of creating a cross-border venture capital market. A new Guarantee programme for Entrepreneurs has been created in 2011 with the aim of encouraging small business development, being the financial risk partially covered by the Spanish Refinancing Company (CERSA). Spain still has a potential for developing more financial engineering instruments linked to the structural funds, like JEREMIE, with a view to increase public private partnerships.

The long delays in payments, in particular by public administrations, are still worrying and aggravating the liquidity problems of enterprises. The Spanish government adopted in July 2010 a law to reduce the times for payments by both businesses and the public administration but it may take some time until we see a real impact of this law for various reasons: first, the law will only be implanted gradually until 2013, second, there is a strong culture of late payments in Spain, third, the law has no retroactive effects (only applies to operations after 7 July 2010). Moreover, due to the difficult financial situation of some Autonomous Communities and municipalities, the law may face significant challenges for its implementation at regional and local level.

Although Spain has progressed considerably in Entrepreneurship over the recent years, it still scores below EU average in most of the SBA indicators of this area, and in particular regarding the society's perception of entrepreneurship. The Government set up an Entrepreneurs Support Action Plan in order to promote entrepreneurship and business creation through financial support, advice and promotion of entrepreneurship. Another area in which Spain scores below the EU-average is in public procurement. Indeed, the Spanish SMEs account for a slightly lower proportion of the value of public procurement contracts (33 % versus 38 % in the EU).

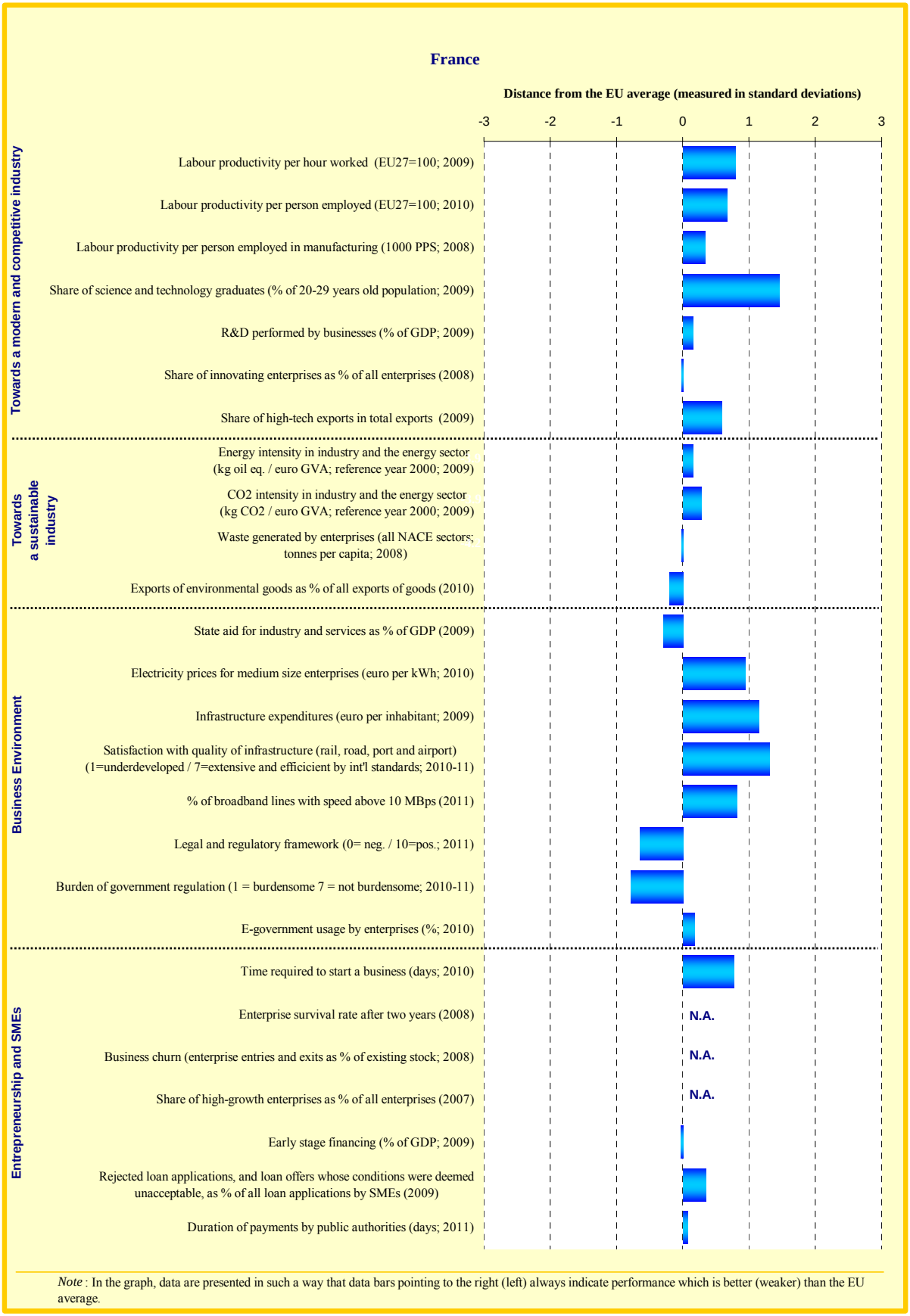
### 4.9.6 Conclusion

After the sharp economic adjustment in Spain during the years 2008 and 2009, particularly in its construction sector, and the market pressure of 2010 and 2011 in the context of the euro area sovereign debt stress, Spain has put in place a considerable number of measures in the last months to facilitate structural change and enhance productivity, like improving the innovation framework, access to finance for SMEs and simplifying the regulatory framework for business creation and growth.

Some challenges still remain in order to enhance the business environment in the area of access to finance as well as in easing entry and exit conditions of firms. Improving coordination between different levels of public administrations would help reducing the administrative burden for enterprises. Enhancing competition and lowering regulation in a number of selected services sectors with high spill over effects such as professional services would increase potential GDP and create opportunities of employment. Another challenge is

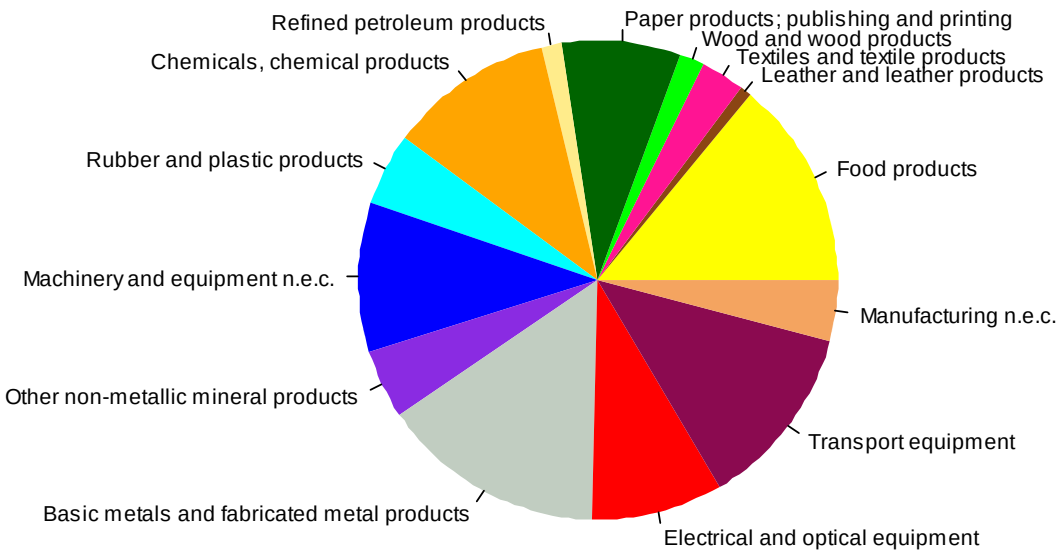
the low private sector participation in R&D and innovation activities besides the large number of public-backed initiatives in the area.

## 4.10 France




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – France (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.10.1 Introduction[89]

*Trade and industry specialisation*

Manufacturing plays a significantly smaller role for France than for the EU in total (10.6 % vs. 14.9 % of value added in 2009). At the detailed manufacturing industry level, France is specialised in technology-driven (manufacture of air- and spacecraft) and marketing-driven industries (soaps and detergents, luggage and handbags). At the more aggregated sector level, France is specialised, in export terms, in goods and services of medium-high innovation and education sectors (transport equipment such as trains and aeroplanes) and, in terms of relative value added in medium innovation (air transport) and high education sectors (research and development, business services). France is less specialised in high innovation sectors, notably due to its lower specialisation in machinery and computers. A high share of France's technology exports goes to the BRIC countries, indicating potential for higher growth.

France has a high R&D intensity with respect to its industrial structure and a particularly good performance in labour-intensive industries, reflecting its luxury fashion industry, similarly to Italy. France is less well-placed on the quality ladder in technology-driven industries. Overall, together with the UK, Belgium and the Netherlands, France has industry specialisation in high education sectors which are predominantly services.

Most prominent sectors in France

**Highest relative value added (2007)**
Transport equipment
Air transport
Recycling

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Real estate activities
Air transport
Research and development
Decreasing specialisation
Office, accounting and computing machinery
Coke, refined petroleum and nuclear fuel
Tobacco products

*Structural change*

89 For main sources used see the methodological annex. The cut-off date for all data and qualitative information is 31 August 2010.

In terms of change, France has considerably decreased its relative share of capital-intensive industries (cement, refined petroleum), while increasing its industry specialisation in technology-driven industries (air- and spacecraft). In exports, France has decreased the relative share of technology-driven industries (radio and TV transmitters) and increased it in marketing-driven industries (e.g. musical instruments). The relative share in sectors with high education (business services) has increased considerably while the share in high innovation sectors has decreased (computers, communication equipment). France has climbed further up the quality ladder, in particular in labour-intensive industries. Its sectoral R&D intensity has fallen in manufacturing sectors (chemicals, cars and transport equipment) while increasing in services sectors (business services and research and development).

Manufacturing production fell by 20 % during the recent economic crisis and has increased by 11.2 % since then (April 2011). The impact of the crisis on the French industrial structure was limited overall; technology-driven industries came out better than capital-intensive and mainstream manufacturing industries.

France experienced a moderate appreciation of the real effective exchange rate over the last decade (8%, compared to 21% in the EU27), indicating nevertheless a loss in cost and price competitiveness. Nominal unit labour costs have increased by 23% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. The employment legislation remains very protective and the minimum wage is among the highest in Europe. Labour productivity per hour worked has slightly declined over the last decade. Nevertheless, it is still about 27 percentage points above the EU27 average and about 13 percentage points above the Euro area average.

Overall, France is in a a favourable competitiveness position, with change dynamics partly positive but partly pointing to vulnerabilities in the export of knowledge-intensive manufacturing industries.

### 4.10.2 Towards an innovative industry

According to the Innovation Union Scoreboard 2010, France remains an innovation follower but its innovation performance tends to improve faster than most Member States falling in this category. Public R&D expenditures are above the EU average and they are in line with the 2020 target, but private R&D and innovation expenditures remain insufficient. Enterprises, especially SMEs, do not innovate sufficiently, including as regards non-technological innovation.

Since 2008, public incentives to business expenditures have been increased and focused on a few key instruments, namely the Research Tax Credit (*CIR*), the 'innovative start-up scheme' (*Jeune Entreprise Innovante*), funding by the Innovation Agency (*OSEO*) and support to 'Competitiveness clusters' (*Pôles de Compétitivité*). Numerous projects financed by the new 'Investments for the Future' programme also promote business R&D activities.

R&D expenditures by businesses did not decrease during the crisis and even increased in 2009 compared to 2008, possibly thanks to the Research Tax Credit, which is likely to remain acutely necessary in the medium term in case of tightening access to finance. No significant modification of this scheme is expected before its thorough ex-post evaluation in 2013.

The new 'Investments for the Future' programme aims at promoting both a knowledge economy and industrial competitiveness, and put the emphasis on the excellence of the science base, public-private cooperation and knowledge transfer. The programme amounts to EUR 35 billion, out of which 13 % are dedicated to the digital economy, 13 % to sustainable industry, 6 % to SME and industrial competitiveness, and more than 60 % to education, research and innovation strictly speaking.

Investments in digital infrastructures are dealt with by the 'Digital France 2012' Plan. The 'Investments for the Future' programme devotes EUR 4.25 billion to ICT infrastructures (mainly optic fibre) and to the development of innovative digital uses (with an emphasis on household applications). A fund to provide growing SMEs in the ICT sector with equity financing was created in June 2011. The creation of the *National Digital Council* (April 2011) is meant to provide the government with in-depth insight on future ICT business applications, including in SMEs, future technological developments and the competitiveness of the ICT sector. The impact of these measures on the competitiveness of the digital sector (and its contribution to GDP growth) is expected to be positive but is not assessed yet. IT skills and business applications, including in SMEs, will be crucial to fully exploit the growth potential of the digital economy.

*Regional Innovation Strategies* contributed to identify the major needs of businesses locally and thus complemented the *National Strategy for Research and Innovation*, which primarily focuses on the priorities of public research bodies and

laboratories.

An evaluation of the economic impacts of the Competitiveness clusters is planned in 2012. In 2010, public support to six Competitiveness clusters was suppressed, and shifted to new Competitiveness clusters on environmental technologies. The impact of the 2011 adjustment of the Research Tax Credit and of the 'innovative start-up scheme' on enterprises below 2000 employees remains to be assessed. A comprehensive ex-post evaluation will be necessary by 2013 to assess the effectiveness of the various schemes and, if necessary, to prepare a refocusing of the policy mix.

As a whole, the innovation 'ecosystem' has significantly improved since 2008. However, higher R&D and innovation expenditures by businesses, a larger number of innovative enterprises and stronger development of high-tech and high-growth sectors remain prerequisites to increase competitiveness and reach the 2020 R&D target. More synergies between the main fields of excellence in academic research and high-growth economic sectors, and stronger linkages between the scientific base and businesses could contribute to this objective, as well as more favourable framework conditions for innovative enterprises below 2000 employees, notably as regards access to finance, the tax and regulatory environment, and skills in SMEs.

Efforts to consolidate the cooperation between the education system and the business community may be usefully pursued and amplified, which could include more vocationally-oriented curricula with technical or engineering background, innovation and managerial courses, introduction to careers and economic sectors, excellence curricula for post-graduate studies, etc.

### 4.10.3 Towards a sustainable industry

Greenhouse gas emissions followed a downward trend since 2005 and decreased by 5.1 % in 2009 compared to 1990, which is consistent with France's Kyoto target. $N_2O$ emissions from agricultural soils significantly decreased. Emissions per capita remain low compared to most developed countries. However, emissions from transports and buildings, in particular $CO_2$ emissions from road transport, increased since 1990, and energy consumption from buildings increased by 4.8 % between 2000 and 2007. Overall, the projected gap to the 2020 target on greenhouse gas emissions is +6 %.

The quality of transport infrastructures remain very good as a whole, but stronger development of non-road transportation (i.e. ports, waterways and rail freight, with effective intermodal connexions, in order to achieve the national target of 17.5 % of non-road freight by 2012) would positively affect traffic congestion and related transport costs. Policy support is still necessary to allow the full development of the market of electrical vehicles, including as regards infrastructures (in particular plug-and-ride terminals) and R&D, which could be complemented by demand-side measures such as public procurement. EUR 1 billion from the 'Investments for the Future' programme is dedicated to R&D on 'vehicles of the future', which should include R&D on hybrid technologies and electrical technologies (e.g. battery life). The introduction of a tax on heavy transport on free roads has been delayed and is now planned in 2013.

The policy framework to improve the energy performance of buildings is comprehensive (regulation, audit and certification, tax and financial incentives, consumer information and training of professionals). Its full and sustained implementation could contribute to the development of a strong eco-construction market and therefore to reaching the national target of -38 % in energy consumption from buildings by 2020.

Two French producers of biomass heating are in the world top 10, but there is no significant French manufacturer in the solar and wind sectors, where France seems to have lost the competitive race so far. R&D is a priority to allow France to position on second generation technologies. EUR 1.35 billion from the 'Investments for the Future' programme is dedicated to research and innovation in renewable energy and green chemicals, including demonstration projects and technology platforms. The development of a competitive supply of renewable energy technologies will need to be combined with a predictable regulatory framework, notably as regards legal requirements for new installations and feed-in tariffs for wind and solar electricity, to allow for the growth of this market in the medium term. This is also essential to reach the 2020 target. The share of renewable energy in gross final energy consumption was 11 % in 2008, against a 2020 target of 23 %, and mainly comes from biomass (heat and power) and hydropower.

Electricity prices, including for medium-sized enterprises, are relatively low and energy dependency remains below the EU average. Energy intensity decreased by 15 % between 1991 and 2006 and energy efficiency is high compared to most developed countries.

The 'Investments for the Future' programme devotes EUR 4.6 billion to green industry and

rightly spots major industrial challenges, including renewable energy, green chemicals, waste & recycling, sustainable cities and transports, thermal renovation of buildings, green vehicles. Sustained efforts will be necessary to build 'green' competitive advantages, reach the *Grenelle* targets and implement the comprehensive *National Strategy for Sustainable Development*, e.g. as regards biological agriculture, adaptation to climate change, waste prevention, collection and recycling, integrated policy framework for green products, elimination of environmentally harmful subsidies and state aids, consolidation of a knowledge and scientific base in the environmental field etc.

4.10.4 The business environment

France scores significantly better than the EU average concerning electricity prices for medium-sized enterprises, infrastructure expenditures and satisfaction with the quality of infrastructure. eGovernment usage by enterprises is slightly above the EU average.

France scores clearly below the EU average concerning the burden of government regulation and the legal and regulatory framework. The business environment remains complex and costly, despite recent efforts. Simplification of the regulatory environment (e.g. 'gold plating'; corporate and labour law; hygiene, safety and environment rules; public procurement codes), administrative procedures and interfaces between businesses and public authorities (e.g. single IT interface for all procedures applicable to enterprises) offer potential to strengthen competitiveness, in particular for enterprises below 2000 employees. The *De la Raudière* report (2010) also points out some recurrent practices, such as regulatory inflation and legal instability.

Since 2008, France has undertaken several initiatives to improve the regulatory environment. The administrative bill of 17 February 2011 extended the obligation to make (and publish) ex-ante impact assessments to implementing legal acts. The list of impacts to assess is comprehensive, but SME test is not included and the methodology is not fully transparent yet. New consultation practices since 2008 (e.g. *États généraux*, *Grenelle*, *Assises*) have allowed longer and wider consultation of all legitimate stakeholders, but consultation is not homogeneous and does not always benefit to SMEs. A Commissioner in charge of Simplification was appointed in November 2010. The most recent simplification law (18 May 2011) includes provisions for enterprises but is not primarily focused on competitiveness of businesses. 80 simplification measures have been announced in April 2011, but not yet implemented. The national target to reduce the most burdensome or 'irritating' procedures by 25 % by 2011 has not been assessed yet. 700 administrative procedures were analysed so far, and 250 simplified, but the approach has been enlarged to private individuals and less focused on enterprises. A permanent, structured and systematic screening of the regulatory environment, to ensure effective simplification for enterprises, would improve the business environment over time.

The current constrains on public finances imply efforts to streamline public administrations (notably with the second *General Review of Public Policies* 2011-2013). There are synergies between these efforts and a systematic review of the business environment from the 'competitiveness' angle. This offers an opportunity to simplify the interfaces between businesses and public authorities, and to screen and simplify existing state aids, subsidies and other public support schemes benefiting to enterprises[90]. This could allow a simplification of the regulatory and tax environment and thus improve the business environment, provided that it does not lead to an increase in the overall fiscal pressure on enterprises.

4.10.5 Entrepreneurship and SME policy

The SME sector in France employs, in total, relatively less people than in the EU (60.4 % against 67 %) and lost almost 5 % of its total workforce due to the crisis. The time required to start a business is significantly shorter in France compared to the EU average. France scores below the EU average as regards the business churn.

The volume of early financing is slightly below the EU average. SME access to credit remains easier than in many other Member States. However, in January 2011, one fourth of enterprises between 10 and 500 employees reported cash and financing problems. In 2009, 30 % of SMEs noticed a declining willingness of banks to provide loans and the cost of credit remains significantly higher (by 25 %) for small enterprises. Access to finance is reported to be especially difficult for very small enterprises, innovative SMEs and mid-term investment[91]. Mutual guarantee schemes and

[90] Public support to research and innovation by businesses, which is costly for the State, has been more systematically evaluated ex-post in the last few years. This good practice could be extended to other domains.

[91] Reportedly, access to bank loans is acceptable as regards short-term cash and investment in fixed assets, but more difficult for long-term investment in non-fixed assets (e.g. R&D, patents, brands)

stronger development of private finance (e.g. venture capital, private equity) may improve SME access to finance. The 'Investments for the Future' programme also allocates more than EUR 800 million to finance SME growth and competitive development, in addition to other funds available from the *Innovation Agency* (OSEO) and the *Caisse des Dépôts et Consignations*.

Between 2008 and 2010, duration of payments by public authorities decreased (from 75 down to 65 days) and duration of payments by enterprises increased (from 50 days up to 59 days). This increase may be due to the crisis. SMEs report an overall shortening of payment duration but more payment delays by large customers. The *Subcontracting Ombudsman* (appointed in April 2010) is meant to improve relationships between large customers and SME suppliers, including as regards payment delays and insufficient compliance with the *Law on the Modernisation of the Economy*[92].

The entrepreneurial spirit, in particular the positive image of entrepreneurship, seems to be relatively less embedded in the national culture than in other Member States. But the survival rate of enterprises after 2 years was 80 % in 2007, against 76 % in 2006 and against 71 % in the EU on average. More entrepreneurial education and the new Independent Contractor Limited Liability Statute (which allows to separate business assets from personal assets) may improve both the enterprise creation and survival rates.

The statute of 'auto-entrepreneurs', introduce in 2008 by the Law on the Modernisation of Economy (LME), is successfully contributing to promote entrepreneurial spirit in France. This statute allows a self-employed person to start a business with no formalities and no capital. More than 660 000 'auto-entrepreneurs' were registered by end January 2011, which means almost 350 000 new 'auto-entrepreneurs' in 2010 (against ~270 000 creations under other statutes). Around one third of 'auto-entrepreneurs' declared sales in 2010, with an average turnover of EUR 8 350. Around one half of auto-entrepreneurs are unemployed and 17 % are retired, students or civil servants. Services, retail trade and construction are the most popular sectors.

The rate of SMEs which import, export (intra or outside the EU) and invest abroad as well as the rate of innovative SMEs remain below the EU average, as well as the share of SMEs participating in EU funded research. This may be correlated to the insufficient number of high-growth SMEs and to an overall insufficient growth of SMEs as well as to the insufficient number of SMEs in high-tech sectors. Besides, IT skills in SMEs still need to be promoted. To enhance their innovation capacity, non innovative SMEs primarily need information and contacts, in particular at local or regional level, while innovative SMEs need financing, especially in the expansion stage. Both need enhanced access to skilled workforce. The 'Investments for the Future' programme dedicates more than EUR 1 billion to finance R&D, innovation, training and structural adaptation in SMEs. Pursuing efforts to streamline and increase the efficiency of structures accompanying SMEs on international markets may contribute to the development of export-oriented activities, in particular in emerging countries. As a whole, improving framework conditions to stimulate higher growth, better technological and geographical positioning and higher differentiation[93] of SMEs remain the major general challenges to increase competitiveness. This includes the improvement of the business environment.

### 4.10.6 Conclusion

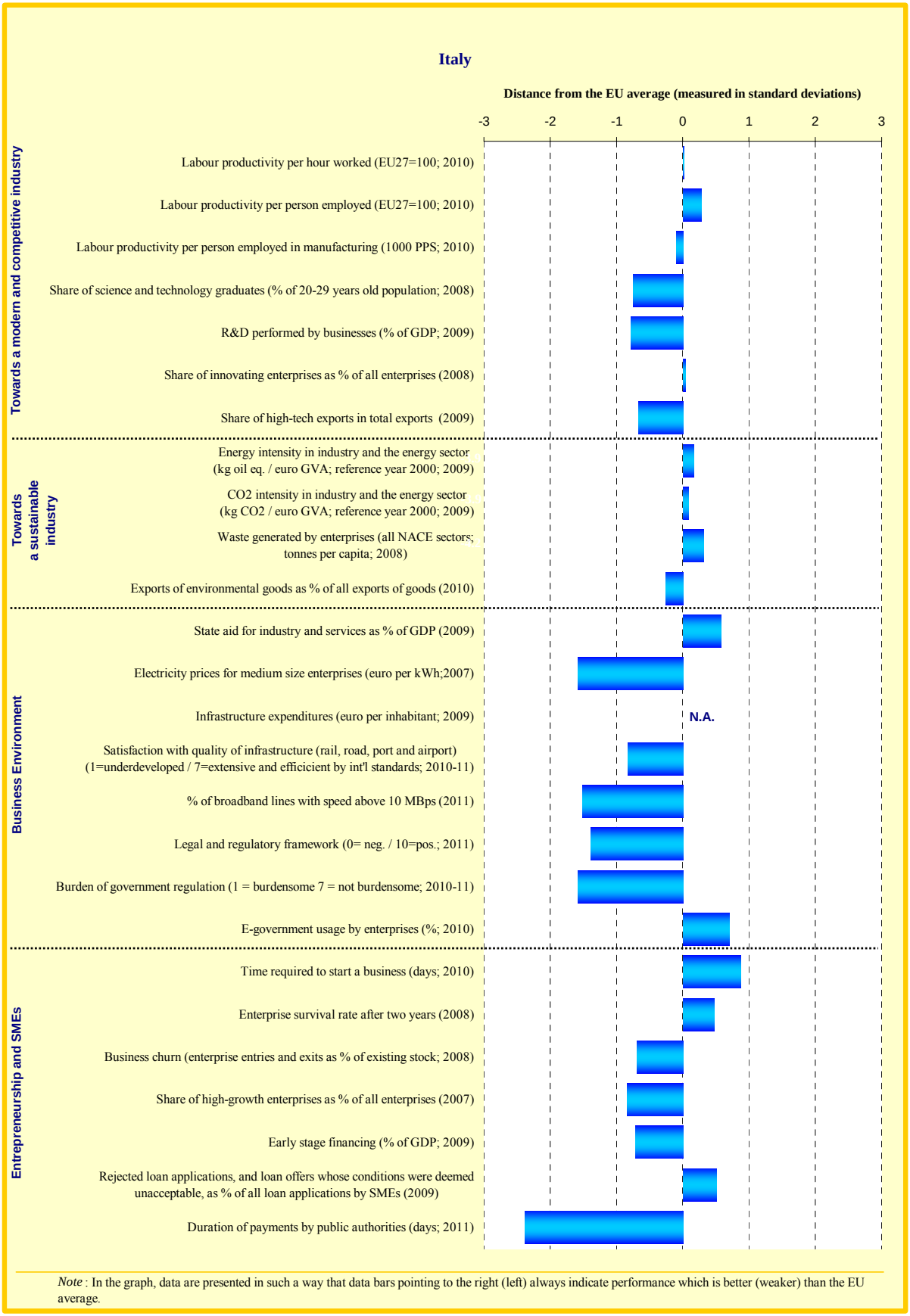
Challenges for France remain to improve its external competitiveness and to facilitate structural change, notably through higher growth and better technological and geographical positioning of enterprises below 2 000 employees. To this end, efforts to improve the business environment, including by alleviating the burden of regulation and administrative procedures and facilitating access to finance would be helpful. The research and innovation 'ecosystem' would also benefit from further efforts.

which are crucial for non-price competitiveness of enterprises below 2000 employees.

92 This law (2008) sets a maximum duration of payments by enterprises of 45 days, with derogations in 34 sectors until 2012. By-passing practices include later registration of invoices, 'slicing' of orders, requests for rebates and discount prices etc.

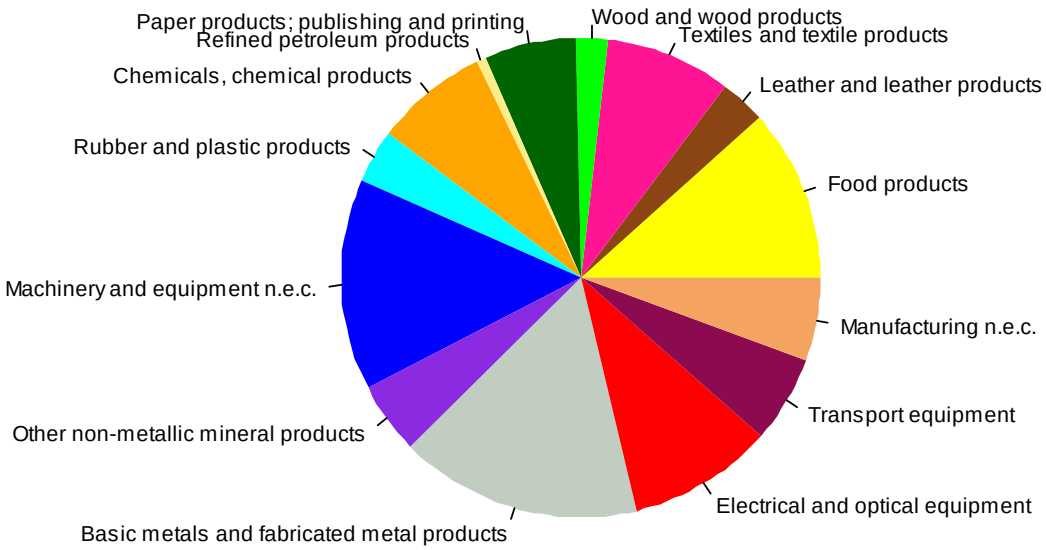
93 Differentiation includes non-technological improvements to products and services (e.g. branding, quality) and constitutes a competitive advantage.

## 4.11 Italy




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Italy (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.11.1 Introduction

*Trade and industry specialisation*

Manufacturing contributes 16.1 % to Italy's total value added against 14.9 % for the EU on average (2009). At the detailed manufacturing industry level, Italy is relatively specialised, both in value added and exports terms, in labour-intensive (leather clothes, cutting and shaping of stone) and in mainstream manufacturing industries (fabricated metal products, domestic appliances, motorcycles and bicycles) and, with respect to exports, also in marketing-driven industries (tanning and dressing of leather, luggage and handbags). At the more aggregated sector level, Italy is specialised in low education and innovation sectors (leather, wearing apparel), but also in highly innovation-intensive sectors such as machinery and automotive. Its relative share in high education sectors is low due to weaknesses in software, business services and research and development.

Italy's position on the quality ladder is very high in labour-intensive industries, while in technology-driven industries it is below the EU average. Its R&D intensity is below average given its industrial structure. Overall, Italy shows how specialisation in labour-intensive industries can be sustained when sectoral upgrading, e.g. through climbing up the quality ladder, takes place.

Most prominent sectors in Italy

**Highest relative value added (2007)**
Leather, leather products and footwear
Wearing apparel, dressing and dyeing of fur
Textiles and textile products

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Air transport
Water supply
Wearing apparel, dressing and dyeing of fur
Decreasing specialisation
Inland transport
Electricity and gas
Coke, refined petroleum and nuclear fuel

*Structural change*

In terms of change, Italy's changing specialisation patterns are quite complex, with opposite directions in trade and industry specialisation: while it has decreased capital-intensive industries in value added (ceramic tiles), it increased them in exports (basic non-ferrous metals), along with the other

industry types (e.g., technology-driven industries – TV and radio transmitters) with the exception of labour-intensive industries (leather clothes). The same holds true for high innovation sectors (increasing in value added – e.g. medical, precision instruments, decreasing in trade) and vice versa for high education sectors (increasing in financial services).

Manufacturing production fell by around 25 % during the crisis and is still 17.4 % lower than its previous cyclical peak. The impact of the crisis on Italy's industrial structure was limited overall, favouring somewhat marketing-driven industries.

Italy has experienced an appreciation of the real effective exchange rate by 19% over the last decade, which is slightly below the EU27 average (21%), indicating nevertheless a loss in cost and price competitiveness. Nominal unit labour costs have increased by 31% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. Labour productivity per hour worked has declined over the last decade and is now only marginally above the EU27 average and about 13 percentage points below the Euro area average.

Italy improved its sectoral R&D intensity and was stable on the quality ladder gaining in the high quality segment of technology industries, but also in the low quality segment. Overall, Italy shows a mixed picture with respect to competitiveness. While it undoubtedly features strengths and improvements in some areas, its overall outlook is impaired by its performance in knowledge-intensive industries and does not unequivocally point in direction of improving competitiveness.

4.11.2 Towards an innovative industry

According to the Innovation Union Scoreboard 2010, Italy is a moderate innovator with below average performance, in particular concerning private R&D investment (0.65 % of GDP). The share of high tech exports is another weakness, illustrating the relatively unfavourable product specialisation of the Italian industry. On the other hand, there are some positive developments regarding human resources (e.g. new doctorate graduates) and intellectual assets (e.g. Community trademarks).

A tax credit for research has been established in December 2010 and subsequently replaced and strengthened, in May 2011, by a tax credit for companies financing research projects in universities or public research bodies equivalent to 90 % of the additional expenditure in 2011-2012 compared to the 2008-2010 average (total allocation for this instrument is EUR 484 million). This tax credit does not cover in-house R&D by companies.

In April 2011, the National Research Programme 2011-2013 was presented and welcomed by stakeholders. The Programme has been prepared on the basis of a consultation of interested parties through thematic working groups dealing inter alia with: environment, health, life sciences, energy, agrofood, nano-sciences and new materials, "Made in Italy", ICT, aeronautics and space, sustainable mobility and transports, cultural goods, construction.

The Programme notably defines as major objectives for the Italian research system increasing R&D expenditure, improving competitiveness in key technological areas, favouring cooperation between companies and public research institutions, improving analysis and evaluation of research programmes and bodies. The intention is to rationalise and reinforce a number of existing measures, such as Technology Districts, national technology platforms (interlinked with EU ones), national excellence poles. Furthermore, 14 priority projects (*progetti bandiera*) have been identified, most notably in relation to key enabling technologies, energy or space, to be supported with EUR 1.7 billion in public expenditure in the 2011-2013 period. The Programme also focuses on simplification of national funding instruments and on improving support to participation in EU and international research projects.

One instrument to simplify and facilitate access to financing in the field of industrial research projects is the *sportello della ricerca* (one-stop shop for research), which should facilitate contacts between companies and the Ministry for Education, University and Research and should be operational in 2011.

The implementation of the "Industria 2015" programme, launched in 2006 and organised in five Industrial Innovation Projects (Energy Efficiency, Sustainable Mobility, New Life Technologies, New technologies for the 'Made in Italy', Innovative Technologies for Cultural Goods), is ongoing and has been confirmed as a priority by the Government. However, the progress in the actual disbursement of funds appear to be quite slow.

A major priority for Italy is reducing the North/South gap, which is particularly evident in terms of research and innovation. Indeed, the level of expenditure in R&D in the Mezzogiorno is broadly one third inferior to that in the Centre and North of the country. Furthermore, the relative share of business R&D is especially low (about half

that in the Northern regions). Therefore, guaranteeing an optimal use of the 2007-2013 Structural Funds, notably in the area of research and innovation, is essential. The National Operational Programme on Research and Competitiveness for the Convergence Regions has a total budget of EUR 6.2 billion. A number of calls for proposals have been published in the last year including, in December 2010, for establishing or reinforcing High Technology Districts and for Public-Private laboratories (EUR 915 million).

The research system will be affected by a law granting more autonomy to universities' governing bodies, increasing their ownership of performance, also from a financial point of view, enhancing meritocratic criteria in selection procedures and improving quality in teaching and research. A 'Brain return' measure to attract Italian researchers living abroad through a tax incentive, initially introduced in 2008, has been confirmed for the 2011-2013 period. Also significant in the area of skills, the reform of professional and technical institutes (secondary education), has been implemented starting from Autumn 2010.

Summing up, the National Research Programme 2011-2013 includes positive ideas to achieve higher coordination and coherence of measures and appears consistent with priorities defined at EU level, for instance key enabling technologies. However, the level of ambition might be insufficient, given that the challenges to Italy's competitiveness are high and a drastic improvement in implementation of measures is essential (e.g. Structural Funds, especially for the Southern regions, and the "Industria 2015" programme).

4.11.3 Towards a sustainable industry

Compared to last year's report, Italy's environmental performances appear to have improved compared to the EU average. While the level of energy intensity in industry is a traditional positive feature – which can be partly explained by the relatively high energy prices – the carbon intensity is now better than the EU average. The share of environmental goods in exports, however, is a weak aspect.

Environmental regulation in Italy is particularly burdensome and unstable. The repartition of competencies between different levels of the public administration and between different bodies does not exclude duplications, is a source of delays, e.g. in authorisation procedures, and contributes to legal uncertainly. Also, implementation of EU environmental legislation is disappointing with a high number of infringement proceedings.

Concerning renewable energy sources, it should be recalled that Italy has been a relative laggard in the development of new renewable energy sources such as solar and wind. In the framework of the EU ”20-20-20“ package, a new impetus has been given to supporting these sources and most notably solar panels, which benefited starting in 2007 of a relatively advantageous feed-in tariff system (*conto energia*). The result has been a significant increase in solar panel diffusion but also a larger impact on energy prices, as reported by the Italian Energy Authority. In March 2011, in the framework of the implementation of Directive 2009/28/EC on the promotion of the use of energy from renewable sources, a review of the feed-in tariff has been announced in order to reduce the level of incentive while preserving security for investments already in the pipeline (ministerial decree adopted in May 2011).

The Italian implementation of the Directive on renewable energy sources also foresees measures supporting new technological and industrial developments in the area, with particular regard to energy infrastructure, biomass, second generation biofuels, new technologies for solar energy such as high concentration panels. These developments appear highly desirable, taking into account that up to now the recent and rapid growth in new renewable energy sources' penetration in Italy (fast development of wind energy in the Southern regions, especially Puglia and Sicilia, is a case in point) does not appear to have fostered an equivalent growth in the domestic supply of industrial products and may be considered, at this stage, a missed opportunity.

Concerning waste, it should be noted that the operation of an electronic *Industrial Waste Monitoring System* (SISTRI) to monitor waste from industrial activities has been delayed.

Concerning the diffusion of Green public procurement in Italy, the implementation of the 2008 national Action Plan is in progress. In particular, a Ministerial Decree of February 2011 has defined minimum environmental standards for a number of goods purchased by public administrations (textile products, office furniture, IT, public illumination). Further decrees for specific goods and services are in preparation.

The absence of a comprehensive national energy strategy is a major structural weakness of Italy. Such a strategy has been repeatedly announced in the past but has yet to be presented. A number of initiatives – quite often as direct consequence of EU legislation and orientations – are taken, at national and regional level as well as in the private sector. A more consistent, stable approach provides an

improved framework for investments and to systematically foster eco-innovation in the industrial fabric, notably with respect to SMEs would improve Italian R&D performance. More generally, the opportunities of "green growth", which could be particularly relevant for Southern regions, are still not fully grasped by Italian industry.

4.11.4 The business environment

The Italian business environment is relatively unfavourable across the board. The burden of government regulation, the complex and slow judicial system, the quality of infrastructure (especially but not only in the Southern regions) and energy prices are all indicators where Italy compares unfavourably with the EU average. Furthermore, the degree of competition in a number of services sectors is still generally considered a major bottleneck for growth. There are however improvements and positive efforts to be emphasised as well as a good performance concerning the e-government usage by enterprises.

In October 2010, the Government presented the Administrative Simplification Plan 2010-2012, which aims at a 25 % reduction of administrative burden (estimated at about EUR 68 billion) on companies by 2012, equivalent to an estimated reduction of up to EUR 17 billion. The Plan focuses on three areas: 1. measurement and reduction of administrative burden in all areas of State competence; extension of the State approach to Regions and local authorities; 3.Simplification focusing on SMEs (criterion of proportionality in administrative procedures).

This approach was applied inter alia, in July 2011, with simplification several measures concerning the areas of fire prevention, environment, public procurement and privacy regulations which, all together, should allow a reduction of burden estimated at EUR 2.2 billion per year. So far the Government has adopted measures that should allow for a reduction in administrative burden for companies estimated at EUR 7.6 billion per year.

In September 2010, the new regulation reforming the Italian one-stop-shops for productive activities (*Sportello unico*) was adopted. With these new rules, one-stop shops are identified as the only public bodies at territorial level responsible for interacting with operators on all procedures related with access and exercise of productive activities and provision of services. Furthermore, communications from operators to one-stop-shops should be transmitted only through the Internet. The portal "impresainungiorno.gov.it" should ensure the interoperability of existing infrastructure and networks and has also been designated as the national point of single contact as required by the Services Directive.

The public administration reform, launched in 2008, has continued in the last few months. Notably, a new Digital Administration Code has been established through a legislative decree adopted in December 2010. The new Code intends in particular to simplify relationships between the administration and businesses by facilitating exchanges of information, online payments, the use of digital signatures and guaranteeing in general more transparent procedures through enhanced institutional websites. The quantitative goals of the new Code are a reduction of up to 80 % in the length of administrative procedures, saving up to 90 % in costs of paper, and up to EUR 200 million in reduced mailing costs.

In terms of opening of services sectors to competition, independent assessments show that improvements have taken place in energy (with electricity more advanced than gas), financial markets and postal services while no progress or even negative trends are identified in sectors such as professional services, transports, and local public services. Italian authorities were supposed to adopt an Annual Law on Competition, which would take into account the main recommendations from the National Competition Authority and further opening of protected sectors. However, the Italian Government has not yet presented the draft law to the Parliament. This is a major disappointment as this law could be a "best practice" at European level and could remove remaining bottlenecks hindering growth in Italy. It should be noted that the Government adopted in February 2011 a proposed constitutional reform aimed at liberalising the economy but it is unclear whether this reform will be implemented and what would be its practical effects on the business environment.

Concerning the development of broadband infrastructure, a Memorandum of understanding (MoU) was signed in November 2010 between the Ministry for Economic Development and the main telecommunication operators. The declared aim is to define and implement a public-private partnership for the deployment of Next Generation Networks and ensure coverage of 50% of the Italian population by 2020. An executive committee formed following the MoU was supposed to complete the necessary preparatory activities in three months but has yet to deliver.

Summing up, Italy starts from a very unfavourable position in terms of its business environment. Italian authorities are implementing an ambitious programme for reducing administrative burden,

simplifying procedures and improving relations between the public administrations and business, with a strong emphasis on e-Government. These developments have been largely welcomed by stakeholders but their actual impact is yet unclear and will need to be carefully assessed. Opening of services sectors to competition remains a key bottleneck to growth and on this front there is no major progress to report.

### 4.11.5 Entrepreneurship and SME policy

Like other EU economies, Italy's is dominated by SMEs (99.9 % of companies and 81.3 % of employment) but has a higher prevalence of micro-companies of less than 10 employees (47.4 % of employment, compared to 29.8 % in the EU average – this share is even larger in the Southern regions where the average number of employees per enterprise is 5.8 in the manufacturing sector compared to 8.5 at national level). On the one side, this demonstrates the strong entrepreneurial spirit prevalent in Italy but, on the other side, it raises specific concerns related to the overall competitiveness of the economy.

Favouring dimensional growth of companies is therefore an important priority, also given the fact that that medium-sized and "medium-large" (up to 500 employees) companies appear to be particularly export-oriented and crucial in contributing to the overall economy's competitiveness.

The financial structure of Italian SMEs, which are relative less capitalised that counterparts in other Member States, appears to be a factor limiting dimensional growth, as well as a higher reliance on short-term borrowing. Attempts these last few years at developing alternative, non-bank, financing options for companies have been only partly successful and, for example, the Italian venture capital and private equity markets remain relatively underdeveloped compared to other EU countries despite the potential to promote firm growth and improve corporate governance.

The Italian Ministry for Economy and Finance, together with bank groups and business organisations, have set up in 2010 the Italian Investment Fund (*Fondo italiano d'investimento*) that intends to address the above-mentioned weaknesses by proving risk capital (or "expansion capital") to promising SMEs with an income between EUR 10 and EUR 100 million. The Fund has started its operations at the end of 2010 and has already invested in a few promising SMEs.

To overcome the disadvantages related to the limited average size of companies in Italy, another approach is to favour cooperation. This is the aim of the "network contract" (*contratto di rete*) that became operational with an implementing decree adopted in April 2011. This contract, supported by a dedicated tax incentive (EUR 48 million for 2011-2013), allows companies, while remaining independent, to collaborate on specific projects, such as in research and innovation or on internationalisation. The emphasis on «network contract» seems to have supplanted, at least at national level, a previous focus on industrial districts.

Late payments by public authorities are a major problem in Italy (also connected with the difficult public finances situation at national, regional and local level). Since January 2011, enterprises can compensate their debts and credits with the Public Administration. This measure reduces the cash problems of enterprises and accelerates the payment procedures of the Public Administration.

To address financing difficulties of SMEs in the framework of the crisis, the Italian Government has promoted in 2009 a "credit moratorium", which is an agreement between business associations and the banking association allowing for a delayed repayment of loans. This moratorium has been prolonged in February 2011 until 31 July.

The time required to start a business is below the EU average and could even further improve. Indeed, the Certified Statement of Business Start up (SCIA – *Segnalazione Certificata di Inizio Attività*), which replaces since 2010 the existing Declaration of Business Start Up (DIA – *Dichiarazione di Inizio Attività*), allows a new company to start operating from the first day (whereas the DIA required a thirty day standstill). With the SCIA, public administrations should control compliance with relevant requirements in the following 60 days (or, after this period, only in exceptional circumstances such as for public safety reasons).

There is a wide recognition that the dimensional growth of companies in Italy should be a priority. Measures such as the Italian Investment Fund and the "network contract" are now in place and appear steps in the right direction. Given the magnitude of the issues at stake, however, it is unclear whether they will be sufficient to address the identified shortcomings. Concerning late payments, an early transposition by Italy of new Directive 2011/7/EC could be a welcome move.

### 4.11.6 Conclusion

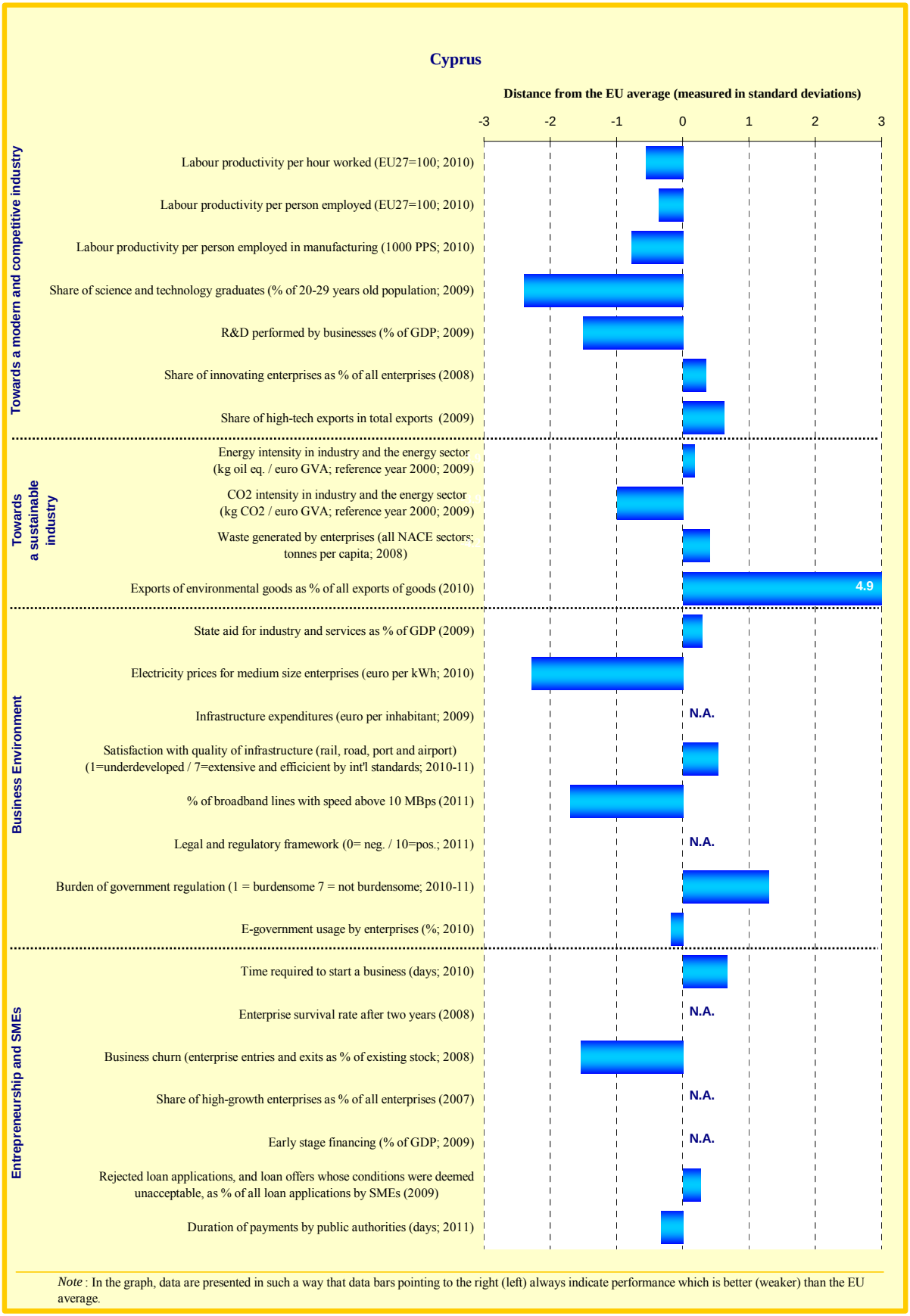
While it maintains a diversified and in some instances globally competitive industrial basis, Italy's overall growth potential is a source of concern. The last few years have seen some

measure of transformation in the industrial fabric, not so much in terms of relative specialisation but of climbing the quality ladder.

As the policy front, significant efforts can be reported, notably in order to improve the business environment or ensure a more coherent research strategy, but much more would be required in a number of areas, such as in promoting eco-innovation, in enhancing competition in services markets or in fostering dimensional growth of companies. In general, there are no major improvements in closing the North/South gap, which is evident in a wide number of domains, meaning that there is considerable scope for catching up of the Mezzogiorno that would significantly enhance Italy's overall competitiveness.

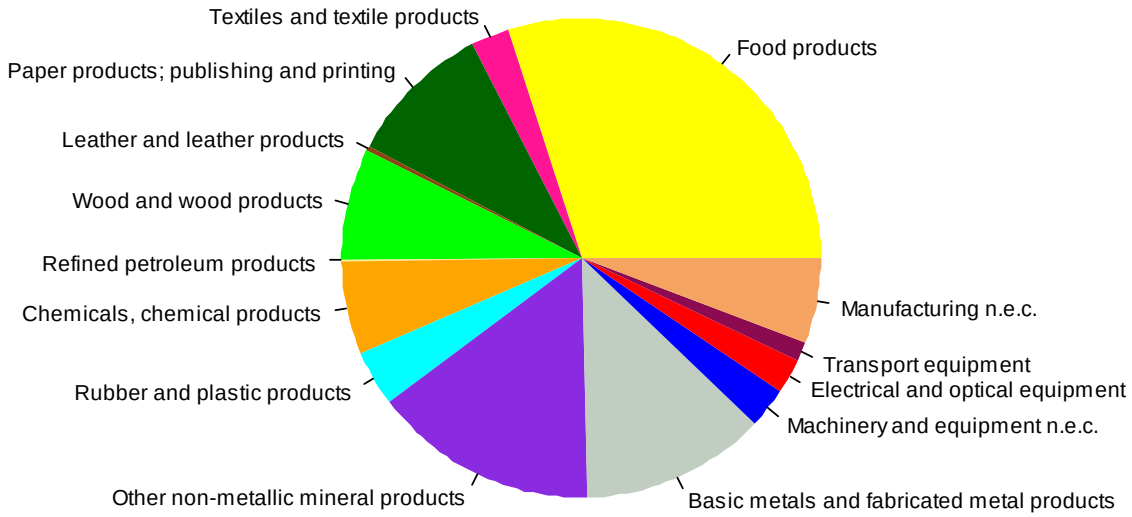
Some policy interventions appear uncoordinated and fragmented while some promising measures remain only partly implemented or are delayed by lack of resources or by complex decision-making procedures and practices. Given the importance of industry, Italy would benefit from putting forward a comprehensive industrial competitiveness policy, which would make sense in a country with such an important industrial sector.

## 4.12 Cyprus




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Cyprus (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.12.1 Introduction

*Trade and industry specialisation*

Cyprus belongs to the group of EU Member States characterised by higher income and a specialisation in technologically less advanced sectors (group 2)[94]. At the detailed manufacturing industry level, Cyprus features specialisation in marketing-driven industries (processing and preserving of fish, fruit, manufacture of vegetable oils, dairy products etc.), value added specialisation in labour-intensive industries (bricks and tiles) and export specialisation in technology-driven industries (electronic valves, photovoltaic systems). However, the share of manufacturing in Cyprus is very small (the three top economic sectors are all in services), and exports of manufactures even smaller, so that (manufacturing) export indicators should be interpreted with care. At the more aggregated sector level, Cyprus is specialised in low innovation and education intensity sectors such as water transport and hotels and restaurants. The export specialisation in high education sectors is due to financial services.

Given its industrial structure, Cyprus' R&D intensity is (slightly) below average, as is its position on the quality ladder. It is closer to the average in technology-driven industries than in labour-intensive industries.

Most prominent sectors in Cyprus

**Highest relative value added (2007)**
Water transport
Hotels and restaurants
Air transport

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Real estate activities
Recycling
Non-metallic mineral products
Decreasing specialisation
Water transport
Wearing apparel, dressing and dyeing of fur
Hotels and restaurants

*Structural change*

In terms of change, Cyprus has considerably increased its trade specialisation in technology-driven industries (electronic valves, photovoltaic

[94] For main sources used see the Annex.

systems, air and spacecraft and medical equipment), and its relative share in high education and innovation sectors (radio, TV and communication equipment), while it has decreased its specialisation in the low innovation and education sectors (water transport, hotels and restaurants) as well as in exports of labour-intensive industries. Cyprus is stagnant on its sectoral R&D intensity, and the quality indicators paint a mixed picture, showing improvement in the high quality segment but also reinforcing the low quality ones.

Overall, Cyprus is clearly catching up with respect to competitiveness in terms of specialisation; however the indicators referring to sectoral upgrading such as R&D and quality show that Cyprus needs to move further up the value chain.

In Cyprus, the crisis clearly held back the structural change towards technology-driven industries, while leading to higher shares of capital-intensive and marketing-driven industries.

Cyprus experienced an appreciation of the real effective exchange rate by 18% over the last decade, which is slightly below the EU27 average (21%), indicating nevertheless a loss in cost and price competitiveness. Nominal unit labour costs have increased by 32% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. While labour productivity per hour worked has gradually increased over the last decade, it is still about 20 percentage points below the EU27 average and about 33 percentage points below the Euro area average.

### 4.12.2 Towards an innovative industry

The Innovation Union Scoreboard 2010 classifies Cyprus among the innovation followers with a close to average performance. Its relative ranking has improved gradually over the years. Its enterprises outperform in non-R&D innovation but underperform in R&D expenditure. Due to the structure of the productive sector, with a clear predominance in small firms specialising in services, a significant increase of business R&D expenditures is unlikely in the near future.

On the other hand, low levels of R&D activity in the business sectors weaken the incentives for students to pursue a researcher career, thus constraining the development of human capacities for research. This situation risks to persist as fiscal constraints do not allow for a significant increase in public research in the near future. The government is preparing a National Strategy for Research and Innovation for 2011-2015 aiming at addressing these bottlenecks in a coherent way, including by giving more emphasis toinnovation over research.

R&D and innovation funding actions are designed and implemented by the Research Promotion Foundation, an independent body co-financed by the state and the EU structural funds. Actions under one of the five priorities are destined to enterprises even if the latter can also use the other actions. There are no policy changes in 2011 as all actions take place within the framework defined for 2009-2010.

While public research capabilities and innovation policy have been considerably improved over the last decade, the business sector is still considerably under-investing in R&D. Innovation policy has evolved rapidly but in a rather fragmented way and the government is planning drawing up a new national strategy. In a context of fiscal constraint, it will have to be well-targeted so as to contribute in achieving the long-term objective of diversifying the economy towards higher value activities.

### 4.12.3 Towards a sustainable industry

The high energy and $CO_2$ intensity of the Cypriot business sector, in combination with the heavy dependence on imported oil for energy generation and a small and isolated energy grid represent a potential risk in case of high volatility in oil and $CO_2$ prices. This risk is addressed by investing for the incorporation of natural gas as a source of energy generation and by encouraging energy savings and the development of renewable sources of energy.

A number of grant schemes were in force to encourage manufacturing establishments reducing their environmental nuisances and increase their energy efficiency. The legal framework has been completed by the recent transposition into national law of the eco-design Directive of 2009 and the publication on-line of all relevant information. The regulation on energy audits has been submitted to the Parliament.

Cyprus was among the early adopters of green procurement. The corresponding framework, valid for 2007-2009 is being revised to take into account the GPP toolkit. The use of green standards is widespread, including in the private sector.

### 4.12.4 The business environment

Cyprus offers a generally favourable business environment. Satisfaction with the regulatory burden and the quality of infrastructure is above the

EU average. The small size and the geographic isolation of the economy pose some challenges regarding the functioning of competition. More generally, domestic firms face high operating costs, especially as concerns energy and water but, also, some professional services. Also, there remain areas where dealings with the administration are lengthy and costly in comparison to EU average.

Better regulation policy is defined by an interdepartmental Steering Committee and is implemented by a Central Specialised Unit at the Ministry of Finance. The vast majority of new legislation is subject to a simplified impact assessment carried-out through a standard questionnaire. Consultation of stakeholders during the drafting procedure is systematic. For the achievement of the national target of 20% reduction of administrative burden by 2012, a sectoral baseline measurement in all national legislation relating to enterprises, based on 8 national priority areas, was completed in April 2011. The reduction proposals resulting from the project were approved by the Council of Ministers and are, currently, under implementation

The *e*Procurement initiative is operational since November 2009. Using the central platform is mandatory for all calls for tender of all public entities. At a next stage also offers will be made electronically. There are 2500 registered users for restricted calls, 10 % of which are non resident to Cyprus. A Help Desk contributes to making the platform SME-friendly and, in general, the transition to an electronic platform is considered as successful.

Following a rapid increase, usage of eGovernment services by enterprises reached the EU average in 2009. However, the supply of public services on-line is still among the weakest in the EU (2010). The government is preparing an ambitious Digital Strategy for 2011-2020 wich would also support the the development and competitiveness of the economy.

### 4.12.5 Entrepreneurship and SME policy

The contribution of Cypriot SMEs to the overall economy compared to that of large firms is significantly higher than for the EU average. In particular, the contribution of micro firms to employment is in Cyprus (39 %) higher than the European average (30 %) and the contribution of the total SME sector to employment (83 %) is in Cyprus higher than in the EU on average (67 %). In terms of value added, the contribution of SMEs amounts to 75 % (EU 58.6 %), pointing to their significantly lower productivity than larger firms.

Attitudes towards entrepreneurship are more favourable as the entrepreneurship rate and the preference for self-employment are markedly higher in Cyprus in comparison to the EU average. The one-stop-shop for setting up a business is operational and the average time to register a new company (8 days) is shorter than EU average. It should permit handdling the registration fully on-line shortly (eFilling project, launched in 2008). It also serves as the single point of contact for the purposes of the Services Directive. It provides information regarding procedures and formalities needed for the access to, and exercise of service activities either through the establishment of a business or through the cross-border provision of services. The electronic completion of a number of procedures is available through the Cyprus PSC portal.

Access to and the cost of credit constitute a concern for Cypriot SMEs. The creation of a Loan Guarantee Granting Facility to support SMEs that are not able to provide sufficient collateral is still on hold. Following the Financing Agreement concluded in April 2009 with the European Investment Fund for an amount of EUR 20 million, Two fionacial products were put in place, the Funded Risk Sharing instrument which offers micro-credits (up to EUR 100 000) assorted with favourable conditions to small and very small enterprises with co-funding and the First Loss Guarantee Financial instrument which offers credit risk protection (to the amount of (50 % by loan) with the aim of facilitating the access of micro and small enterprises and start-ups to bank credit. The first instrument is operational since January 2011 while the second is in the phase of negotiation with the financial intermediary that will implement it. New loans of, respectively, EUR 20 and EUR 50 million in total are expected through these two instruments. Payment delays, both from the state to businesses but also in transactions between businesses constitute another source of complaint. This is expected to be improved with the adoption of the Late Payments Directive.

A number of features make the *e*procurement platform particularly SME-friendly (Help Desk – including for filing in the forms, existence of model documents for all procedures, system of alerts and possibility of submitting only a declaration in honour in order to participate). In addition, tenders are divided into lots (for example, on a geographical basis) and, when sub-contracting is used, sub-contractors are paid directly by the procuring authority.

Regarding grants to SMEs, the execution of existing actions financed by the EU structural Funds, targeting manufacturing (total budget

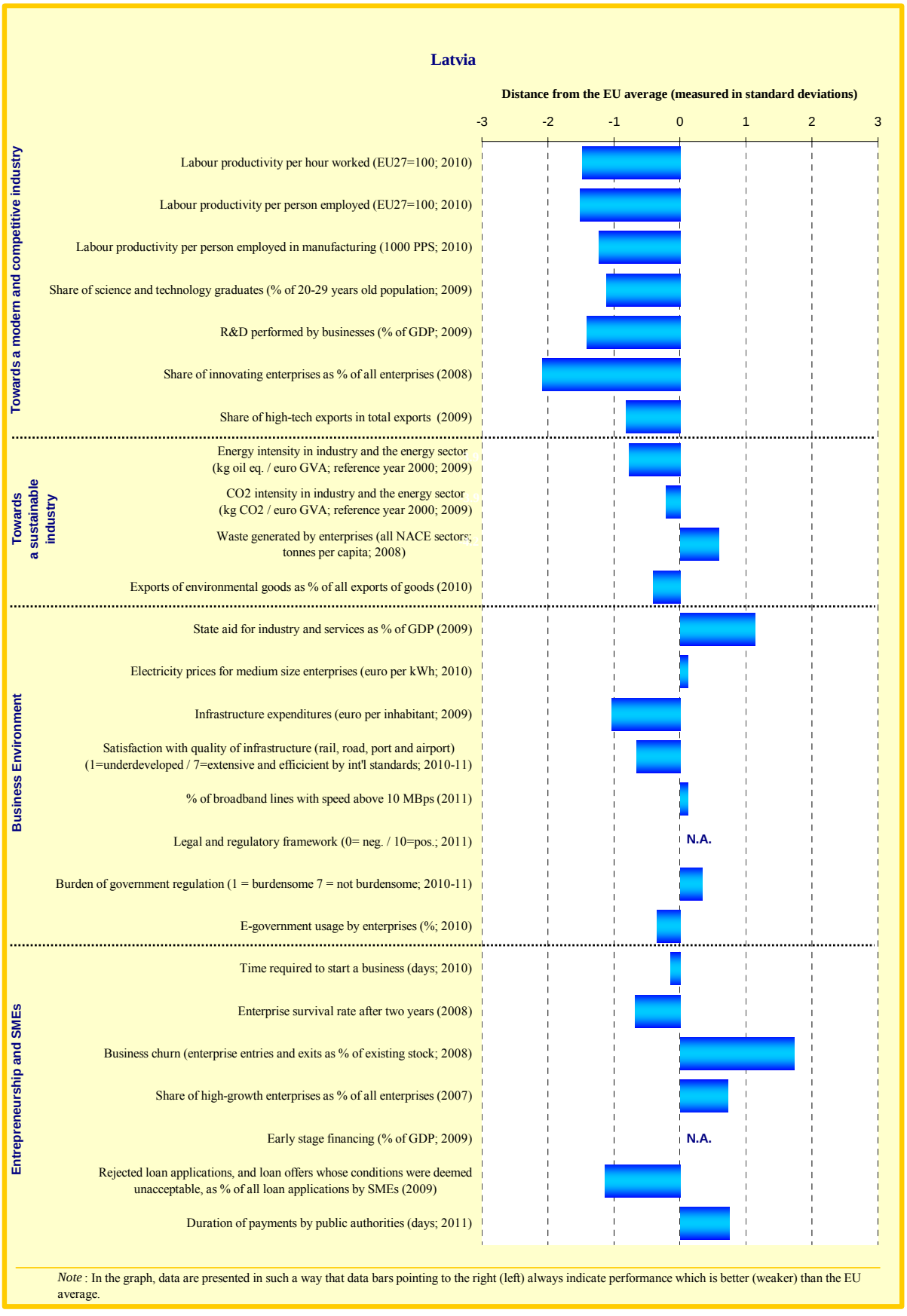
EUR 23 million), the processing of agricultural products (total budget EUR 24 million), tourism (total budget EUR 13 million), agro tourism (total budget EUR 15 million) and women and youth entrepreneurship (total budget EUR 5 and EUR 6 million respectively) is ongoing. The latter was particularly successful in creating new enterprises and jobs, also thanks to its skills acquiring dimension. Of notable interest for its reduced administrative burden is the nationally-funded action for the relocation of manufacturing or nuisance producing very small enterprises to authorised areas (Industrial Areas, Industrial Zones, etc).

#### 4.12.6 Conclusion

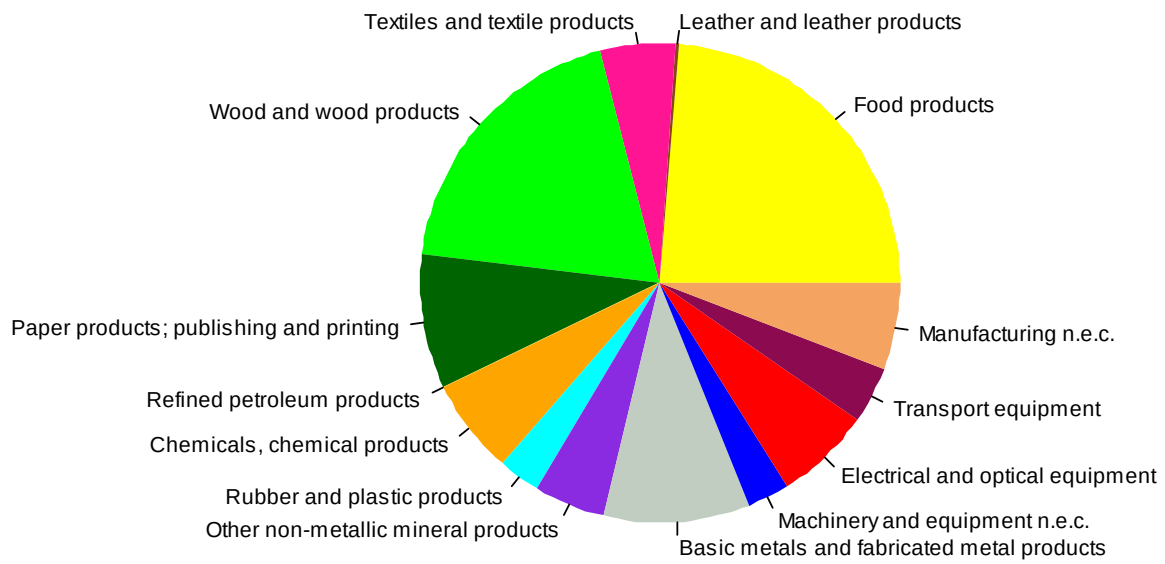
The insular nature and distance from the rest of the internal market pose a challenge for small Cypriot enterprises. Cyprus faces a chronic competitiveness problem linked to its structural specialisation in labour-intensive, low-skills and low technology sectors, which is also reflected in its current account deficit. On the other hand, Cyprus is endowed with highly educated and multilingual workforce. The policy priority therefore remains to adjust the structure of the economy towards more knowledge-intensive and high growth activities, primarily in services and tourism, through a well targeted R&D and innovation policy and encouraging entrepreneurial activity in high value added sectors.

Besides this overarching challenge, there are structural weaknesses that could be addressed in the short term, such as further improving the business environment by addressing regulatory burden and offering more public services on-line, reinforcing competition, especially in some professional services, and promoting energy efficiency.

### 4.13 Latvia




**Sectoral specialisation of manufacturing – Latvia (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

### 4.13.1 Introduction

Latvia is one of the countries that are catching up: among the population of active enterprises, it has a high share of enterprises that are growing fast. The impact of the crisis on Latvia's economic structure seems to have been limited, favouring capital-intensive industries against the trend. While manufacturing production fell by almost 27 % during the crisis, it has partially recovered, reaching 12.7 % below its previous cyclical peak in April 2011. Latvia belongs to the group of countries with relatively lower income levels and specialisation in labour-intensive industries. Moreover, Latvia's R&D intensity is higher than the average of this country group, even though it is below average when taking into account its industrial structure. The same holds true for Latvia's position on the quality ladder: it is below the EU average but above its group average, while the low quality segment is on par with the EU average. Overall, Latvia is improving its competitiveness, especially in terms of specialisation and to a lesser extent in as far as sectoral upgrading is concerned.

*Trade and industry specialisation*

In 2009, when compared to the EU average, manufacturing contributed significantly less to Latvia's total added value – 9.9 % against the EU average of 14.9 %. Latvia is specialised in labour-intensive manufacturing industries, such as sawmilling and wood planning, manufacturing of veneer sheets and wooden containers, as well as marketing-driven industries (e.g. fish processing and preserving). At the more aggregated level, Latvia is specialised in sectors with low and medium-low innovation and education intensity, such as metal processing and machinery, wood and wood products, food production, and inland transport. As is the case for the other Baltic States, Russia is an important destination for Latvian exports.

Most prominent sectors in Latvia

**Highest relative value added (2007)**
Wood and products of wood and cork
Inland transport
Real estate activities

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Air transport
Real estate activities
Recycling
Decreasing specialisation
Post and telecommunications
Wood and products of wood and cork
Supporting and auxiliary transport activities; activities of travel agencies

*Structural change*

In terms of change, Latvia has been moving unequivocally towards knowledge-intensive industries: the share of technology-driven industries (e.g. motor vehicles, radio and TV receivers) in exports has increased considerably, as has the share of sectors with high innovation and education intensity (e.g. communication equipment, computers). At the same time, trade specialisation in labour-intensive industries and specialisation in low innovation sectors (e.g. clothing apparel, auxiliary transport) has decreased. In particular, Latvia has improved its position on the quality ladder; the exception is the share of technology-driven industries in the low price segment of exports, which has been decreasing in Latvia relative to the EU average trend. However, Latvia's sectoral R&D intensity has remained unchanged relative to the EU average.

Latvia has experienced a strong appreciation of the real effective exchange rate during the last decade (48 compared to 21% in the EU27), indicating a loss in cost and price competitiveness. Here, the increase in nominal unit labour costs (87%) between 2000 and 2010 played a significant role. While labour productivity per hour worked has gradually increased over the last years, it is still about 53 percentage points below the EU27 average.

### 4.13.2 Towards an innovative industry

Latvia is classified as a modest innovator with a performance significantly below the EU average, according to the Innovation Union Scoreboard 2010. In 2009, 0.46 % of GDP was spent on R&D, out of which 37 % from the private sector.

While reduction of all public expenditures in 2010 affected the implementation of R&D and thus continued to place Latvia well below the EU average, the country has still benefitted from ESF and ERDF funds intended for developing both research and IT infrastructures, attracting human resources to science, commercialising science output, supporting applied research as well as R&D.

The government supports innovative enterprises in developing new products and technologies through loans, guarantees, grants for the manufacturing sector and for high-added value investment projects, as well as the creation of a technology and business incubators. In order to improve access to venture capital for innovative enterprises, seed and start-up funds have been made available for concept and/or product development; a venture capital instrument is being created to develop and enhance production capacities.

The Innovation and Entrepreneurship Motivation Program encourages innovative enterprises through training and information sessions, consultations for new entrepreneurs and an annual competition of business plans – *Cup of Ideas*. However, the budget allotted by the government for the support of innovative enterprises could be considered rather limited in comparison to other countries, hence the low likelihood of having a long term impact on increasing the number of innovative enterprises as well as improving the innovation performance of Latvian companies.

In terms of cooperation between business and academia, the most prominent program is the support of industrial research in competence centers: running until 2015, the 6 existing centers are active in the main exporting industries: wood, machine building, pharmaceuticals, electronics, ICT and biotech. In addition, in order to facilitate the commercialisation of state funded research, contact points for technology transfer have been established in 8 universities, under a program running until 2013. It is worth mentioning the Institute of Solid State Physics of the University of Latvia, Latvian Institute of Organic Synthesis, Latvian Biomedical Research and Study Center and the Institute of Mathematics and Computer Science of the University of Latvia as stories of successful cooperation between scientists and entrepreneurs.

As most universities are largely involved in state-funded research, the Law on Scientific Activity is being amended to allow the intellectual property rights on inventions funded with public money to stay with the originating universities or institutes. However, state-funded universities do not have enough incentives to reach out to the industry. On the other hand, companies either do not know what universities can offer or have a short term approach that disfavours research and innovation, as long term projects. The R&D and innovation community argues that, should more funds be dedicated to new laboratories, enterprises will have an incentive to approach universities and thus sponsor common projects. Similarly, more should be done to encourage applied research, continue to fund the ongoing clusters program, as well as directly support research activities in companies. Another way to bridge the gap between the science and the business communities is through several innovative companies that are led by former scientists.

In order to address the shortage of highly skilled labour force, the government plans to increase the number of people employed in science and research, strengthen the infrastructure of the state scientific institutions with state-of-the-art equipment (a EUR 148 million program, starting in June 2011) and support 9 national level research

centres in priority fields like: energy and environmental resources, extraction technologies, pharmacy and biomedicine, ICT, creative technologies, nanotechnologies and nanomaterials etc.

There are important challenges that Latvia will have to address if it wants to increase the competitiveness of its enterprises by improving their innovation capacity and boosting R&D. The infrastructure for science and research should continue to be upgraded, the number of highly skilled people should be increased and significant investment should be made in the high tech sector. In addition, the commercialisation of research output should be further improved and cooperation between industry and academia should be encouraged by means of incentives.

Latvia needs to continue to improve its R&D and innovation governance system and its communication and coordination with the R&D and innovation community. Stakeholders argue that R&D and innovation could also be further enhanced by offering more government guarantees and better access to finance, for instance through an innovation or mezzanine fund, or some forms of risk capital.

#### 4.13.3 Towards a sustainable industry

Latvia's energy intensity still remains well above the EU average. Energy consumption in Latvia is high and the situation has worsened as a result of the crisis: the industry, as well as public opinion, seems rather reluctant to 'go green'. Given that the implied costs are too high, companies prefer to either stick to business as usual or expect fiscal incentives in order to take action. Banks are also less willing to provide long term loans for green investments.

Latvia has a good record on renewable energy: the energy produced from renewable energy sources as a percentage of the total net final energy consumption in Latvia was 29.9 % in 2008, compared to the EU average of 10.3 %. The largest sources of renewable energy are hydro-power and biomass; the quotas on the production of electricity from renewable sources have been abolished recently. There are measures in place to increasingly replace fossil fuels with renewable energy: the new draft Renewable Energy Law replacing the current support mechanism aims at further increasing awareness and promoting the use of renewables, and ensuring a long term supply of renewable energy. The Climate Change Financial Instrument facilitates heat and electricity production from renewable energy sources rather than fossil fuels in municipalities and households. In addition, there are some ongoing programs that aim at developing co-generation power plants using renewables (running until 2015), supporting technology transfer from fossils to renewables, using biofuels in the transport sector and enabling energy production from agricultural and forest biomass (to be used outside the farm). However, these measures need to be further implemented and their impact will need to be thoroughly assessed.

In terms of energy efficiency, the law on end-use energy efficiency introduces energy audits in Latvia, which function on a voluntary basis in industry, but become mandatory for obtaining public financial support. However, stakeholders emphasise that there is a lack of skilled auditors who could carry out energy audits. While there is an ongoing program for the heat insulation of multi-apartment houses and increasing the energy efficiency of centralised heating systems, the Climate Change Financial Instrument has a component that aims at increasing the energy efficiency of public and industrial buildings. Street lighting is becoming more energy efficient as well, through the use of LED lamps, under a grant scheme of LVL 7 million. Most importantly, some industrial sectors are becoming more energy efficient. For instance, to export timber, producers are obliged to produce a certificate of sound environmental management, without which it is difficult to find clients; this requirement has pushed the sector towards more environmentally-friendly solutions. Another example is a large Latvian beer producer that spent more than 1 million euro on a new heat/water system that is more energy efficient. Moreover, a green investment scheme is being implemented in some manufacturing buildings and technological processes. However, despite the actions taken and the significant impact, the necessary investments are still delayed, which will eventually lead to a considerable slowdown of progress. Further on, more effort is needed to raise awareness on the importance of energy efficiency.

The use of green procurement advances very slowly in Latvia, also as a consequence of the fact that it is implemented on a voluntary basis. While until recently the main criterion in procurement was the lowest price, 'economically efficient' solutions have started to be considered. The Climate Change Financial Instrument also supports, among other things, green public procurement although its implementation is not broadly developed yet.

As local demand is more inclined towards low cost products and services, the environmental goods produced in Latvia are mainly targeting export markets. However, the share of Latvia's exports of environmental goods as a percentage of total

exports is still lagging behind the EU average.

Latvia is performing rather well in the area of waste management; it is well above the EU average in terms of reducing the waste generated by enterprises. An ongoing program, running until 2013, targets the development of water and waste management infrastructure.

Among the challenges that are still to be addressed, the decrease of energy intensity in industry remains a high priority, as is the utilisation of more efficient heating solutions, possibly using some under-exploited technologies. Financial support and tax incentives could be used on a wider scale, in order to reduce the costs of green solutions and thus make them more affordable for companies. In addition, more effort needs to be put into building and/or modernising the Latvian energy infrastructure and improve the interconnections in the Baltic region, including through a Baltic energy market.

### 4.13.4 The business environment

Latvia has made noticeable progress in improving its business environment, but there is still room for significant development. In terms of burden of government regulation, Latvia scores slightly below the EU average. While satisfaction with the quality of infrastructure did not change and remains below the EU average, there has been a significant improvement in infrastructure expenditure. Latvia scores well above the EU average on state aid for industry and services and slightly above the EU average on electricity prices for medium-sized enterprises. In addition, Latvia has made considerable progress in increasing the percentage of broadband lines with speed above 10 MBps, which places it slightly above the EU average. This year, Latvia moved from position 27 to position 24 (position 9 among EU countries) in the *Doing Business* indicators of the World Bank.

In order to further improve the business environment, the government is planning to enable municipalities to foster entrepreneurship by amending the laws on property lease and redistribute EU structural funds to improve the business infrastructure by developing industrial areas, ensuring availability of public services and modernising the country's regional roads. The government Annual Action Plan for Improvement of Business Environment has stipulated, among other things, a new microenterprises tax law, a patent fee for individuals in certain professions, and amendments to the laws on property registration. A new Construction Law has been adopted in May 2011, aiming at reducing the number of procedures required for obtaining a construction permit from 24 to 6, and cut the duration from 186 to 69 days; while implementation is still pending, authorities claim that the procedures involved have already been simplified. In addition, the new legislation on insolvency procedures has shortened the length of procedures from 3 to 1 year.

As regards business start-ups, the minimum equity capital requirement of a newly established company was reduced, such that it is now possible to start a new company with a minimum equity capital of EUR 1.43 (one Lat). Additionally, business start-ups are able to get support co-financed by ESF in the form of consulting, training, loans and grants; so far, 396 loans have been provided and 966 persons have received training. The Latvian authorities claim that a one-stop-shop for start-ups has been completed, as from June 2010 the Enterprise Register enables start-ups to apply simultaneously for VAT registration. However, individual cases have been reported by business organisations that the one-stop shop system for new entrepreneurs was not yet fully functional.

In terms of access to markets, a set of measures have been introduced by the government to support SMEs. Apart from export guarantees, which intend to support exporters by covering risks for export transactions, the government is developing a Foreign Direct Investment Attraction Strategy aiming at bringing foreign direct investments (FDI) to export-oriented sectors with high value added. The Investment and Development Agency of Latvia has been developing similar measures. The Agency has 11 Foreign Economic Representative Offices in countries that are Latvia's main trade partners and provide the main source of FDI for Latvia. These offices serve as points of contact, provide information on market access and support the diversification of exports as well as the attraction of FDI. In 2010, 55 informative and training seminars have been organised by the Agency for enterprises interested in foreign markets. The Agency also offers individual consultation and support to entrepreneurs, organises match-making events in Latvia and abroad, as well as individual trade visits and trade missions to foreign countries, including participation in trade fairs abroad. Despite these measures, export support still remains a priority and, according to stakeholders, there is still room for further improving the effectiveness of existing instruments.

The use of e-commerce by both enterprises and private individuals could be further improved. According to the most recent government data, 20 basic services are 94 % available online, 70 % of enterprises submit forms electronically; 50 % of companies perform full e-transactions. The government has in place two 2011-2013 Development Plans for E-government and E-skills,

respectively, aiming at developing e-services, e.g. the e-declaration system for the State Revenue Service and the e-registration of a company in the Register of Enterprises. In addition, the government intends to further develop the e-procurement system – at present containing almost 400 buyers and 100 suppliers – as well as a business section in the portal www.latvija.lv, which contains information on all state and local government services and provides access to e-services for both companies and individuals. However, these measures have not been sufficiently advertised, such that entrepreneurs are not aware of the simpler access to e-government.

In terms of infrastructure, Latvia has significantly increased the total amount of funds spent on infrastructure, including from the EU funds; the main investment areas are the construction/improvement of railways, roads, seaports and broadband networks. The government is planning to introduce International Freight Logistics and a Port Information System to make freight transport more competitive. The Next Generation Access Network for rural areas aims to ensure broadband internet connection for all local administrations and facilities by 2020. However, more could be done in the area of transport, as Latvian roads are not in optimal condition, thus generating higher energy consumption: public transport based on electricity and biofuels (rather than fossil fuels) could be further developed.

Despite noticeable progress, Latvia should continue its efforts to create a better business environment. According to stakeholders, the procedures for both obtaining licenses and permits, and paying taxes could be further simplified; the uncertainty of the tax situation seems to be particularly detrimental to enterprises Standardisation and certification were also considered rather difficult and expensive in Latvia. In addition, property registration, starting and closing a business and exploiting the ICT potential to raise productivity are areas where Latvia should continue reforms, so that the business environment would become more attractive for both local entrepreneurs and foreign investors.

### 4.13.5 Entrepreneurship and SME policy

Compared to the EU average, Latvia has a higher number of larger SMEs and a lower percentage of micro-enterprises. The SME sector contributes 70 % of total value added to the Latvian economy, with services being the most important sector. The general entrepreneurship rate is slightly below the EU average and there is a relatively low share of opportunity-driven entrepreneurs in Latvia.

Latvia has made good progress in supporting micro-enterprises – companies with an annual turnover not exceeding LVL 70 000 and less than five employees. The Micro-enterprises Tax Law and the implementation of the Program of Support Measures for Microenterprises has resulted in a set of 30 measures intending to reduce the administrative burden of companies, such as: smoother bookkeeping and access to finance; a special reduced tax for micro-enterprises (9 %); better access to information; and a lump sum patent fee for individuals in certain professions (crafts and services), essentially replacing their income tax and social security contributions. These measures have proven successful, as the number of new micro-enterprises registered in Latvia has increased.

In order to improve the competitiveness of enterprises, the government has taken steps to offer more financial support instruments. It is intended to provide support to at least 300 enterprises within the framework of the state support program administered by the Ministry of Economics until 2013. The following instruments have already been made available to enterprises: loans for increasing the competitiveness and growth, individual credit guarantees, venture capital, seed and start-up capital funds; so far, 618 loans and 490 guarantees have been provided, both together providing access to finance in amount of almost 300 million lats. The government is in the process of creating one united Financial Development Institution of Latvia by merging the Latvian Guarantee Agency, the Mortgage and Land Bank, the Latvian Environmental Investment Fund, the Rural Development Fund and JEREMIE Holding Fund to provide entrepreneurs with a one-stop-shop facility. Other instruments, such as a mezzanine instrument and a new co-investment fund to provide equity, are currently being developed. Nevertheless, access to finance still remains a priority and an analysis of possible additional support instruments should be made in order to better meet market needs. Furthermore, business organisations believe that, in spite of the availability of existing instruments, the supply of good business ideas that could receive funding is relatively short or the expectations of investment readiness for new commercial proposals relatively high. As a result, very few investments are actually made. In addition, access to finance seems to be especially difficult for companies operating in the domestic market, whereas export-oriented companies have more opportunities to secure financing.

The Innovation and Entrepreneurship Motivation Program encourages innovative enterprises through training and information sessions, consultations and mentoring for new entrepreneurs and an annual competition of business plans – Cup of Ideas (760 participants in 2010). A set of measures has been

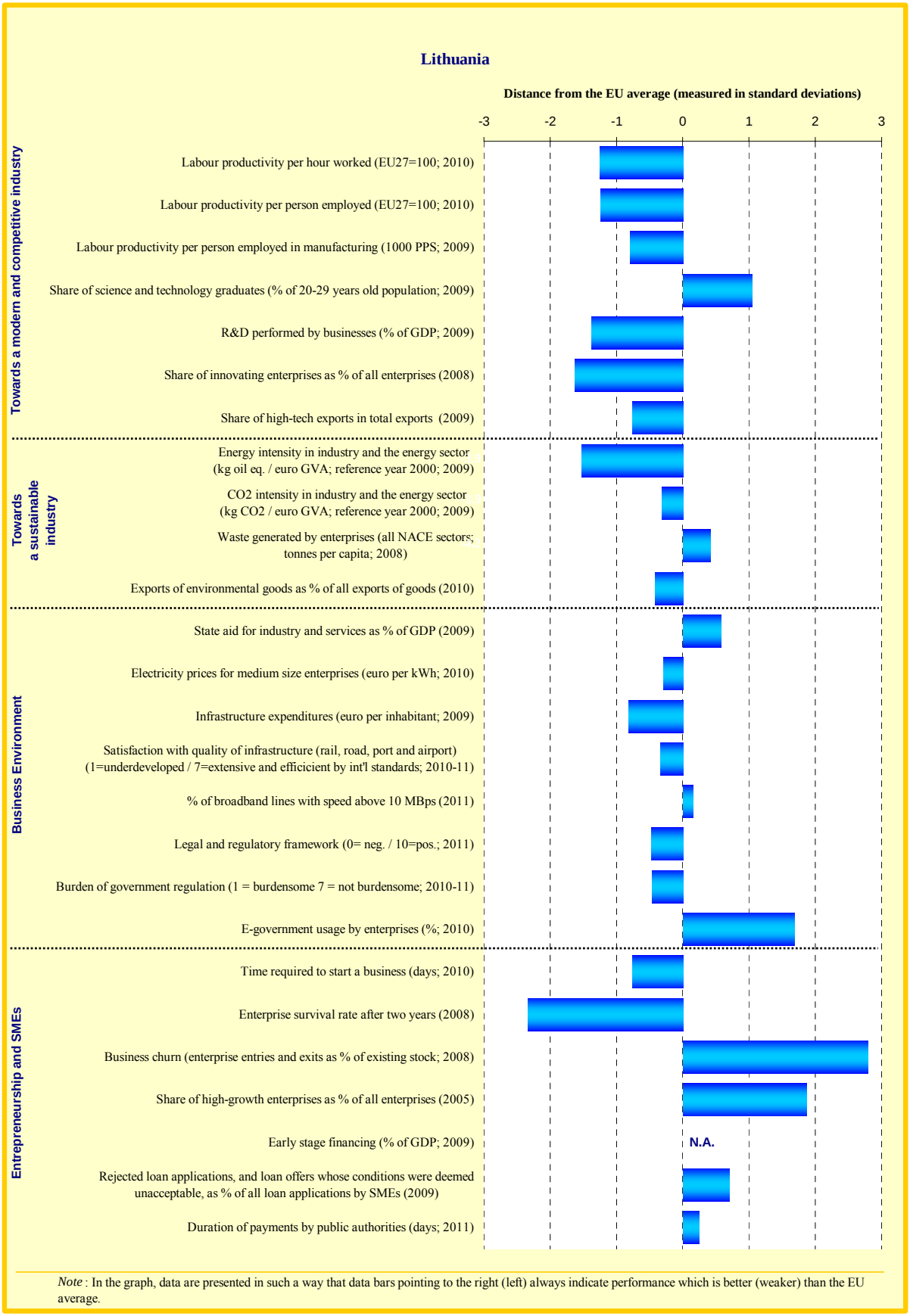
taken to further increase the attractiveness of entrepreneurship: 567 people have benefited from business and self-employment/start-up training through a life-long learning program; the training of 1200 new entrepreneurs is ongoing as well as the previously mentioned motivation program. In addition, 9 regional business incubators have been created, encompassing 274 enterprises, including one incubator in Riga for creative industries. However, more needs to be done to foster entrepreneurial attitudes and skills by systematically introducing entrepreneurship education in schools. During 2009 – 2011, support has been provided under The Innovation and Entrepreneurship Motivation Program to the non-government organisation Junior Achievement to widen involvement of school children (primary and secondary schools) in the Pupils Learning Firms Program. Equally, the government could intensify its efforts to support specific target groups, including in particular women who want to start a business, for instance through mentoring programs.

### 4.13.6 Conclusion

In order to continue to improve its competitiveness conditions, Latvia would benefit from a further strengthening of the growth potential of its economy through a range of structural reforms. In particular, stronger policies would be benefit the absorption of EU funds; improve public procurement and competition; enhance performance of public administration; and improve active labour market and lifelong learning policies, including skills upgrading and retraining.

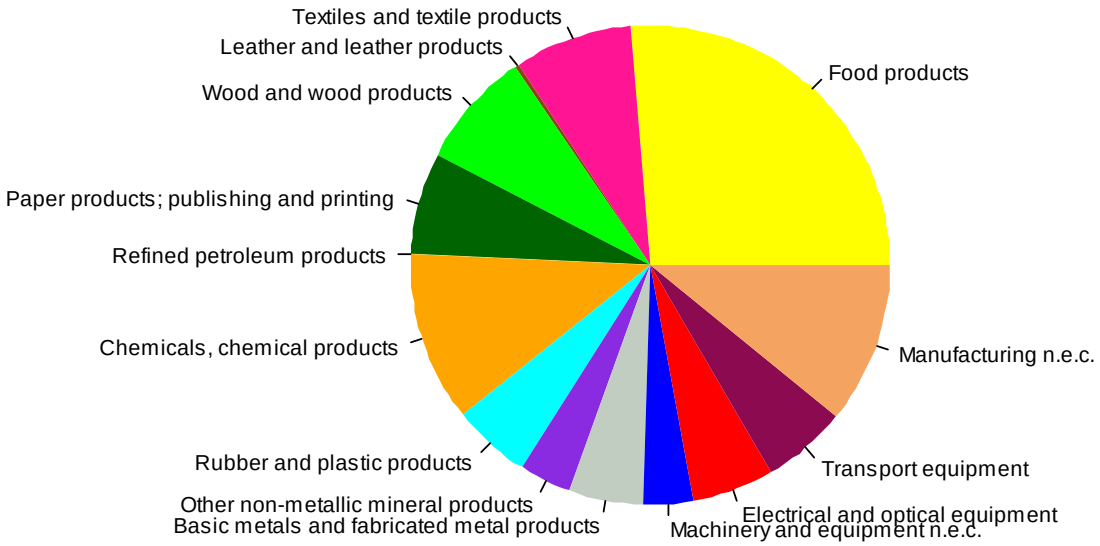
In order to further improve the business environment, increased efforts to attract FDI and promote exports would help growth, as would further implementation of the program for the support of small and micro companies, continued reduction of the administrative burden, (re)building and modernising the infrastructure and expanding the use of e-services. In addition, there is potential to further exploit the cooperation opportunities offered in the Baltic region.

## 4.14 Lithuania




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Lithuania (2009)**




*Note* : n.e.c. (not elsewhere classified)

*Source*: Eurostat

### 4.14.1 Introduction[95]

*Trade and industry specialisation*

Manufacturing contributes 16.4 % to Lithuania's total value added against 14.9 % for the EU on average (2009). At the detailed manufacturing industry level, Lithuania is specialised in labour-intensive (wooden containers, sawmilling, builders' carpentry) and marketing-driven industries (processing and preserving of fish, dairy products) in terms of value added and exports. It is also specialised in capital-intensive industries (refined petroleum products) regarding exports. At the more aggregated sector level, Lithuania is specialised in low and medium-low innovation and education sectors (wearing apparel, inland transport) and in medium-high sectors (textiles, coke and refined petroleum) for its exports. Its share of high growth firms indicates that Lithuania is catching up, while the high share of exports to the BRIC countries is mainly due to exports to Russia.

Given its industrial structure, Lithuania's R&D intensity is below the EU average, as are its shares in the high price segment of industries, while export shares are high in the low price segment, indicating an unfavourable position on the quality ladder. Overall, Lithuania shares all the characteristics of its group of lower income countries specialised in labour-intensive industries (group 4).

Most prominent sectors in Lithuania

**Highest relative value added (2007)**
Wearing apparel, dressing and dyeing of fur
Wood and products of wood and cork
Inland transport

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Recycling
Furniture, jewellery, musical instruments, sports goods, games and toys
Office, accounting and computing machinery
*Decreasing specialisation*
Water supply
Water transport
Coke, refined petroleum and nuclear fuel

95 For main sources used see the methodological annex. The cut-off date for all data and qualitative information is 31 August 2010.

*Structural change*

In terms of change, Lithuania has increased its relative value added share in high education sectors (computers, software, business services) and its relative export share in technology-driven industries (electricity distribution and control apparatus), while it has decreased trade specialisation in labour-intensive industries and in high education sectors; it has also decreased its relative share in high innovation sectors further (communication equipment), but has gained in medium-high innovation sectors (motor vehicles). It has substantially improved its position on the quality ladder, with the exception of the share in the low price segment of technology-driven industries, which has decreased relative to the EU. While sectoral R&D intensity, e.g. in machinery, is rising more quickly than in the EU, it still remains below the EU average.

Manufacturing production has recovered to a large extent from the crisis, being in April 2011 3.4 % lower than at its previous cyclical peak. The crisis clearly slowed Lithuania's structural change towards technology-driven industries while favouring capital-intensive industries.

Lithuania has experienced a strong appreciation of the real effective exchange rate during the last decade (35%, compared to 21% in the EU27), indicating a loss in cost and price competitiveness. Nominal unit labour costs have increased by 26% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. While labour productivity per hour worked has gradually increased over the last decade, it is still about 45 percentage points below the EU27 average.

Overall, Lithuania is catching up with respect to competitiveness. In comparison with its similar neighbour Latvia, Lithuania's specialisation profile is less clearly improving, while its sectoral upgrading performance is superior to Latvia.

4.14.2 Towards an innovative industry

Lithuania is classified as a moderate innovator in the Innovation Union Scoreboard 2010, with a low share of innovating companies and low R&D expenditures by businesses. On the other hand, it scores well in the share of science and technology graduates.

The current Lithuanian industry structure remains disadvantageous for rapid productivity growth and high value added manufacturing development. Therefore, the major challenge for Lithuania is to upgrade its sustained traditional industries towards high value added, knowledge intensive modern industrial sectors, regardless of their position in low-high tech classification.

An amendment to the Law on Corporate Income Tax entered into force in 2009. It encourages companies' investment in R&D by reducing the taxable profit 3 times the investment and reducing the amortisation process to 2 years. In 2009 98 firms used the scheme for a volume of LTL 98 million. Another option is to use Income Tax Relief for Investments into New Technologies; assessable profit for the enterprises could be reduced up to 50 % of expenditures incurred by investing into equipment, means of communication, computers, etc. In 2009 this measure was used for a volume of LTL 475 million.

Another quite successful measure is the Innovation Voucher scheme which started being implemented in 2010 with 86 SMEs benefitting during that year. It allows businesses to easily buy R&D services and technical feasibility studies from state universities and research institutes. The allocated budget of LTL 1 million was distributed in less than one month thanks to the high number of applications.

There have been some attempts recently to improve co-ordination and implementation regarding innovation policy. They have now been integrated in a broad, horizontal policy paper, the Lithuanian Strategy for Innovation 2010-2020. A set of measures is oriented to strengthen innovation support infrastructure and develop its institutional capacities, to improve R&D and business co-operation in innovation development, to improve quality of human resources for R&D and innovation and to strengthen the public and private R&D base.

The innovation policy discussion has intensified and addressed innovation culture, cluster development issues, and the problems industry is facing - intensifying brain-drain and international migration of qualified labour.

EU structural funds are used for nine instruments focussing on both technological and other forms of innovation across different stages of the innovation process, beginning with first ideas over feasibility studies to putting ideas into practice.

A key initiative in terms of reorganisation of research and innovation activities is the ongoing establishment of five integrated science, study and business centres – so called Valleys – which are supposed to reinforce the strengths of regionally concentrated research and innovation networks. Each Valley gathers in one place higher-education institutions, research centres, business companies

and Science & Technology parks which are intermediaries between science and businesses. Each Valley is focussed on certain S&T fields and is now implementing its programme for the construction of research infrastructures and research centres in those fields. The total State's investment in the 5 Valleys is about EUR 320 million.

In order to increase innovation activities, a recent reform of the Law on Education and Science gives the ownership of intellectual property rights (IPRs) to higher education institutions which belonged to the state before. Along with recommendations on how to manage these IPRs this is expected to encourage scientists to patent research findings.

Key challenges include, first, to improve skills for innovation and entrepreneurial attitudes. Even though Lithuania has a relatively high share of science and technology graduates there remain concerns about skills shortages in certain fields (e.g. highly skilled human resources in specific areas of science and technology). Secondly, the Lithuanian business sector suffers from the relatively low R&D potential, both in terms of the number of researchers in the business sector and in terms of R&D funding. Improving R&D capabilities in firms, the development of a sound R&D base and closer links with public research and higher education institutions are therefore important. Thirdly, there is a need to develop knowledge-intensive clusters across public knowledge poles.

### 4.14.3 Towards a sustainable industry

Substantial efforts are needed for Lithuania to reduce its greenhouse gas emissions in line with agreed policies.

With the aim to promote Cleaner Production (CP) technologies the Lithuanian Environmental Investment Fund (LAAIF) provides subsidies to environmental projects within the *de minimis* threshold. The main recipients are SMEs that invest in less polluting or waste preventing technology. Funding can reach 60-80 percent and shortens the amortisation period of the investments to a maximum of three years.

In spite of progress in recent years energy intensity in Lithuania is still twice as high as the EU average. In order to increase energy efficiency a budget of LTL 1.8 billion is available since 2009 to support renovation and insulation works of public buildings and private apartment blocks, co-financed by EU structural funds (ERDF). If the tendency of uptake of these funds from early 2011 (15 loan agreements signed from January to March) continues this could indicate a problem of slow absorption.

A 2007 Green Procurement Implementation Programme foresees a 25 % increase in the share (in 2011) of public procurement for which purchased products and services have to meet established environmental criteria.

### 4.14.4 The business environment

Lithuania scores clearly above the EU average concerning the e-government usage by enterprises and slightly above average concerning the availability of high-speed broadband lines. However, the country scores below average concerning infrastructure expenditures. Policies to systematically improve the business environment are still relatively recent.

In 2008, Lithuania adopted its National Programme for Better Regulation with the aim of creating the adequate institutional framework and strengthening administrative capacities, improving the quality and efficiency of regulations as well as reducing administrative burden and unjustified compliance costs for businesses. In March 2009, the Government adopted the target of reducing by 30 % the administrative burden on businesses by the end of 2011 in the seven priority areas: Tax Administration, Work Relations (Labour Law), Statistics, Environment Protection, Transport, Territorial Planning and Construction and Real Estate Operations. The mapping of the information obligations was completed in the beginning of 2009, and the corresponding baseline measurement to quantify the administrative burdens is delayed to the second half of 2011. Though, by June 2011 about 50 'fast track' measures were proposed corresponding to an estimated 6 % out of the 30 % targeted reduction.

An expert body composed equally of representatives of public authorities and businesses (the Sunrise Commission) was established in March 2009 and has presented since then some 170 proposals to improve the regulatory environment; about half of them have been implemented. For instance the process of establishment of individual enterprises and private limited liability companies has been simplified by abolishing notarial registration of private limited companies and registration term of legal entities in the Centre of Registers has been shortened from 5 to 3 working days. These reforms in the area of start-up conditions as well as others planned in the areas of licensing and business inspections should be rigorously implemented and supplemented by the findings of the administrative burden measurement exercise.

Two major regulatory reform projects are ongoing. The reform of business inspecting institutions which currently involves more than 70 public institutions aims to reduce the burden on businesses, optimise use of resources, promote compliance and eliminate abuse. Although the implementation of the reform is slow due to scepticism and resistance from some inspectorates, progress is tangible: inspectorates are restructured in 9 clusters in order to pursue joint planning and inspecting functions and there is a provision that sets two dates for adoption and entry into force of legal acts as obligatory for inspectorates. Second, during the implementation of the Services Directive 300 out of more than 800 screened legal acts have been identified as containing requirements that are in conflict with provisions of the Services Directive and create administrative burden for businesses. Some of these requirements have been removed.

eGovernment policy is part of the Lithuanian *Public Administration Development Strategy* until 2010 as well as of the *Information Society Development Programme* 2009-2015. The central eProcurement platform is mandatory and allows contracting authorities to implement the whole online process of public procurement. Usage of eGovernment by enterprises in general is quite high with 91 percent compared to 77 % for the EU average.

Since the closure of the Ignalina nuclear power plant in December 2009, which has turned Lithuania from a net exporter to a net importer of electricity, electricity prices have risen by about 30%. In 2010 Lithuania imported more than 62 % of electricity to satisfy its demand which is the highest import score among EU member states. The gas sector is monopolised by a single supplier and creates high dependence on gas for heating and electricity generation. Therefore structural energy market reforms are being implemented, including the electricity spot market BaltPool for the Baltic region since January 2010, deregulation of electricity tariffs, implementation of ownership unbundling in the electricity and gas sectors as foreseen in the Third Energy Package as well as increasing physical and organisational integration in the Nordic (NordPool) and Continental EU energy market. A number of strategic generation, interconnection and storage projects are foreseen until 2020, some of them EU co-financed, including the new regional Visaginas nuclear power plant, electricity interconnections with Sweden (NordBalt) and Poland (LitPol Link), an underground natural gas storage facility, an LNG terminal and a gas pipeline between Poland and Lithuania[96]. Ensuring long-term stable and diversified supply as well as strengthened competition remains a challenge that can be achieved by implementing the mentioned strategic projects and structural energy sector reforms.

In transport policy, Lithuania's rail and road networks are largely isolated from its EU neighbours. Therefore the strategic objective is to become a transport hub between Western and Eastern markets and to integrate in the European networks, with the North-South flagship projects Via Baltica and Rail Baltica.

### 4.14.5 Entrepreneurship and SME policy

SMEs in Lithuania tend to be, relatively, larger than in the EU. This is consistent with the good performance in terms of share of high growth enterprises. The total SME sector employs proportionally more people in Lithuania than in the EU.

The national education strategy for 2003-2012 states that entrepreneurship education should be introduced at all levels of the educational system, including secondary, professional and university education, as well as in training programmes for teachers and lecturers. In 2008, the government enacted the National Youth Entrepreneurship Education and Incentive programme with a budget of EUR 35 million until 2012. It focuses on entrepreneurship education, incentives for businesses run by young people and monitoring as an input for governmental institutions and the society. Mentoring and support for entrepreneurs is provided by the Public institution “Versli Lietuva” and its representatives in the regions.

Current policy measures to support SMEs include access to finance, business internationalisation, as well as shifting priorities towards exporting enterprises in granting financing.

In order to actively improve SMEs' access to finance, which remains a bottleneck after the crisis, a number of financial engineering instruments (10) have been introduced since 2009 that use EU structural funds (ERDF) in the order of EUR 268 million (2007-2013). The uptake of some of the instruments is still slow. An export promotion strategy for 2009-2013 and its implementation plan were adopted by the government in 2009. It identifies services and high value added sectors as priority as well as some priority regions for exports: Scandinavian countries, large EU Member States including Poland and the

[96] These projects are outlined in the National Energy (Energy Independence) Strategy.

CIS countries. The share of exporting SMEs is currently above the EU average but clearly lower than e.g. in Estonia.

The one-stop-shop to start-up a company (Centre of Registers) is fully operational and an SME Council was set up in 2008 to advise state authorities on policy developments.

A mid term challenge remains to ensure SMEs access to finance. A longer term objective would be to promote a culture of entrepreneurship, in particular by continuing to implement the respective reforms in the educational system. Many of the problems addressed by the ongoing regulatory reforms are also relevant for SMEs, such as reducing burdens related to starting up a business, obtaining licences or building permits.

#### 4.14.6 Conclusion

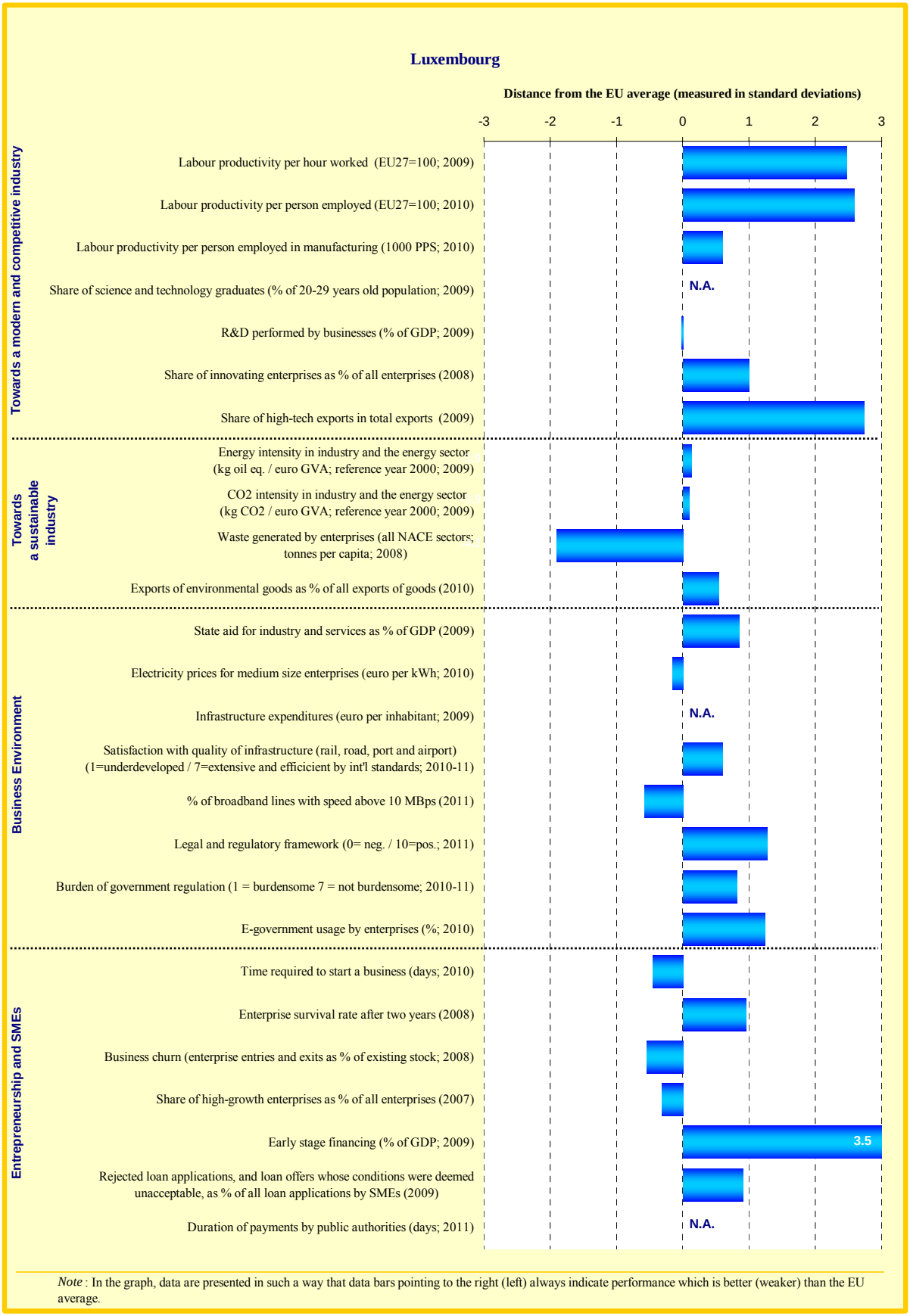
The most imminent challenge to ensure the competitiveness of Lithuania's economy is to create energy markets both in electricity and gas sectors, which are characterised by security of supply, ownership unbundling, increased competition and interconnection with European markets.

Mid- to long-term challenges are to promote structural change towards more high value added and knowledge intensive sectors. Appropriate policies include strengthening links between industry and public and private research, increase R&D and innovation funding and continue the reform of the research system.

The business environment in Lithuania can be further improved through administrative burden reductions, in particular in the areas of licensing, business inspections and territorial planning, through further developing road and rail infrastructure and through regulatory reforms that further improve start-up conditions.

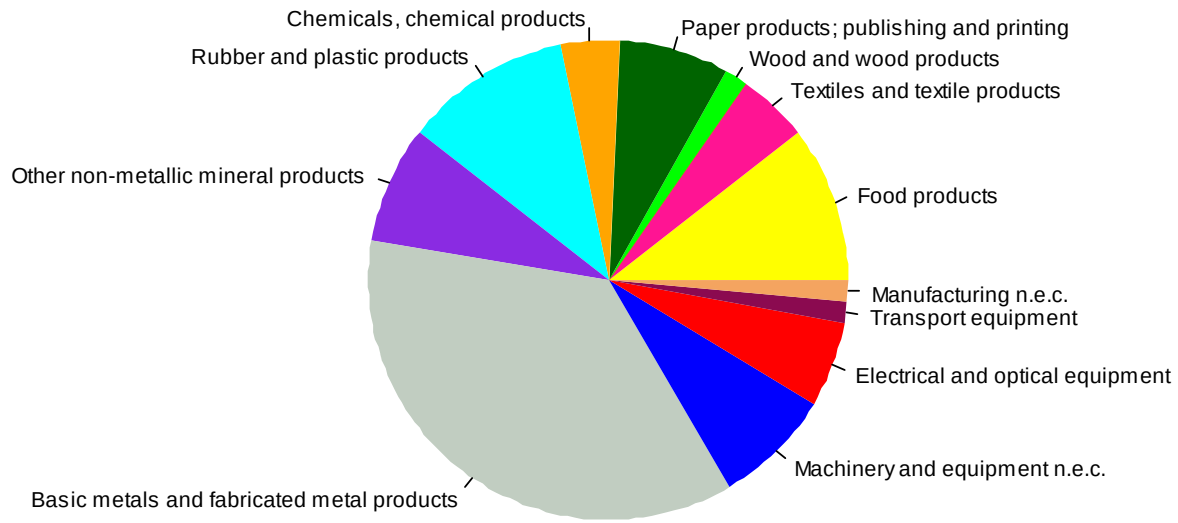
Finally, a long-term challenge is to increase resource efficiency of Lithuanian industry significantly and to transform it into a low carbon economy.

## 4.15 Luxembourg




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Luxembourg (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.15.1 Introduction

*Trade and industry specialisation*

Luxembourg is the Member State where manufacturing plays the lesser role in the economy (6.5 % of total value added against 14.9 % for the EU on average in 2009). At the detailed manufacturing industry level, Luxembourg is specialised in mainstream manufacturing industries (rubber products) and capital-intensive industries (basic iron and steel, cement, basic non-ferrous metals). It also features export specialisation in technology-driven industries (radio and TV transmitters). However, as Luxembourg is a small country with a small share of manufacturing, export indicators should be interpreted with care. At the more aggregated sector level, Luxembourg is highly specialised in high education sectors (research and development, business services, finance), but also in low education ones (construction, inland transport). Furthermore, Luxembourg features specialisation in medium and medium-high innovation sectors (e.g., basic metals, textiles, air transport).

Luxembourg is high on the quality ladder in technology-driven industries, but slightly below the EU average in labour-intensive industries. Due to the very low value added specialisation in technology-driven industries and highly innovation-intensive sectors, as well as its mixed quality performance, Luxembourg was attributed to the group of higher income countries with specialisation in labour-intensive industries.

Most prominent sectors in Luxembourg

**Highest relative value added (2007)**
Research and development
Air transport
Basic metals

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Basic metals
Research and development
Business services
Decreasing specialisation
Post and telecommunications
Water transport
Recycling

Structural change

In terms of change, Luxembourg has moved overall towards more knowledge-intensive industries and a higher position on the quality ladder, also in labour-intensive industries. It has increased trade specialisation in technology-driven industries (radio and TV transmitters, medical and surgical equipment) and value-added specialisation in high education and innovation sectors (computers, research and development, business services), while it has decreased its trade specialisation in high education sectors (financial services).

Manufacturing production fell sharply during the crisis (around 33 %) and has partially recovered since then, being 12.2 % lower in April 2010 than its previous cyclical peak. The crisis has had an impact on Luxembourg's industrial structure in terms of slowing down structural change towards technology-driven industries, but also accelerating the decline of labour-intensive industries; the crisis "winners" were the mainstream manufacturing industries.

Nominal unit labour costs have increased in Luxemburg by 32% between 2000 and 2010, which is considerably higher than the average increase in the EU27 and the Euro area (14% and 20% respectively). Labour productivity per hour worked remains the highest within the EU, exceeding the EU27 average by about 89 percentage points and the Euro area average by about 74 percentage points.

Overall, Luxembourg faces a favourable position with respect to competitiveness, in particular given its improvement in terms of quality segments and specialisation. Keeping this trend, it could soon upgrade to the group of higher income countries specialised in knowledge-intensive industries, similar to countries such as Belgium and the Netherlands which also feature specialisation in high education sectors.

4.15.2 Towards an innovative industry

The Innovation Union Scoreboard 2010 ranks Luxembourg as an innovation follower with innovation performance above the EU 27 average. Relative weaknesses are in firm investments and linkages & entrepreneurship. Relative strengths are in open, excellent and attractive research systems, innovators and outputs.

R&D intensity in Luxembourg has only slightly increased over the last decade, growing from 1.65 % in 2000 to 1.68 % in 2009, with a predominant financing by the private sector. Whereas the private spending fluctuated over the last decade, the public R&D spending has increased steadily, but remains relatively low, at 0.44 % in 2009 (after 0.12 % in 2000). In its National Reform Programme (NRP) submitted in April 2011 Luxembourg foresees to increase its efforts in this field and programs to drive the public R&D intensity to 0.7%-0.8% of GDP by 2020.Luxembourg has made efforts in order to provide support for R&D and innovation. The reforms have encouraged public-private partnership and increased the financial support for R&D for companies. Further actions are foreseen, both in the field of public and private research. The objective is to concentrate efforts on a limited number of priority fields and to develop the 'knowledge triangle' concept aiming at strengthening links between research, high education and innovation.

Its sole University, which was only set up in 2003, cannot fully meet the economy's needs for high skilled workforce. Therefore, Luxembourg's growth depends most on its capacity to attract and retain talent. Recent reforms have increased the mobility of researchers mainly through a new law on free movement of people and immigration and the grant scheme "Aid for Research Training" providing funding for PhDs and post-docs of all nationalities.

Due to the country's specificities, such as a small and service-oriented economy, large companies undertaking research abroad and a deficit of entrepreneurial culture, Luxembourg has difficulties to attract and keep the necessary human resources for developing local competitive centres of excellence and small innovative firms.

4.15.3 Towards a sustainable industry

The main challenges that Luxembourg seems to face as regards climate change and energy are the national targets for the reduction of greenhouse gas emissions (-20 % by 2020 compared to 2005 levels) and for the increase of the share of renewable energy in energy consumption. A Partnership for Environment and Climate was launched in February 2010 in order to gather representatives from public administration, social partners and NGOs to reflect on optimal policies and measures in the field of environment and climate change. A Second National Action Plan for $CO_2$ reduction was adapted in May 2011.

In November 2010, Luxembourg adopted the Second National Plan for Sustainable Development: the social (health, poverty); economic (economic diversification, transport) and environmental (biodiversity, renewable energies) pillars of

sustainable development.

Luxembourg is active on green technology support measures. In the framework of the 2009 Action Plan on ecotechnologies, the EcoDev cluster has been created, covering eco-construction/eco-materials, renewable energies, eco-design/eco-conception, rational use of energy and other selected topics. It is a network of public and private actors at national and international level, aiming at creating and developing new business opportunities dedicated to the development of the eco-technologies sector in Luxembourg.

The law of 18 February 2010 on aid schemes for environmental protection and the rational use of natural resources provided for new possibilities for financial support for companies implementing an environmental and energy efficient policy. Eligible investments for this support should be aimed at increasing the protection of the environment, adapting to future standards, achieving energy savings, installing high-efficiency cogeneration or at producing energy from renewable energy sources.

### 4.15.4 The business environment

Luxembourg has performed well as regards the setting-up of the Single Contact Point "Enterprises", which is already operational as regards information providing pillar. Further work is ongoing to make the system fully operational where a range of important administrative procedures can be performed online.

Different measures have been undertaken to reduce administrative burden such as the simplification of the social security regime. Although the progress in the field of business environment has been made, further measures are needed. . A new legislation regarding "establishment/setting-up of businesses" in view of implementing the Services Directive was voted by the Chamber of Deputies on 13 July 2011. It aims to regulate in a horizontal manner the access to almost all economic activities.

Under the Euro Plus Pact, which is reflected in the NRP, the Luxembourgish government committed to a number of measures to reinforce structural competitiveness by improving business environment through administrative simplification and better infrastructure. Measures to reduce formalities for companies to obtain permits and measures to reduce the delays for their treatment are planned to be taken during 2011. Since June 2010, administrative simplification and better regulation issues are under the State Minister's responsibility.

Luxembourg faces high-cost of land and difficulties for enterprises to find suitable industrial zones. In addition, mainly due to a considerable increase in the number of cross-border commuters in Luxembourg in recent years (from 8 % in 1990 to 40 % in 2010), the level of saturation of road and train connections to and from neighbouring countries has constantly risen to a point where this transport bottleneck could have important negative consequences on enterprises and on the whole economy in the future. . Therefore the cooperation with neighbouring countries has been intensified, especially with France where a strategic program for the development of cross-border mobility has been worked out. A similar approach has been launched with Germany and Belgium. Meanwhile, besides the complementary extension of road infrastructure, the Government pursuits a strategy seeking promotion of public transport (extension of railway infrastructure, new cross-border train and bus connections, more attractive transport pricing etc.).

### 4.15.5 Entrepreneurship and SME policy

The average size of SMEs in Luxembourg is larger than the average in the EU. The share of medium enterprises in the total number of enterprises in Luxembourg is double the EU-average (2 % versus 1 %) but as Luxembourg's economy is service-oriented, only 4 % of SME are manufacturing firms against EU average of 11 %. Luxembourg's entrepreneurship rate is below the EU average (8 % versus EU 12 %) but 'opportunity-driven entrepreneurship' rate is above the EU average (62 % versus EU 55 %). Different initiatives have been launched to promote entrepreneurship spirit and to assist entrepreneurs to develop his/her businesses (Jonk Entrepreneuren in 2005, Business Mentoring Programme in March 2010).

SMEs face however shortages in specialised professions, mainly in the industrial and construction sectors. Certain measures have been initiated to better match people's skills to labour demand, such as creating a professional skills observatory and the obligation for enterprises to declare their vacant posts.

Globally, Luxembourg enjoys a good average performance in access to finance for SMEs, state aid and share of SMEs with intra-EU imports and exports. On the contrary, the country performs less as regards SMEs outside-EU imports and exports.

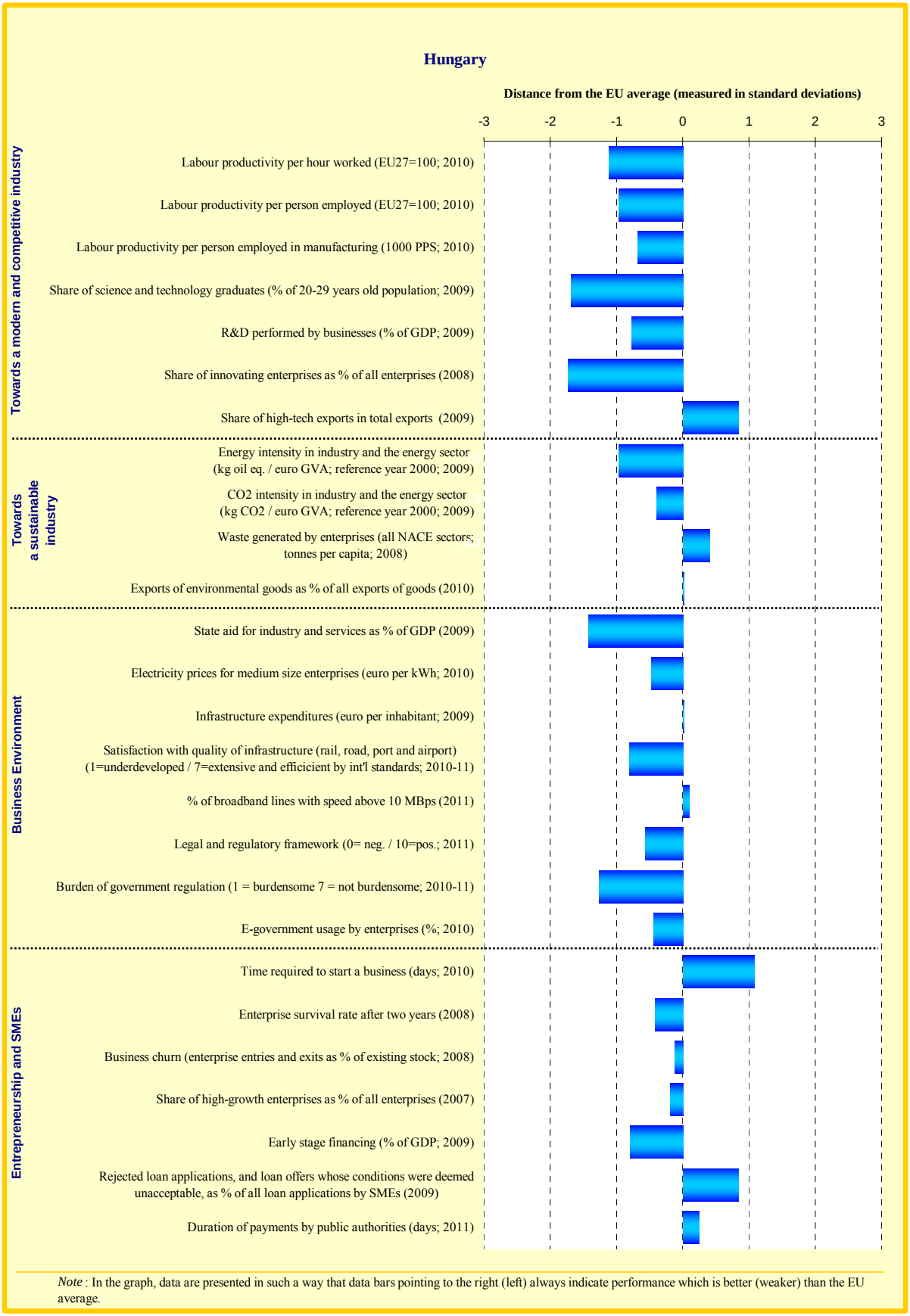
### 4.15.6 Conclusion

Luxembourg occupies a favourable position with respect to competitiveness. The country is also ranked in the category of innovation followers with innovation performance above the EU 27 average but due to the country's specificities, there are

difficulties in attracting and keeping the necessary human resources for developing local competitive centres of excellence and small innovative firms.

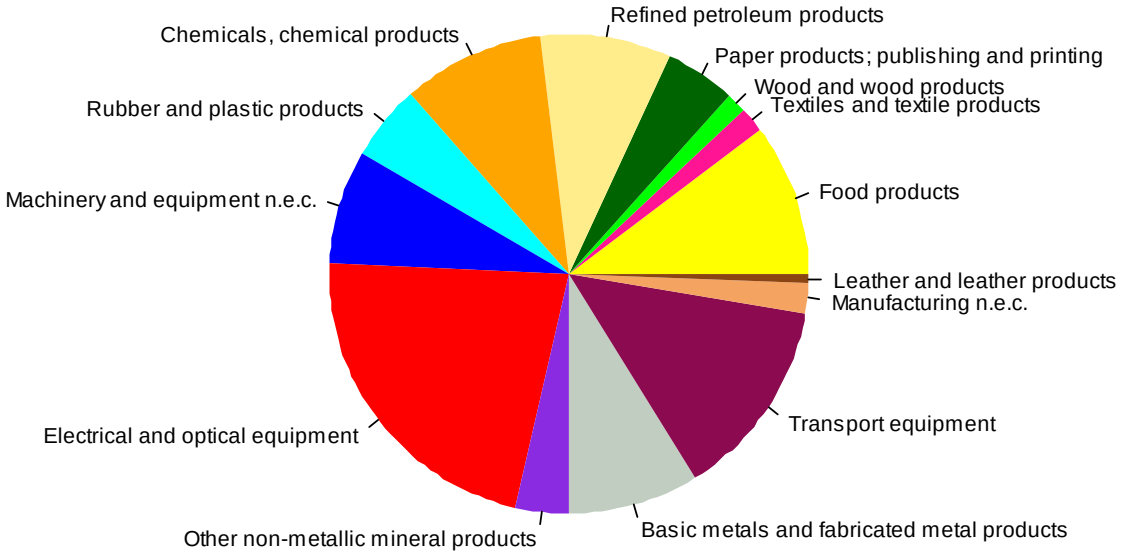
The business environment is improving, even if further measures are needed. The main challenges that Luxembourg seems to face as regards climate change and energy are the national objectives for the reduction of green house gas emissions and the increase of the share of renewable energy in energy consumption.

## 4.16 Hungary




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Hungary (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.16.1 Introduction

*Trade and industry specialisation*

Manufacturing plays a more important role in the Hungarian economy than in the EU on average (21.3 % of value added against 14.9 % in the EU). At the detailed manufacturing industry level, Hungary is specialised in technology-driven industries (radio and TV transmitters and receivers), both in value added and exports terms, and in capital-intensive industries (petroleum refining) in value added terms. At the more aggregated sector level, Hungary features high specialisation in innovation intensive sectors such as communication equipment, electrical machinery and computers, but not in high education intensive sectors, because of relatively low shares in software, R&D and business services. Hungary shows also a high share of exports to BRIC countries.

Given its industrial structure, Hungary's R&D intensity is particularly low, indicating that Hungary is focusing on the production and assembly-parts of the value chain. Its low position on the quality ladder confirms this. Overall, Hungary is a typical member of the group of lower income countries specialised in knowledge-intensive industries (group 3), where the knowledge-creating part is provided by other, more R&D intensive countries.

Most prominent sectors in Hungary

**Highest relative value added (2007)**
Coke, refined petroleum and nuclear fuel
Electrical machinery and apparatus, nec
Radio, television and communication equipment

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Radio, television and communication equipment
Real estate activities
Electrical machinery and apparatus
Decreasing specialisation
Wearing apparel, dressing and dyeing of fur
Office, accounting and computing machinery
Coke, refined petroleum and nuclear fuel

*Structural change*

In terms of change, in Hungary the relative value added share of labour-intensive low-skill industries (leather, clothes) and of low education sectors has decreased, while it has increased in mainstream manufacturing (electric lamps, isolated wire, batteries). Its trade specialisation in technology-driven industries (air- and spacecraft, measuring

instruments) and highly innovation-intensive sectors (computers, electrical machinery) has increased as well. Hungary has considerably improved its sectoral R&D intensity, while its movements on the quality ladder have been mixed, partly improving and partly deteriorating.

Industrial production grew by 22.3 % from the lows reached during the crisis; in April 2011 it was still 7.9 % lower than its previous peak. In Hungary, the crisis clearly slowed structural change towards knowledge-intensive industries, while labour-intensive industries gained relative shares.

Hungary has experienced a strong appreciation of the real effective exchange rate during the last decade (36%, compared to 21% in the EU27), indicating a loss in cost and price competitiveness. Here, the increase in nominal unit labour costs (58%) between 2000 and 2010 played a significant role, similar to most of the countries in the region. While labour productivity per hour worked has gradually increased over the last years, it is still about 40 percentage points below the EU27 average.

Overall, Hungary is clearly catching-up with respect to competitiveness. If it moves further up the value chain, i.e. increases the R&D intensity and output quality within existing sectors, Hungary will ultimately join the group of higher income countries specialised in knowledge-intensive industries.

### 4.16.2 Towards an innovative industry

Based on the Innovation Union Scoreboard 2010, Hungary belongs to the moderate innovators, representing a below average performance. R&D investments relative to GDP (in 2010: 1.14 %) is far below the EU average. Business sector R&D spending has been growing since 2004 both in absolute and relative terms, however it is still low (in 2009: 0.66 % of GDP). A recent survey on R&D[97] reported that three-quarter of medium and large enterprises do not intend to increase R&D expenditures in the coming years.

In terms of human resources for R&D and innovation there are also bottlenecks, both on the supply and demand sides. The share of science and technology graduates, is well below the EU average. Both the new reform programme on education and the new STI strategy are expected to address skills challenges for a knowledge-based economy and provide policies aimed at increasing the proportion of science and technology graduates.

Generally, Hungarian enterprises are less innovative than the European average. Moreover, R&D and innovation activities are concentrated mainly to large foreign- owned enterprises. Also R&D activity is not evenly distributed across regions, with high concentrations in the most advanced regions. Patent activity is similar to that of the regional competitors, and high-tech export exceeds the European average, which is, however, largely attributable to activities of foreign-owned enterprises (especially in electronics and telecommunication) and thus it does not necessarily reflect a technology-leader position of the sectors.

One of the main problems of the Hungarian science, technology and innovation policy in the past was its low priority, but the institutional system was recently reorganised. Priority measures for 2011 consist of the comprehensive revision of the R&D strategy and a consolidated R&I supporting system. The National Research, Innovation and Science Policy Council was set up in 2010, ensuring efficient decision making on policy issues of strategic relevance and major projects. The national support system will also undergo significant changes; the support of adaptive innovation and technology transfer will stimulate the R&D and innovation potentials of the SME sector. An example is the loss of specialisation advantages in the office machinery sector over the past ten years, indicating vulnerability.

Hungary set the target to raise R&D expenditure to 1.8 % by 2020, while further increasing the share of the business sector. Under the Structural Funds more than EUR 990 million have been allocated in the Economic Development Operational Programme to support R&D and innovation in the 2007-2013 period, targeting in particular the promotion of R&D cooperation between enterprises, universities and research institutes, the establishment of modern research infrastructure and innovation parks, as well as patenting activity. For 2011 the government has earmarked HUF 122.5 billion for R&D and innovation purposes.

The low level of overall innovation activities, especially among domestic SMEs, remains a significant challenge. Moreover, the links and networks between public and private research are weak or missing and there are still gaps in the quality and quantity of scientific human resources. Multinationals would represent a potential for raising innovation capacities more widely if they were better embedded into the local research and economic networks and the regional innovation systems.

[97] Deloitte: Vállalati K+F Jelentés 2011

### 4.16.3 Towards a sustainable industry

Environmental sustainability of the Hungarian industry is rated low. The energy insensitivity of the industrial sector is above the EU average. The share of renewable energy (7.3 % in 2010) in gross inland energy consumption increased in the past decade with significant ground to cover to reach 2020 target (14.6 %).

The Hungarian National Climate Change Strategy for the period 2008-2025 was adopted by the Parliament in 2008. A long-term energy strategy is currently under public consultation, which will cover, among others sustainable tourism, agriculture and industry. Pursuant to the revision of the National Energy Efficiency Action Plan, a national strategy on energy efficiency in buildings, will be prepared in 2011. Adoption of the act on sustainable energy management and the revision of the feed-in tariff scheme in the course of 2011 will further increase stability in the regulatory environment that facilitates the production and use of renewable energy sources.

One of the seven priorities of the New Széchenyi Plan is the green economy. Different measures encourage investments in the sectors associated with greening the economy. Energy efficiency, renewable energy, bioenergy, recycling industry, green employment, R&D, innovation, and training and education are all covered in the green economy programme. Calls for bids in these areas have been announced continuously. In the next programming period more sources are expected to allocate into the Environment and Energy Operational Programme in order to deliver the goals.

One of the main challenges in this policy area is to reduce energy intensity of production. Shifting towards a green economy requires not only financial sources and a transparent regulatory framework, but also timely and effective implementation from all type of actors. Recent initiatives are going in the good direction, reflecting that industrial and growth objectives are compatible with sustainability targets.

### 4.16.4 The business environment

Hungary scores clearly below the EU average on business environment indicators, such as the legal and regulatory framework with the exception of the e-government usage by enterprises. In particular, it provides a high level of state aid for industry and services (excluding crisis measures) compared to other Member States. Direct support from the central budget has been allocated mainly to public transport services.

Like in most Member States the high administrative burden on enterprises, such as wide range of reporting obligations and other requirements have negative effects especially on SMEs. In Hungary, the time it takes to prepare, file and pay corporate income tax, value added tax and social contributions is 277 hours per year, while the OECD average is 199 hours[98]. It has been also reported that administrative costs account for more than 10 % of the GDP. Furthermore, low transparency in public administration has been considered as a barrier to start and run a business.

One of the main goals of the new Government is to improve competitiveness of the Hungarian economy by creating better business environment. In the frame of the Széll Kálmán Structural Reform Programme a comprehensive programme on administrative burden reduction has been announced. The first two packages are estimated by the authorities to yield some HUF 500 billion in administrative burden reduction already in 2011. By the end of 2011, new laws will be adopted for quicker foreclosure and liquidation proceedings with more transparency to reduce burdens on enterprises. The planned measures are expected to ensure a 25 % administrative burden reduction by 2012.

eGovernment is a key element of the administrative reform. In the first half of 2011, the e-government pillar of the Magyary Programme (the strategy on renewal of public administration) was finalised. It provides digital solutions to cut administrative burdens, simplify processes, implement on-demand programmes with the participation of the citizens, develop public services and support information and knowledge-based asset management and economy.

A new public procurement law was adopted in July 2011. The new and less complicated and transparent framework law is aimed at better serving the transparency of public spending and fair competition.

If the implementation of the above measures is effective, considerable improvement of the business environment can be expected. Reduction of the administrative burdens, the better regulatory framework and the improvement of the quality of public administration can contribute to the growth of the business sector and facilitate of starting new businesses.

### 4.16.5 Entrepreneurship and SME policy

[98] World Bank Doing Business 2011.

The SME sector in Hungary provides 73.8 % of employment in the business economy and 56.1 % of the business sector´s value added. The share of micro enterprises is higher than the EU average. Unlike in other European countries the net number of SMEs declined during the last decade.

Over the period 2005-2011 the performance in most of the SBA areas has considerably improved, however, still two-third of them are trailing the respective EU averages[99]. Statistics show significant gaps in entrepreneurship, skills and innovation, as well as in internationalisation. The willingness to start up companies is lower than in other Member States in general. This can be explained by the complexity of the regulatory and legal framework and high administrative burdens, but also entrepreneurial attitude and perceptions were found to be weak in Hungary. Skills and innovation is one of the most problematic areas in international comparison. The rate of Hungarian SMEs with innovation activities scores clearly below the EU average. Employees´ participation rate in education and training is very low. Despite the very high openness of the economy, internationalisation of the SME sector is far from the EU average, which is mainly attributable to the relative high costs and time required to export or import outside the EU.

To address these challenges Hungary initiated several actions. First of all, the New Széchenyi Plan has identified new investment priorities in a frame of a restructured development and support policy. A more efficient support system, which allocates the EU sources, provides new tenders for SMEs (including e.g. enhancing innovation activity). The simplification of the tendering system also encourages enterprises to apply for non-refundable sources. Due to these steps the number of grant contracts has also increased significantly and number of payments has doubled in the recent months. .Second, the Széchenyi Card programme has been extended, which provides preferential loans for SMEs, creating better financial conditions for SMEs. The role of non-banking funding mechanisms, like seed capital, business angels and venture capital is lagging behind that of other European economies. However, significant sources (EUR 700 million) under the JEREMIE Holding Fund have been available; it has not had a sufficient leveraging effect. Recently, the allocation plan has been modified aiming at leveraging more additional private funds than before. For example, combinations of non-repayable grants with revolving instruments such as guarantees and microloans have recently been introduced under the heading of JEREMIE.

At the beginning of 2011 a new governmental agency was established to facilitate internationalisation of Hungarian enterprises. It is feasible to raise the share of the SMEs´ exports from 18 % to 20 % of total export of Hungary. The Hungarian Investment and Trade Agency works closely with professional associations, business chambers and trade development agencies. 173 export development programmes in 20 sectors on 40 target markets are planned this year and some 3 000 companies can be affected. Emphasis will be placed on competitive, job-creating sectors, such as biotechnology, the pharmaceutical industry, green industries, the food industry, IT and software development.

The corporate income tax was decreased to 10 % for enterprises with profit up to HUF 500 million, which is especially beneficial for SMEs.

Increasing employment is one of the main targets of the Hungarian Government, in which SMEs are expected to play a significant role. Administrative burden reduction, supporting programmes, easier access to finance are all aspects likely to encourage entrepreneurship; however entrepreneurial mindset and innovative attitudes remain a challenge. As international experiences show, entrepreneurship education can play an important role here. However, the share of rejected SME loan applications is lower than the EU average, access to financing for SMEs, early stage financing and the insufficient leverage of private funds remain a challenge.

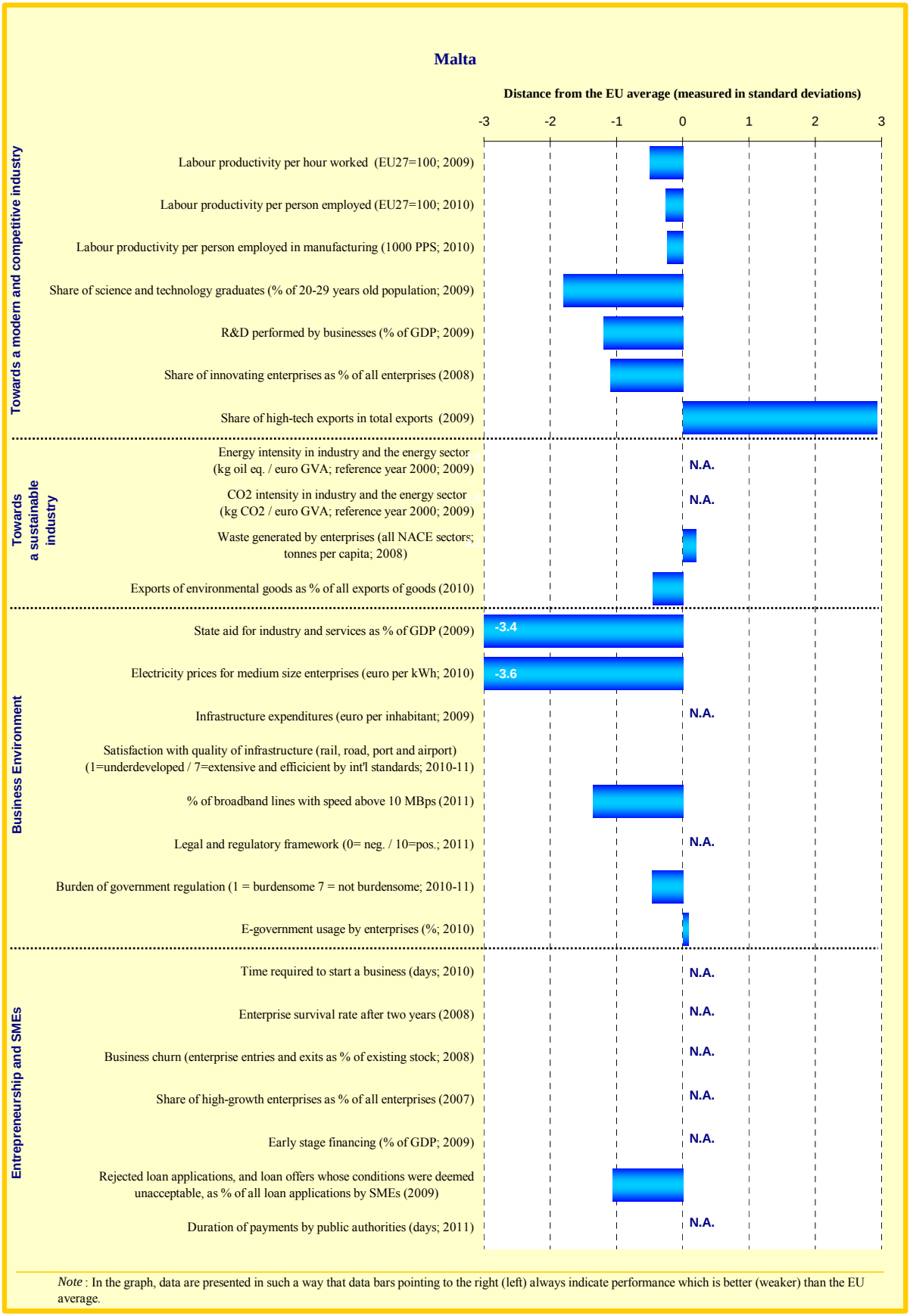
### 4.16.6 Conclusion

The crisis period and slow recovery shed light on the bottlenecks of the Hungarian economy that hamper sustainable and balanced growth. In 2011 structural measures have been identified in key areas such as the labour market, the pension and welfare system, education and public administration etc.

One of the priorities of the Government is to improve business environment by reducing high administrative burdens and introducing a new public procurement legal framework beneficial for SMEs. Along with the full implementation of these measures significant positive impacts on the profitability and investment activity of enterprises can be expected. Access to finance and reducing policy and institutional uncertainty, the reallocation of EU funds for innovation and green development purposes and entrepreneurship are remaining challenges as well as the low R&D intensity of many companies.

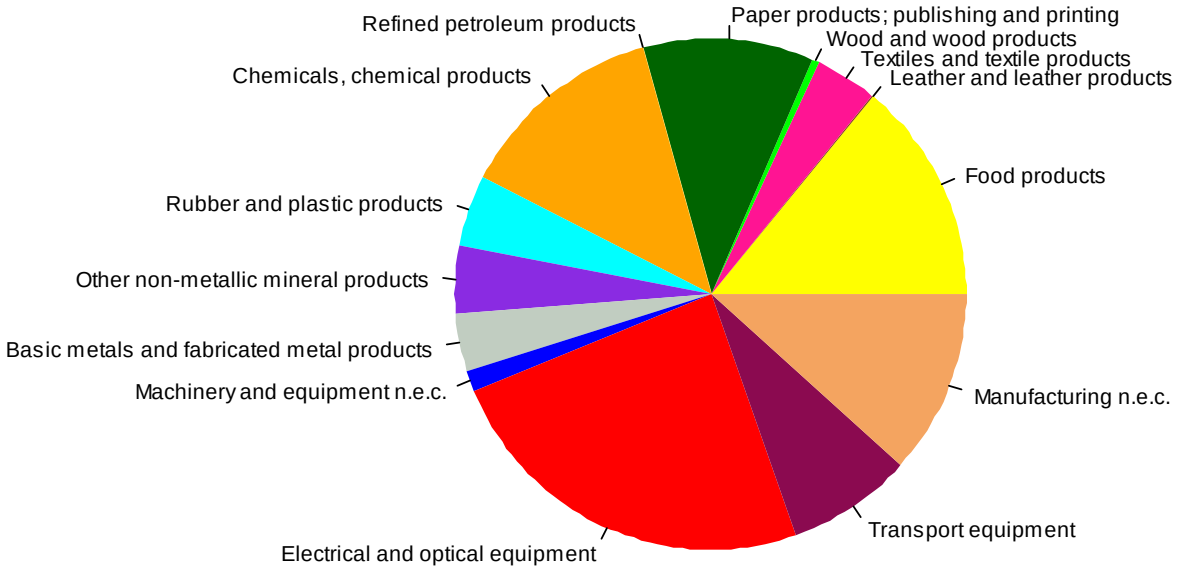
[99] SBA Factsheet 2010/2011, Hungary.

## 4.17 Malta




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Malta (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.17.1 Introduction

*Trade and industry specialisation*

Manufacturing in Malta accounts for 13.3 % of total value added (2009). In terms of export specialisation at the detailed industry level, Malta is highly specialised in technology-driven industries (electronic valves mechanical systems, electricity distribution control apparatus, pharmaceuticals) and weakly specialised in marketing-driven industries (printing and services activities related to printing). However as Malta is a very small country, the export data should be interpreted with care as a small number of enterprises can dominate the market and export content might be significantly influenced by imported inputs. At the more aggregated sector level, Malta features specialisation in medium-high innovation and education sectors (communication equipment, chemicals), as well as in low innovation sectors.

While Malta's R&D intensity considering its industrial structure is far below the EU average, its position on the quality ladder is much better, featuring only a slightly higher share in the low price segment of labour intensive industries.

Malta has experienced an appreciation of the real effective exchange rate by 16% over the last decade, which is below the EU27 average (21%), indicating nevertheless a loss in cost and price competitiveness. Nominal unit labour costs have increased by 29% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. Estimated labour productivity per hour worked is about 18 percentage points below the EU27 average and about 32 percentage points below the Euro area average.

Most prominent sectors in Malta

| |
|---|
| **Highest relative value added (2007)** |
| Hotels and restaurants |
| Chemicals and chemical products |
| Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of fuel |
| **Change in the relative value added (1999/2007)** |
| *Increasing specialisation* |
| n.a. |
| n.a. |
| n.a. |
| Decreasing specialisation |
| n.a. |
| n.a. |
| n.a. |

*Structural change*

In terms of change, Malta has decreased trade specialisation in labour-intensive industries (leather clothes) and in technology-driven ones (computers, TV and radio transmitters, medical and surgical equipment), as well as decreased value added specialisation in low innovation and low education sectors. It has increased trade specialisation in capital intensive industries (basic chemicals), mainstream manufacturing (weapons and ammunition, transport equipment) and marketing-driven industries (prepared animal feeds). Like other lower income countries featuring trade specialisation in knowledge-intensive industries, Malta has improved its sectoral R&D intensity and has climbed the quality ladder in technology-driven industries, but not in labour-intensive ones, where it deteriorated its position.

Manufacturing production has partially recovered from the crisis, reaching a level 11.6 lower than its previous cyclical peak in April 2011. The crisis clearly slowed down structural change towards technology-driven industries, while it also slowed down the decline of labour-intensive industries.

However, it can be said that Malta is catching up with respect to competitiveness, even if the patterns of change yield a mixed picture in terms of specialisation and sectoral upgrading.

*Unit labour costs and effective exchange rate developments*

Malta has experienced an appreciation of the real effective exchange rate by 16% over the last decade, which is below the EU27 average (21%), indicating nevertheless a loss in cost and price competitiveness. Nominal unit labour costs have increased by 29% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. Estimated labour productivity per hour worked is about 18 percentage points below the EU27 average and about 32 percentage points below the Euro area average.

### 4.17.2 Towards an innovative industry

Following consultations with the European Commission, Malta has set its national R&D target at 0.67 % of GDP by 2020 (down from 0.75% in 2010). Malta has defended its rather low R&D target as realistic regarding its structural disadvantages (market size, structure and location, absorption capacity).

The National Reform Programme (NRP) of April 2011 focuses on the following four priority measures:

1- Continuation of R&I programme (on-going) and extension towards commercialisation (new): the implementation of the national R&I programme is an ongoing measure, the objective of which is to fund research projects of between EUR 50 000 and EUR 200 000 concentrating on technology transfer between academia and industry with specific focus on the four priority sectors identified in the National R&I Strategy, namely Environment and Energy Resources, ICT, Value Added Manufacturing, and Health and Biotech. By 2012, the Research and Innovation Programme will be supplemented by a Commercialisation programme to provide dedicated support to the commercialisation of research results.

2- Incentives for R&D in Industry (new): in 2009, the Government launched an incentive package to support Industrial Research and Experimental Development. It incorporates a total of eight incentives that provide assistance to increase the amount of research and development activities in Malta. The Government plans to continue investigating and addressing gaps in funding and provide support for ideas to innovation, thus closing the cycle between the generation of a new idea and its realisation as a new product/process on the market.

3- Doctoral and post-doctoral scheme (on-going): the post-graduate programme of the Malta Government Scholarship Scheme and the ESF funded STEPS project (ongoing until 2013) have both yielded important results in enlarging the pool of Malta's researchers, especially in areas which have been identified as priority research areas in the 2007-2010 national R&I strategic plan.

4- Set-up of a Life Science Centre (new): a state-of-the-art Life Sciences Centre is a key factor in maintaining existing FDI in Malta, attracting new FDI and sustaining the local industrial base. The Life Sciences Centre will encompass the whole Innovation life cycle and Supply Chain process for companies specialising in areas related to Life Sciences, from the development of the Innovation process and the start-up of new businesses and entrepreneurial activity through to ongoing growth within the Centre. The

Centre is being financed through the ERDF programme and is expected to be fully operational by end 2013.

A National Research and Innovation Strategy 2011 – 2020 is being drawn up which builds on progress made and lessons learnt in implementing the previous strategy, but which will put particular attention to the whole cycle of innovation from blue sky to market by providing a policy framework for the coming decade.

In addition, the NRP identifies the need to smartly specialise its R&I investments in niche markets. It identifies health as a first area, which is also the first pilot area for the European Innovation Partnerships. The links with education (especially higher education in biotechnologies and medicines) should be analysed further.

As with other policy areas, the design and announcement of sophisticated strategies is not necessarily a guarantee that they will be fully implemented in the way they were intended to. The Smart City project is a case in point. Originally conceived as an IT cluster- similar to the planned Life Science centre- it is criticised to have turned into a real estate venture at the expense of the envisaged IT-focus. In this context it should be noted that a new strategy is to be flanked by a dedicated system monitoring implementation by using key performance indicators. The various existing support schemes may need to be reviewed so as to ensure that they are not overly differentiated. Hence, establishing clearer and broader programmes and better communication remains a priority.

Finally, to support a wide-spread knowledge-intensive production, it seems indispensable to raise the qualification level of the workforce, in particular with a view to demographic developments and the expected increase in skill demands.

### 4.17.3 Towards a sustainable industry

Malta's energy provision is characterised by considerable dependence on imported oil. This makes the economy vulnerable to oil price changes, which may be posing problems to entrepreneurship and the competitiveness of its businesses. In addition, in spite of the influence of the economic crisis, the recent evolution of the greenhouse gas emissions does not appear in line with the 2020 national target defined at the European level (+5 % compared to 2005 level), suggesting additional emissions reduction measures and/or the use of flexibility mechanisms may be required. Exploiting the potential to produce energy from renewable sources could bring the double benefit of improving competitiveness and achieving energy and climate targets. The Government has announced a series of actions to address these issues:

Issues pertaining to security of supply are being addressed in the NRP with plans to extend the power station at Delimara by 2012 and to build an electricity interconnector with Sicily partially funded under the European Economic Recovery Plan that is expected to be completed by 2013.

In terms of energy-efficiency some clear national targets have been set as part of the climate change strategy: 22 % primary energy savings are targeted by 2020 (0.235 Mtoe) with an intermediate target for 2014 of 15 % or 0.145 Mtoe. The energy efficiency target for 2020 is based on primary energy consumption for Malta, capped for aviation (energy consumed in aviation is included in the calculation of the target only up to the level of 4.12 % of the overall energy consumption) in the same manner as the target for renewables sources of energy. It is based on national models of energy consumption projections, and assumes primarily that the energy end use savings envisaged in the NEEAP are achieved and that the new electricity generation plant in Delimara is commissioned as well as a new interconnector with Sicily. The proposed actions in this area also include measures to improve electricity generation efficiency by 10 %, with a third of this expected to come from the promotion of energy saving upon end-use consumption. The introduction of smart meters will also help in this regard.

As regards renewable energy, the proposed measures include extending schemes to encourage solar water heaters and micro-generation from renewable sources and supporting investment in renewable energy sources through the introduction of a feed-in tariff system. The success of the latter largely rely on avoiding delays in the implementation of the renewable energy projects announced in the NRP and ensuring that the costs of support schemes remain limited.

As far as the use of community funds go, only 4.67 % of Malta's total ERDF and Cohesion Fund allocation for the 2007-2013 programming period was dedicated to renewable energy and energy efficiency investments. The take up of these investments has been relatively high, however, especially under the ERDF Energy Grant Scheme for SMEs, where the initial allocation has already been increased by 50 %. Using new possibilities for introducing financial engineering instruments for energy efficiency and the use of renewable energy in buildings (including in existing housing) through the Structural Funds has until now not been

exploited. Malta is in the process of preparing a second National Energy Efficiency Plan, due to be submitted in August this year, which should underpin the government's strategy on energy efficiency in a more comprehensive way.

Despite recent upgrades to Malta's public transport system, it should be noted that further measures in the road transportation and waste sectors would be of key importance given their weight in the national emissions.

Overall, the envisaged measures appear to help reducing the country's vulnerability to the oil price, contribute to sustainability and foster business´ competitiveness. The information provided in the National Reform Programme on energy measures is limited, however, making it difficult to assess their feasibility and cost-effectiveness.

### 4.17.4 The business environment

Malta's significant progress in reducing state aids is acknowledged (but requires continued monitoring). The most important institutional development is the establishment of the Malta Competition and Consumer Affairs Authority which is a more institutionally independent body (previously the corresponding functions were covered by a department and an Authority falling within the portfolio of the Ministry of Finance, the Economy and Investment and, more recently, the Office of the Prime Minister). The new Authority was to be operational during the first half of 2011. At the same time significant amendments to the Competition Act (Cap.379) were also expected to come into force so as to make the Competition Act more effective in achieving its objective of regulating competition and providing for better functioning markets. At this time, a leniency programme was to be in place by the second half of 2011 to complement the new administrative fines in the amended Competition Act.

Government also reported about liberalisation steps in the transport sector (coaches and minibuses completed, taxi services to be completed until 2015).

However, a number of issues persist. For instance, the grey carry trade from Italy putting law-abiding entrepreneurs at a disadvantage as such imports would regularly not comply with certain standards and not be submitted to fees etc, is in need of even closer surveillance following the recent set–up of an inter-ministerial committee tasked with co-ordinating enforcement between the different authorities concerned with the objective of curtailing this.

### 4.17.5 Entrepreneurship and SME policy

The Malta Small Business Act was enacted in Parliament on 29 June 2011. The objectives of the SBA, or at least parts thereof have become enshrined in national law. The Malta SBA is, however, not a 1:1 translation of the EU-level SBA. Instead of addressing all the ten SBA principles, there has been a deliberate focus on those issues that were considered to be of specific priority in the national context. This refers in particular to "Think Small First" and responsive administration. The SBA Malta is regarded by government and business representatives alike as a major achievement. Government is now working on the implementation of the Act including the implementation of the SME Test and the training of officials at all administrative levels. This is a crucial accompanying so as to ensure that the legal provisions set out in the SBA Malta will also be consequently adhered to in the administrative practice. On this specific point, the Government's Better Regulation Unit (BRU), has already prepared a detailed training plan as part of their better regulation strategy. Overall, the BRU activities seemed to be the area with the clearest strategy and commitment to follow-through with actions.

In other areas, access to finance appeared to be the most challenging one. Timely access to micro-credit programmes such as Jeremie, to venture capital, as well as selected delayed payment practices by some government institutions (late clearing of invoices, protracted pay-out of promised subsidies, etc) are important issues in this respect. Some steps to alleviate the existing problems have been already undertaken, though: the recent launch (April 2011) of the Jeremie programme has been a step in the right direction with the local financial intermediary signing around €4 million worth of contracts that total to 28 contracts with an average loan value of €145,000. Also, with regard to the delayed payment practices, the revised Directive on late payments as well as the agreement that Government had signed with the pharmaceutical sector are meant to ensure a positive approach for the way forward.

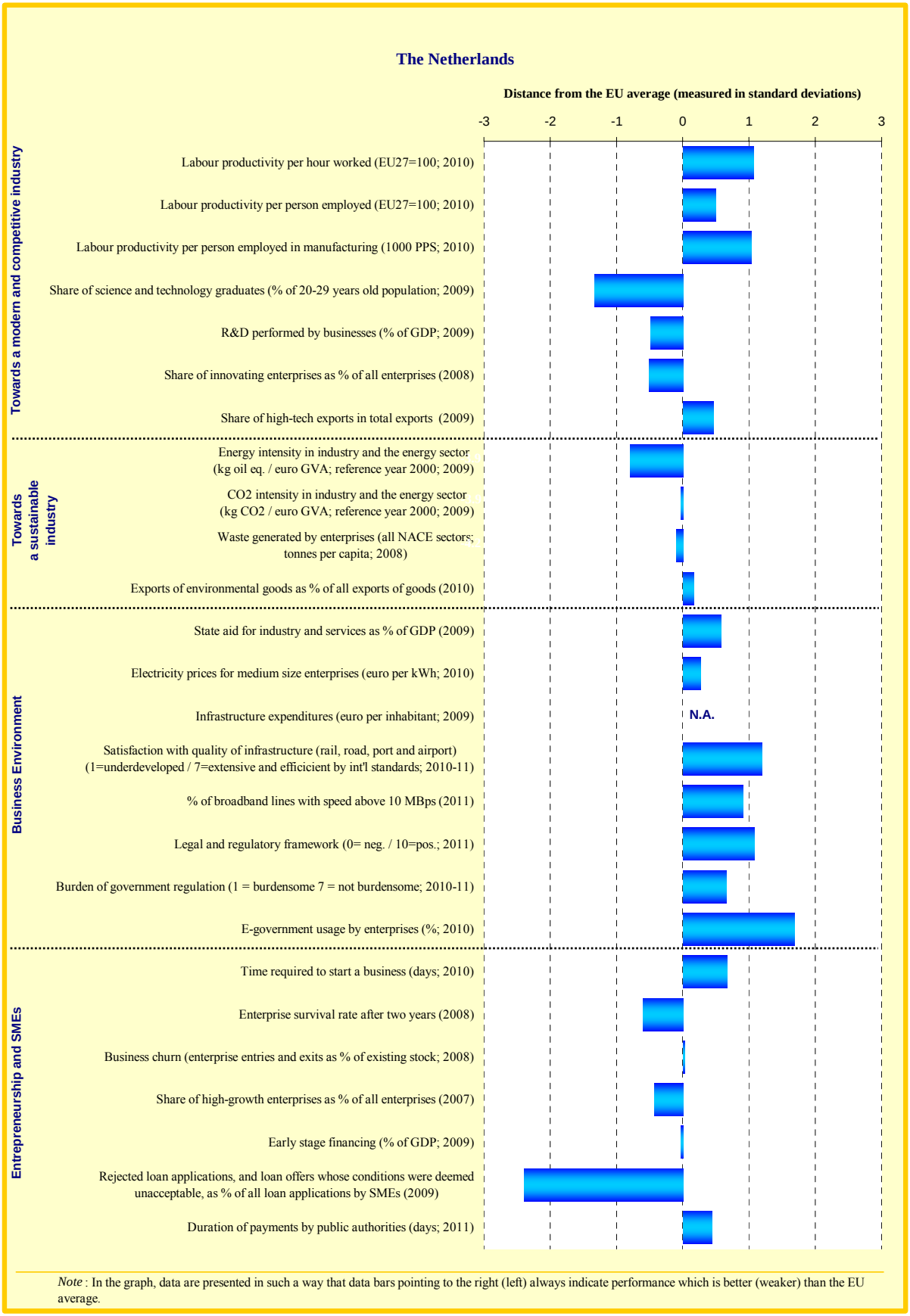
On the issue of simplification as part of responsive administration the question of the one-stop-shop (OSS) requires specific attention. Since a number of years the establishment of the OSS has been promised but full implementation has been the subject to several postponements. The most recent plan is that the planned OSS will actually turn, still in 2011, into "Business Service Centres" said to be equipped with even more comprehensive authorities than a regular OSS. The eventual establishment of a functioning OSS or Business Service Centre is clearly needed and the further

progress in this matter needs to be closely monitored.

#### 4.17.6 Conclusion

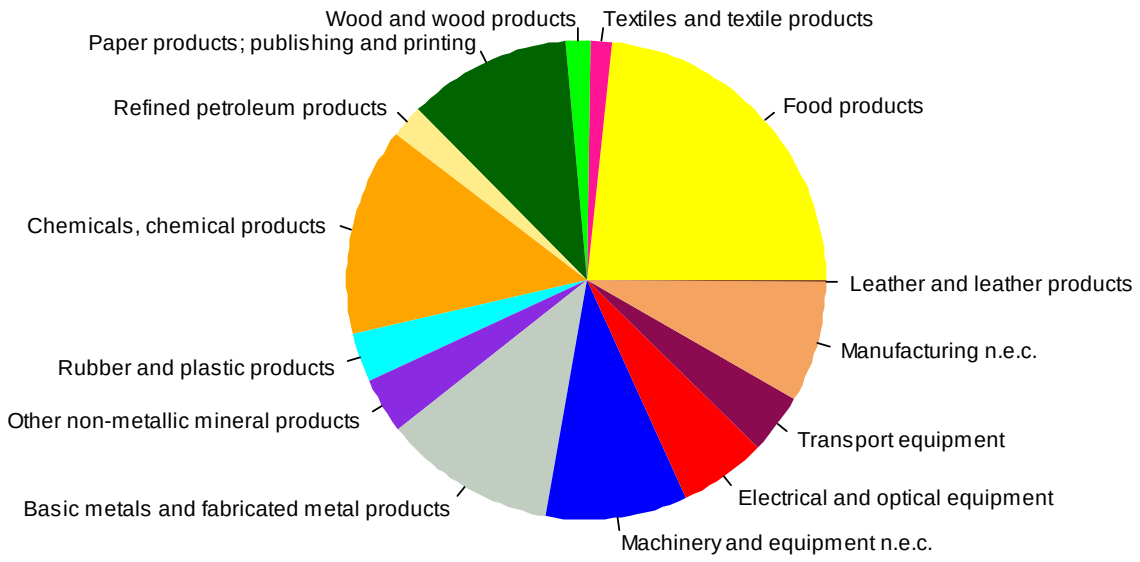
The Government continues to pursue the reform agenda. However, the often prevailing impetus and ambitious plans are not always backed up by clear and reliable implementation strategies (one-stop-shops, leniency programme). So as to fully realise the results of the announced measures, a reinforced emphasis on implementation, follow-up and tools or processes that help to regularly measure the implementation progress of announced policies in a transparent way does seem advisable.

## 4.18 The Netherlands




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Netherlands (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

### 4.18.1 Introduction[100]

The first part of this country chapter considers mainly the sector structure of *manufacturing* industries, while the remaining four parts extend to policies that support business activities in *all sectors*, in particular manufacturing.

*Trade and industry specialisation*

Manufacturing plays a slightly smaller role in the Netherlands (12.6%) than the EU on average (14.9 %). At the detailed manufacturing industry level, the Netherlands is specialised in capital-intensive (man-made fibres, refined petroleum) and marketing-driven industries (prepared animal feeds, tobacco) as well as in technology-driven industries (computers, radio and TV transmitters) as regards exports only. At the more aggregated sector level, the Netherlands i value added and exports specialisation in high and medium-high education sectors (computers, software, R&D and business services), trade specialisation in high innovation intensive sectors, but also in medium-low sectors (tobacco) and value-added specialisation in low innovation-intensive sectors (water transport).

Overall, the Netherlands form together with the UK, France and Belgium a group of countries specialised in educationally intensive sectors, within the group of higher income countries specialised in knowledge-intensive industries.

Most prominent sectors in the Netherlands

**Highest relative value added (2007)**
Manufacture of tobacco products
Water transport
Air transport

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Tobacco products
Air transport
Coke, refined petroleum and nuclear fuel
Decreasing specialisation
Research and development
Radio, television and communication equipment
Water supply

*Structural change*

In terms of change, the Netherlands has increasd its specialisation in capital-intensive industries (man-

[100] For main sources used see the methodological annex. The cut-off date for all data and qualitative information is 31 August 2010.

made fibres) and in value-added also in mainstream manufacturing (lighting equipment and electric lamps), as well as trade specialisation in high innovation sectors (computers, communication equipment). It has decreased its specialisation in high education sectors (R&D), low education sectors (water and inland transport), in labour-intensive industries and the relative share in technology-driven industries (television and radio receivers). Sectoral R&D intensity has fallen considerably in computers and risen in communication equipment.

Industrial production fell by 15 % at the trough of the crisis but recuperated most of the ground lost since then. In April 2011 it was 2.7 % lower than during its previous peak. The impact of the crisis on the industrial structure of the Netherlands was limited, with a trend reversal only in labour-intensive industries (gaining in relative share).

The Netherlands has experienced an appreciation of the real effective exchange rate by 15% over the last decade, which is below the EU27 average (21%), indicating nevertheless a loss in cost and price competitiveness. Nominal unit labour costs have increased by 23% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. Labour productivity per hour worked has slightly increased over the last decade to about 38 percentage points above the EU27 average and about 25 percentage points above the Euro area average.

Overall, while the Netherlands' position with respect to competitiveness is still favourable, the pattern of change is mixed.

### 4.18.2 Towards an innovative industry

According to the Innovation Union Scoreboard 2010, the Netherlands are an innovation follower, partly due to its relatively low share of science and technology graduates, mainly due to the fact that the process of turning scientific research into product innovation (valorisation) is staying behind. The R&D intensity of the Netherlands was 1.84 % in 2009 which is below the EU average.

It should be noted that the Netherlands has a relatively large service sector, which is not very R&D intensive. The overall share of high-tech sectors is relatively low and attracting more R&I intensive companies from abroad has proven difficult.

Mainly private R&D and innovation expenditures remain relatively low compared to other EU Member States, while public R&D spending is generous in quantity and has a high efficiency and effectiveness (when measured by the number and impact of scientific publications and of patents). The Netherlands performs above average concerning the number of patents.

Given that public R&D expenditure is unlikely to grow in the next few years, it is hoped that private R&D will increase significantly. In order to foster private R&D, the new enterprise policy of the Netherlands is aimed at achieving more space for entrepreneurs, less regulatory burden, lower taxes and increased tax incentives for innovation.

The government has also stated its ambition to turn the Netherlands into one of the Top five knowledge economies in the world, measured according to the Global Competitiveness Report of the World Economic Forum. In its 2010-2011 edition, the Netherlands ranked eighth. The new Dutch enterprise policy ("Naar de top") consists of two components. The first part is a sectoral approach with more demand-side management by industry. The "Top sectors" on which activities will be concentrated are: agro-food, horticulture, high-tech systems and materials, logistics, creative industry, life sciences, chemicals, water, energy, headquarters.

The government has identified these sectors as the ones in which the Netherlands has a comparative advantage and performs well with regard to research. In order to bring research closer to business to foster valorisation and product innovation, the Top-sector approach aims at stimulating more cooperation between government, business and knowledge institutes.

The second part of the Dutch enterprise policy is aimed at giving entrepreneurs more space by lowering administrative burden and taxes and increasing the tax incentives for innovation. Various specific subsidies have been or will be cut (including innovation programmes and innovation vouchers) and a big part of the remaining innovation budget is transformed into tax incentives. For example, the RDA (Research and Development Aftrek) will be implemented as a new instrument to stimulate innovation. It can be expected to encourage capital-intensive R&D in larger companies. A drawback may be the complex interaction with other incentive schemes like the special tax rate of the "Innovation box" and the WBSO wage cost subsidy.

The new government has decided to use the revenues from the Fonds Economische Structuurversterking (FES) to consolidate the budget and to fund transport infrastructure, no longer to invest in science and innovation. The

funding for innovation and science from this source will be phased-out until 2015. It is not clear yet how large scale research infrastructure will be funded in the future (so far by FES). On the other hand, the government has decided that a revolving innovation fund will be set up in favour of fast-growing innovative SMEs with a size of EUR 500 million by 2014. It will be developed together with the EIB/EIF.

The subsidy for wage costs of R&D personnel (WBSO) is now by far the largest measure in the Dutch innovation policy, with a budgetary weight of EUR 0.8 billion in 2011. It has been positively evaluated in several studies. Second in importance is the "Innovation Box" (reduced tax rates for profits associated with R&D activities) which had a budget of more than EUR 600 million in 2010.

An interesting feature of the Dutch innovation system has been the innovation voucher scheme which allowed enterprises to purchase knowledge from public and private research organisations. Due to budgetary constraints and a general policy of phasing out subsidies, this mechanism is likely to be discontinued in the future.

The potential shortage of skilled professionals could become an important barrier for more innovation and enhanced private R&D investments. The inflow of new science and technology graduates is below the EU average. An interesting practice example of innovation policy in the Netherlands is the SBIR (Small Business Innovation Research programme). It consists of calls for tender to procure an innovative product that still needs to be developed in maximum two years. In a first step, companies hand in their proposals for product development. Several companies are funded for half a year to perform feasibility studies. In the light of these studies, three companies are asked to develop their idea into a marketable product and are subsidised for 18 months with up to EUR 450 000 each. After that, the procuring authority is free to buy one of these three products. The advantages of this scheme are: It is quick, result-oriented and adapted to SME needs, with 100 % funding and little administrative burden. The programme has been positively evaluated. More than a dozen marketable innovations (e.g. traffic guiding, dyke monitoring, bio-based catalytic) have been developed through this tool since 2004.

A second interesting practice example is the concept of Innovation Performance Contracts (Innovatie Prestatie Contracten – IPC): Groups of ten to twenty SMEs that develop an innovation together are funded with up to EUR 30 000 each. SMEs have to contribute another EUR 30 000 as co-financing. The project is coordinated via a branch organisation. The programme has been very positively evaluated and is very popular among enterprises. The advantage is that this programme fosters SME collaboration for bottom-up product or service development with little administrative burden for the SMEs.

#### 4.18.3 Towards a sustainable industry

The national strategy of 2008 with a time horizon until 2030 remains valid. It states that sustainability is part of competitiveness. The government also encourages all nine Top-sector teams under the new enterprise policy to include the topic in their agendas and action plans.

One specific topic to be addressed in each of the nine sectors is the further development of a "bio-based economy" for which the Netherlands has good starting conditions (well developed agro-industry sector, chemicals sector, etc). The Social and Economic Council (SER) has asked the government to concentrate on high-value products within its bio-economy policies and to ensure strict sustainability criteria.

Also the Dutch cabinet has launched a "Green Deal" with the society. It is aimed at removing concrete barriers which hamper projects for energy saving and renewable energy (e.g. quality of legislation and rules), to help citizens, companies and other stakeholders to realise their plans for sustainability, without additional public subsidies. 30 concrete projects have been put on track now and more are planned.

However, in light of budgetary constraints and general policy considerations, the new government has reduced the ambition in several important dimensions in the environmental field: It has not set a quantitative energy efficiency target and is not committed to more ambitious targets for renewable energy and $CO_2$ emission reductions than those already legally required under EU law. However, even concerning these not overly ambitious policy goals, the measures envisaged appear most likely to be insufficient.

Concerning green public procurement, it remains to be seen whether the envisaged reforms will allow pragmatic steps forward or whether they will in fact mean a reduction of ambition and commitment. The former government had aimed at a very high percentage of green public procurement, but the criteria set were deemed too inflexible by many SMEs.

The current Dutch energy production is oriented towards gas and developing international gas

pipelines further. According to the national statistical office's environmental accounts, the Dutch gas reserves could be depleted in the next 19 years, assuming constant net exploitation at the rate as in 2009.

Renewable energy is subsidised via an electricity levy (SDE+). The government puts high priority on building a sea electricity line to Denmark, to have access to Danish sea-based wind park electricity, but this should not deflect attention from increasing investments in renewable energy in the Netherlands itself.

The Dutch government wants to encourage more nuclear energy. It has announced to issue licenses to build new reactors if enterprises submit an application. But it has made clear that it will not provide any subsidies for this technology.

The plans to expand nuclear power will take time and raise questions of sustainability with regard to the radioactive waste generated. It is not clear whether these plans are a strategic anti-cyclical move towards competitiveness at a time when other countries try to reduce their dependency on nuclear power, or whether this will lead to lock-in investments into a transitional technology with potentially higher adjustment costs in the future. In particular, additional centralised power stations (large scale coal, nuclear) may delay the development of a smart grid which is more appropriate for decentralised renewable energy distribution, unless a more coherent approach is taken to integrate all sources into smart-grid type solutions.

The electricity levy has been revised to concentrate subsidies mainly on those renewable energy investments that are highly cost-effective in the short run. The main advantage of SDE+ in comparison to the previous SDE system is that it provides an incentive to apply for a relatively low subsidy which is expected to spur innovation and the development of more cost-effective technologies. One disadvantage may be that solar panel projects are unlikely to get any subsidy at all. The new scheme will be operational from 1 July 2011 to 2020.

#### 4.18.4 The business environment

The Netherlands ranks among Member States with a legal and regulatory environment that highly encourages the competitiveness of enterprises and scores clearly above the EU average concerning the satisfaction with the quality of infrastructure. Permits and other administrative procedures, including for import and export, can be very quickly settled.

SMEs still complain about the difficult situation regarding access to finance. The anti-crisis measures in this field have been extended again. A task force is currently looking at the situation on the Dutch financial market. A previous study in 2010 found that the level of credit granted in the Netherlands is similar to the period before the crisis, but the conditions for SMEs are tighter. The top-sector agendas should provide an insight into sectoral problems of access to finance.

The Dutch microfinance scheme appears useful. SME associations consider that the main problem of access to finance occurs now the range EUR 100 000 to EUR 1 million loans. A micro-credit foundation ("Qredits") co-financed by government and big banks was set up in late 2010.

Progress on the new public procurement law is slow. In June 2010, a revised proposal for a new public procurement law was sent to the Parliament which includes the proportionality principle, less paperwork upfront and an ombudsman system. It was hoped that this version could finally pass both chambers of parliament, but it was held up again in September 2011. It is also planned to issue an important guidance document developed jointly by enterprise associations and public authorities and to train public procurers better.

New legislative proposals have to go through an impact assessment. One part ("bedrijventoets") concerns the impact on businesses, both large and small. But there is no separate SME test. There is now an integrated guideline document on how to perform impact assessments, rather than nine different guides for various aspects (business, gender, etc.), but the system still has to prove itself.

Public internet consultations have become more frequent but only address a small share of legislative proposals. A central website has been set up: www.internetconsultatie.nl

Regulatory reform has been on the agenda of the Dutch government for over two decades. The 2007-2011 Regulatory Burden Action Plan had set a quantitative target of 25 % reduction of the administrative burdens on businesses to be achieved by 2011 which is going to be largely met. A new target is a reduction of 10% in 2012 and 2013 and of 5% in the years thereafter. The actual performance of the administrative burden assessment works well: A specialised body (ACTAL) looks at the most important pieces of new draft legislation at national level.

Concerning infrastructure, project investments have

been speeded up as part of the anti-crisis measures (concerning bridges, roads, waterways and measures against rising sea level).

### 4.18.5 Entrepreneurship and SME policy

SMEs' contribution to employment in the Netherlands is the same as in the EU (67%) but they tend to be larger on average than in the EU, with the share of small and medium-sized enterprises relatively higher. The Netherlands scores clearly above the EU average concerning the time required to start a business and early stage financing, but significantly below average concerning bank loan conditions deemed acceptable by companies and slightly below average concerning the share of high-growth enterprises. It is remarkable that the share of "opportunity-driven" entrepreneurs for whom being an entrepreneur was the first career priority (rather than accepting it due to a lack of other options) is very high in the Netherlands.

The Dutch government does not have a comprehensive plan of implementation of the "Small Business Act" at national level, but the "think small first" principle is being mainstreamed into all kind of government programmes.

One policy success of the last few years is that the number of entrepreneurs has risen and more young people express an interest in entrepreneurial thinking. But most companies do not grow or, from the viewpoint of the government, do not grow fast enough.

On late payments, the governments has enacted a 30 day rule and increased compliance significantly. The different ministries are monitored for their individual performance.

There is some concern among SMEs that the "Prepare to start" programme will be abolished to cut subsidies. This programme provided coaching for internationalisation. The same may happen with a programme which subsidised SME participation in trade missions. On the other hand, the Dutch foreign service will in the future increase its activities to help internationalisation of companies. Better communication towards starting companies about this subject is necessary.

Entrepreneurship education programmes were very successful in the last few years and the government is planning to extend the six entrepreneurship centres at higher education institutions (if the budget is available). The next step would be to extend it to the vocational training (MBO).

Since the tax year 2011, the corporate taxes have been decreased from 25.5 percent to 20 percent for SMEs. This will increase profitability and provides more financial means for investments in capital equipment and innovation. A new Integrated Entrepreneurship Facility (Geïntegreerde Ondernemersfaciliteit) was set up, combining various measures to support successful entrepreneurship. The first actions are expected in 2011.

The public procurement agency "Pianoo" is offering trainings to contracting authorities on writing their notifications according to the standards set out in the EU Code of good practice to ease participation of SMEs in public procurement.

No notable challenges have been identified in this policy area.

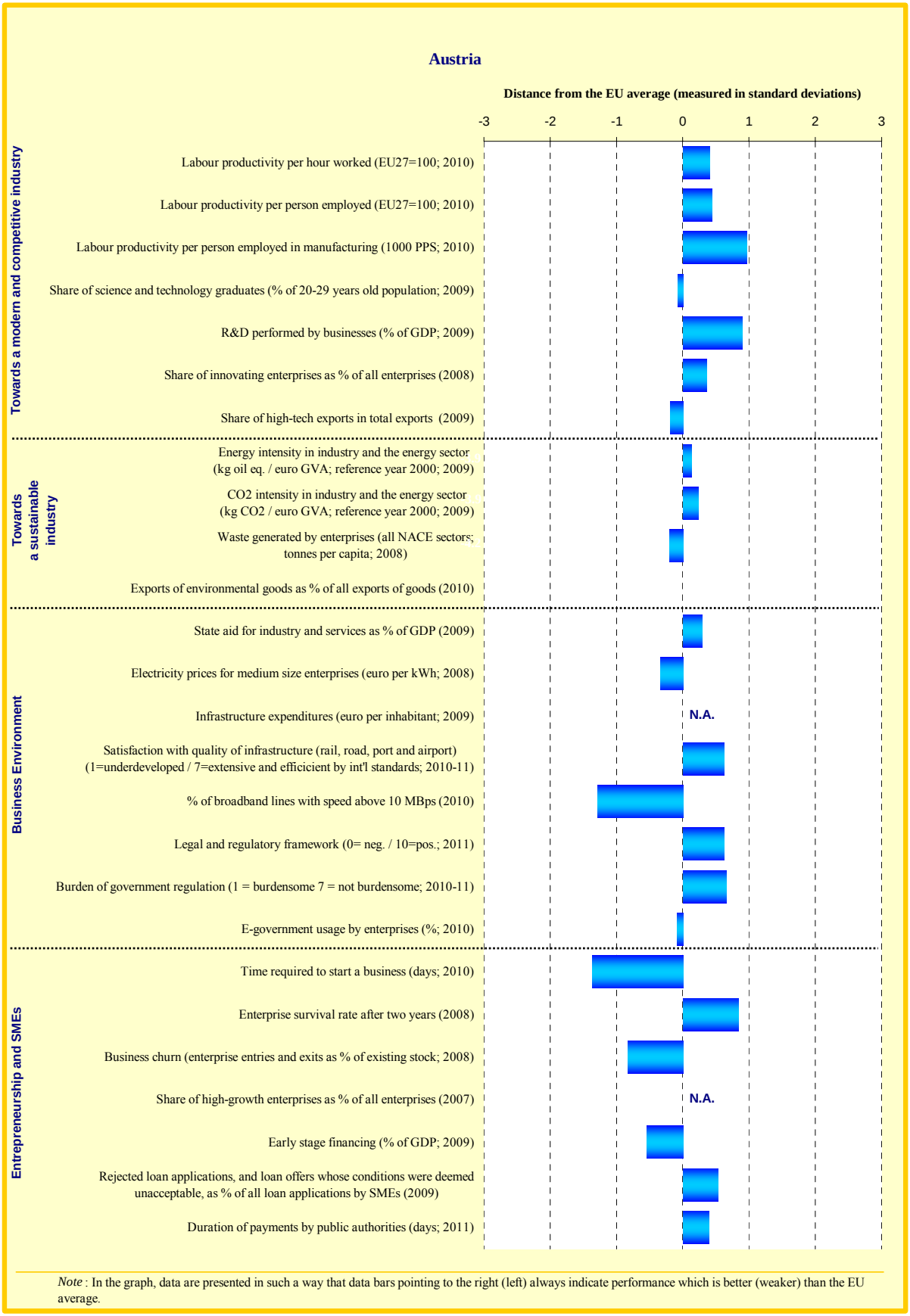
### 4.18.6 Conclusion

Important structural challenges in the Netherlands are to increase private R&D investments and to promote renewable energy and energy efficiency. The recent new enterprise policy, with a focus on nine top sectors and a move from specific innovation subsidies to more generic tax incentives could be an interesting example to reduce the administrative burden for applicants and may promote the efficiency and effectiveness of public spending. However, the move should be carefully evaluated in order not to jeopardise the overall innovative capacity of the Dutch economy. The level of budgetary expenditure for research and innovation is an important factor for the future, even if the FES will no longer be used to fund these activities. The transition towards a more energy efficient and low carbon economy could be stepped up with further measures.

The policy recommendation of the Council of the European Union is to promote innovation, private R&D investment and closer science-business links by providing suitable incentives in the context of the new enterprise policy ('Naar de top').[101]

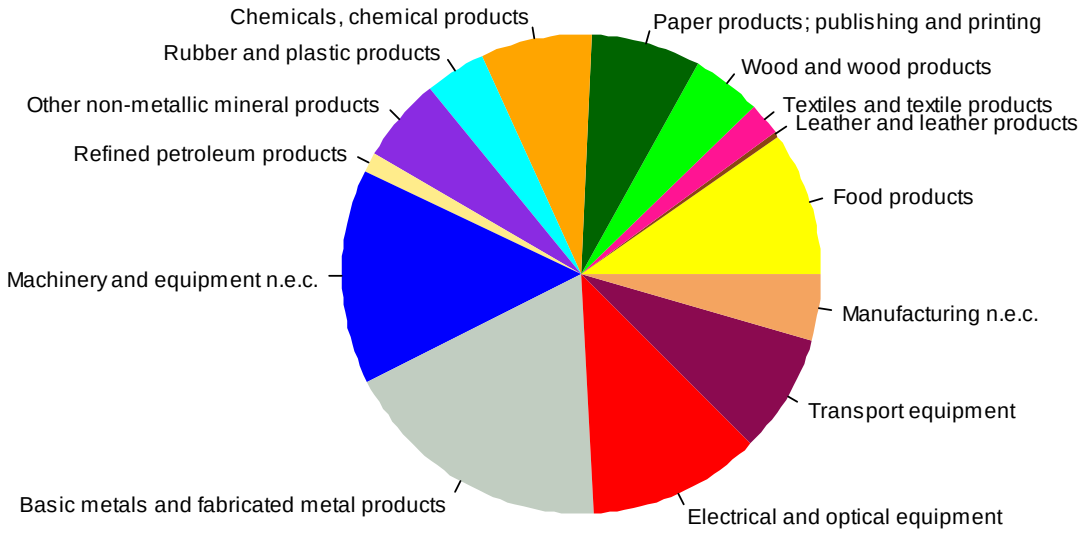
[101] Country-Specific Recommendation No. 4 in the Council Recommendation of 12 July 2011 on the National Reform Programme 2011 of the Netherlands and delivering a Council opinion on the updated Stability Programme of the Netherlands, 2011-2015, published in the Official Journal of the European Union, C 212, 19 July 2011, page 15.

## 4.19 Austria




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Austria (2007)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.19.1 Introduction

*Trade and industry specialisation*

Manufacturing contributes 20.1 % to total value added in Austria against 14.9 % in the EU on average. At the detailed manufacturing industry level, Austria features value added and export specialisation in mainstream manufacturing (manufacture of railway and rolling stock, electric motors) and labour-intensive industries (builders' carpentry and joinery, sawmilling, machine-tools) as well as in capital-intensive industries (man-made fibres) regarding valued added and in marketing-driven industries (sports goods, beverages) regarding exports. At the more aggregated sector level, Austria is specialised in highly innovation-intensive sectors such as machinery and, in exports, in medium-innovation sectors (such as wood, basic and fabricated metals), but also in sectors with low innovation and education, such as in hotels and restaurants and auxiliary transport activities. Austria's R&D intensity considering its industrial structure is very high and its position on the quality ladder is high across industries and quality segments. Overall, Austria shows that competitiveness can be sustained in structures which are not markedly knowledge-intensive, if sectoral upgrading in terms of R&D and quality takes place, i.e. if a country moves to the knowledge-creating parts of the value chain.

Most prominent sectors in Austria

**Highest relative value added (2007)**
Wood and products of wood and cork
Coke, refined petroleum and nuclear fuel
Basic metals

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Real estate activities
Electrical machinery and apparatus, nec
*Renting of machinery and equipment*
Decreasing specialisation
Tobacco products
Inland transport
Radio, television and communication equipment

*Structural change*

In terms of change, Austria has further increased its industry specialisation in mainstream manufacturing (motorcycles, steam generators) and labour-intensive industries (veneer sheets, made-up textile articles, machine-tools), as well as in high innovation and high education sectors (computers, electrical machinery, communication equipment).

Austria has increased its R&D intensity taking account of its industrial structure and overall maintained its position on the quality ladder.

Austrian manufacturing output fell by around 20 % during the crisis but recovered rather fast. In April 2011 it was 3.7 % lower than its previous cyclical peak. The crisis has slowed structural change towards technology-driven industries in Austria, while it has also boosted labour-intensive industries.

Overall, Austria's competitive position is favourable, with trends mostly going in the right direction both in terms of specialisation and sectoral upgrading.

### 4.19.2 Towards an innovative industry

According to the Innovation Union Scoreboard 2010, Austria is an innovation follower, with a developed innovation system and an above average innovation performance.

Austria's economy exceeds the EU average in R&D intensity. The overall investment in R&D grew from 1.94 % in 2000 to 2.78 % of GDP in 2010, which was faster than in most other EU countries. The share of private sector amounted to remarkable 60 % of the total, including a significant portion of R&D investment coming from abroad. In spite of the substantial level of public and private R&D funding, the economic structure still seems largely based on low R&D intensive sectors, partly due to the services industry and its weight in the economy. However, R&D intensity in these sectors is higher in Austria than average.

Although the high-technology industries have been gaining ground, their overall share is still relatively low. In consequence, the share of high-tech products in total exports is below the EU average, suggesting that the economic benefits of the R&D investment are yet to be better exploited. Looking only at the importance of high-tech sectors would however underestimate Austria's innovation performance, as mentioned in the structural change sub-section. Moreover, Austria has witnessed a high growth of community trademarks, license and patent revenues from abroad.

The share of Austria's innovative businesses accounts for 2/3 of total enterprises. The industry specialises in sectors demanding high and low-intermediate labour skills. After several years of incremental improvement, the number of science and technology graduates nearly reached the EU average in 2009 (14 % vs. 14.3 %). Nonetheless, Austria gradually begins to face shortage of skilled workforce and the number of researchers seems insufficient. To address the emerging mismatches on the labour market, the government introduced the so-called "red-white-red card" as from July 2011. The card facilitates immigration of highly qualified labour force from third countries. The rights provided by the card to the successful applicants can be extended also to their relatives. In addition, the successful candidates need not speak German upon entry and only have to learn it within the first two years.

The formation of human capital remains a challenge also due to persistent weaknesses in the education system, including the tertiary level. In view of the relatively high expenditure on education (per student), the quality[102] of primary and secondary education in particular appears mediocre. On the other hand, in indicators such as the share of high-impact publications or patents, Austria outperforms the EU27 average, indicating decent scientific performance and technological knowledge productivity. There are several specific initiatives[103] to further promote the number of science and technology students, motivate more women to engage in research, and give incentives for expatriate researchers to return.

In March 2011, the Austrian Government adopted a comprehensive strategy for research, technology and innovation - "Realising potentials, increasing dynamics, creating the future: Becoming an Innovation Leader"[104]. The strategy confirms commitment to invest more in R&D (3.76 % of GDP by 2020) and highlights the importance of R&D for economic policy and the long-term competitiveness of Austria's economy. It outlines a series of measures aimed at reforming education system and improving its links with the innovation system, facilitating technology transfer and cooperation between science and business, or making the framework conditions for R&D activity more innovation-friendly. The further promotion of high quality research infrastructure including university and extramural research institutions are formulated as important objectives. The role of a more innovation-oriented procurement practices is also spelled out. The strategy further intends to strengthen fundamental research, which is in the current research mix less developed. The key-enabling technologies do not seem to be explicitly addressed by a dedicated policy, the strategy however calls for the formulation of national

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102 PISA 2006, 2009.

103 e.g. MINT – awareness-raising and promotion campaigns targeting potential students in Mathematics, Information and communication technologies, Natural or Technical sciences

104 Der Weg zum Innovation Leader.

programs for generic science and technology fields. For its part, the strategy also recognises the low share of tertiary graduates and foresees improving the rate of tertiary and equivalent graduates in the 30-34 population to 38 % by 2020.

The public R&D and innovation funding consists of two main components: (i) broad variety of funding programmes with general (bottom-up) or thematic (top-down) focus; complemented by (ii) indirect instruments based on tax incentives. The funding schemes played in recent years a more prominent role. Three dedicated major agencies[105] operate various schemes supporting (i) basis research, (ii) applied research and business R&D, and (iii) innovation projects in companies, seed financing and start-ups. As indicated in the strategy, the currently horizontal and diversified focus of the public funding schemes shall be reoriented towards well-defined research sectors. Smaller number of thematic priorities should allow for more specialising and synergy in sectors where Austrian economy has comparative advantage. An example of thematic focus is the climate and energy funds that annually invest EUR 150 million in innovative and demonstration projects in the field of climate change.

The total R&D expenditure amounts in 2011 to EUR 8.29 billion, out of which EUR 2.7 billion came from federal government, EUR 3.7 billion from corporate sector, EUR 1.3 billion from abroad and the rest originated from federal states, municipalities or NGOs. In 2010, the Austrian Research Promotion Agency co-financed 2 950 applied research projects, amounting in total to EUR 429 million[106]. As regards tax incentives, in its budget bill for 2011 the federal government increased the research tax bonus from 8 % to 10 %. The impact of the measure is estimated at EUR 100 million.

Although still respectably high, the private R&D investments have been somewhat losing ground in 2008-2010, stagnating in nominal terms. This unfavourable trend, observed in many Member States, was compensated by robust growth in public funding, which, as a part of anti-crisis measures, increased its share from 31 % in 2007 to almost 39 % in 2010. To achieve the 2020 R&D intensity target in a context of fiscal consolidation efforts though, it is instrumental to reverse this trend and mobilise the contribution of private sector. To this end, the strategy recognises the relative under-development of venture capital and the role it could play in financing innovation. It spells out a number of measures to improve the regulatory framework for venture capital and non-banking financing. Of particular interest are the measures planned to strengthen finance competence and entrepreneurship at universities, including the establishment of knowledge transfer centers, which are expected to help universities better capitalise on their intellectual property rights.

The competence for R&D and innovation policies is currently fragmented and shared by several institutions. In consequence, policy development and implementation suffer from complex governance structure. Under the new strategy, all relevant ministries are to cooperate. The newly established *Task Force for Research, Technology and Innovation* shall coordinate the activities of the government bodies involved and ensure their effective collaboration. The composition of this task force and its institutional standing vis-à-vis other governmental departments will determine to what extent it can fulfil its role. The "*Council for research and technology development*" will annually provide for strategic guidance and advise the federal government as to the implementation of the strategy and its future orientation. Although monitoring and assessment mechanisms are in place, the findings evaluating the effectiveness of the existing R&D and innovation instruments could better feed into policy formulation.

The strategy shows awareness of all major challenges and sets feasible targets. The effective implementation of the announced measures and initiatives is crucial for better exploiting the economic benefits of R&D investments and speeding up structural shift towards economic activity with higher value added.

### 4.19.3 Towards a sustainable industry

Over the last decade, the overall energy efficiency of Austria's economy has continuously been improving. The relatively high share of renewable energy in final energy consumption further rose from 24.8 % in 2006 to 28.5 % in 2008, representing fourth rank in the EU.
As regards the environmental footprint of industry, Austria sends positive but somewhat blurry a message. Between 1990 and 2008, the final energy consumption in industry, measured in quantity, grew by 48 % (from 6 091 to 9 014 million toe). In the same years, however values for EU27 and EU15 diminished or stagnated respectively. Whilst culminating in 2008, energy consumption of Austrian industry significantly fell back (to 8 263 million toe) during the crisis year 2009. The largest energy consuming sectors of manufacturing were paper and pulp, followed by iron and steel,

[105] Austrian Science Funds (FWF), Austria Research Promotion Agency (FFG), Austria Wirtschaftsservice (AWS)

[106] Source: Austrian Research and Technology Report 2011

non-metallic minerals and chemical industry. More importantly however, the energy intensity of industry has been declining over the last decade, and Austria belongs to the better performing Member States. The carbon intensity of industry also improved and was slightly below the EU average of 2009. The amount of waste generated by enterprises grew from 6.1 kg per habitant in 2006 to 6.3 kg in 2008, contrary to the EU weighted average that decreased from 5.5 kg to 4.81 kg in the same period.

In April 2010, the Federal Ministry of Economy, Family and Youth and the Ministry for Environment concluded the elaboration of the national Energy Strategy. It targets three main policy areas: increase in energy efficiency, share of renewables, and energy security. One of the main objectives is to stabilise the final energy consumption at 2005 levels. To this end, the transport sector, heating and cooling, and the electricity sector are expected to most reduce their energy consumption. In addition to 21 % for sectors subjected to ETS, Austria aims at a 16 % reduction of $CO_2$ emissions for the sectors outside the ETS by 2020. Following the adoption of the "Green Electricity Act 2012"[107] by the Parliament in July 2011, Austria has strengthened its renewable electricity targets. It is investing to triple the production of wind power and plans to achieve a tenfold increase in the production capacity of solar panels. The construction works of a new pumped-storage power plant (Kaprun-Limberg II), worth EUR 400 million, approaches completion. In near future it will add a capacity of 480 MW to the hydroelectric power generation. To accommodate towards the national 2020 target of 34 % of renewable energy, the electricity grids would benefit from upgrading investments and better cross-border connectivity of distribution networks.

The Energy Strategy translated into a broad variety of horizontal and sector-specific measures of regulatory, financial or information campaign nature. The thematic sectors include buildings, production and services in industry, mobility, energy supply and security. At federal level, the most significant legal instruments include the National Renewable Energy Action Plan, Climate and Energy Fund Law, Green Electricity Act, Environmental Aid Act, Environmental Assistance Austria, Bio-fuels Directive, Action Programme for Mobility Management, Waste Management Act. Altogether, these provide for developing environmentally-friendly mobility, feed-in tariffs for renewable energy, financial support for solar energy, finances to reduce atmospheric pollutants or dangerous waste, thermal insulation of buildings, technical rules promoting renewable energy systems in buildings, certification of installers, energy efficiency consulting for SMEs, including promotion of voluntary actions by industry sectors, awareness raising campaigns or sustainable consumption initiatives.

The existing funding schemes target "greening of industries" by supporting efficient energy, resource and emission management plans, as well as sustainable business models and take up of environment-friendly technologies. In 2010, 2399 projects were financed with a total value of EUR 571.1 million. The energy efficiency of buildings remained in 2010 an explicit goal. In view of their multiplication effect and positive impact on employment, the existing funding instruments for thermal insulation were reinforced and extended into 2011-2014. For 2011, EUR 100 million were made available, out of which 70 % is envisaged for residential and 30 % for industrial buildings. Depending on the expected energy savings, investments can be co-financed by up to 35 %. The awareness raising campaigns and consulting services on energy efficiency targeted in 2010 in particular energy intensive SMEs.

The Energy Strategy indicates the intention to overhaul the public procurement law, aiming at making it more environment-friendly and conducive to energy efficiency. The planned strategy for introducing electro-mobility in Austria has still been in discussion in 2010. On the other hand, the first parts of the environmental tax reform, which aims at increasing taxation of resources and energy consumption, were adopted with the budget bill for 2011: e.g. the tax on mineral oil went up (20 EUR/tonne); an airline ticket tax was introduced (EUR 8, 20, 35 for short, medium, and long-haul flights respectively); the ecological elements of the car registration tax were further strengthened.

To secure the supply of mineral resources for its industry, and to allow better planning of future mining activities, federal and state governments continued elaborating the Austrian Mineral Resources Plan. The first phase devoted to identifying and estimating the value of mineral deposits was accomplished. The crucial second stage, which aims at (i) eliminating any protection conflicts (e.g. with residential areas, national parks, water management zones) and (ii) declaring exploitable deposits as "mineral protection zones", is still underway. In parallel, the Federal Ministry for Agriculture, Forestry, Environment and Water management is working on the Resource Efficiency Action Plan.

Austria has advanced in the application of

[107] Ökostromgesetz 2012

sustainability patterns in public procurement. In July 2010, the federal government adopted National Action Plan for Sustainable Public Procurement, drawing lessons from the pilot phase and the EU GPP Toolkit. The Action Plan targets primarily procurement practitioners by providing guidance on good organisational practices, showing how to effectively apply environmental or sustainability criteria at various stages of procurement procedure.

### 4.19.4 The business environment

Austria has a favourable business environment and scores well in the overall competitiveness of its economy.[108] Businesses highly regard especially the stability of legal and regulatory framework, the enforcement of contracts and quality of infrastructure. Despite the high share of renewable energy, the electricity prices for SMEs remain competitive at below EU average.

To foster efficiency of the public sector and thus indirectly improve business environment, Austria implemented a budgetary and administrative reform (Haushaltsrechtsreform) coming into operation in two stages (2009 and 2013). Inter alia, it introduced and further developed the Impact Assessment System, including ex-ante und ex-post evaluations. The so called outcome-oriented impact assessment will be enforced as from 2013. It puts the cost of public policies and regulation into context with outcome objectives and expected environmental, social and economic impacts.

Ministry of Finance developed a tool for the calculation of administrative burden for businesses and citizens (Verwaltungskostenrechner), screening all new legislative proposals. It also actively supports other ministries in their estimations of administrative burden. The tool takes into account the size of an enterprise. An SME test is not included therein, however it is already under development. Overall, the impact assessment still tends to be limited to estimation of administrative burden rather than the overall cost to businesses.

In 2007, the government launched an action program for reducing administrative burden for businesses, setting a 25 % reduction target for 2012. It identified 5687 information obligations stemming from 561 legal acts, which, based on the standard-cost-model, induce administrative burden of EUR 4.31 billion. In 2010, the implementation of the initiative further progressed and achieved its 2010 target of EUR 564 million. For instance, the new thresholds for VAT registration (raised to EUR 30 000) came into force in 2010. The new accounting act, which amongst others increased the threshold for mandatory accounting to EUR 700 000, is estimated to trigger administrative burden reduction of EUR 55 million. The second phase of the initiative, which is focused on burdens arising from EU legislation, too, shall bring about administrative burden reductions of additional 512 million. In 2010, the government extended the scope of the campaign. It now focuses also on administrative burden for citizens. Starting from a focused baseline measurement of the 100 most burdensome administrative procedures more than 150 simplification measures have been identified to cut red tape for citizens. To build up on the already enacted measures and to boost their effect, the institutional capacity for the better regulation agenda could be strengthened by closer cooperation between the central government and the federal states.

The existence of broad variety of e-government solutions and online services, and their uptake by enterprises impact positively on business conditions. The implementation of the Business Service Portal (USP)[109], a flagship initiative aimed at establishing a central gateway for any contact between companies and authorities, further advanced. The first stage of USP (provision of official information services for business) was completed in 2010. Whilst ensuring the single-sign-on approach in 2012, the second stage shall be completed by 2013. Further developments will integrate all existing (e.g. tax declarations, social security contributions) and develop new electronic transactions including the public procurement area. If its full functionality is successfully achieved, this electronic single-point-of-contact has the potential to streamline many administrative procedures. Based on the initial estimates, the USP could reduce administrative burden by 100 up to EUR 300 million. The internet uptake by businesses is relatively high, although the penetration of fixed broadband lines with high-speed connection remains significantly below EU average. On the other hand, Austria ranks among the best performing EU countries as regards mobile internet. To further increase broadband capacity, in 2010, the government assigned the 800 MHz frequency band for mobile broadband services and the regulator conducted auction in the 2.6 GHz band. Moreover, in February 2011, the government launched new support program[110] worth

[108] Austria ranked 18th in the 2010-2011 Global Competitiveness Report of the World Economic Forum, and 32nd in the 2011 Doing Business survey of the World Bank.

[109] Unternehmensserviceportal (USP) – www.usp.gv.at

[110] Breitband Österreich 2013 (BBA 2013)

EUR 30 million to prop up the broadband infrastructure in rural areas.

### 4.19.5 Entrepreneurship and SME policy

Austria's SME sector resembles the EU average, both in terms of employment (67.2 %) and contribution to valued added (61.9 %). As regards its structure though, the small and medium-sized companies play a more prominent role. In contrast to that, the number of micro firms as well as their contribution to employment and value added is below EU average (88 %, 25 % and 18.9 % compared to the EU average of 92.1 %, 29.8 % and 21.9 % respectively). The business demography indicators show, on one hand, lower-than-EU-average birth and exit rate of enterprises, and one of the highest survival rates after two years on the other hand.

At the beginning of 2011, the government published the "SME Report 2010"[111], listing support measures for SMEs that were structured along the 10 principles of the EU Small Business Act (SBA). In 2010-2011, Austria was one of the countries that launched actions in all SBA areas. In cooperation with the Federal Economic Chamber (WKÖ), the Federal Ministry of Economy, Family and Youth also carried out the "SBA-Begleitprogramm 2009/2010" - a programme accompanying the SBA implementation. It targeted in particular sole traders; topics included e.g. transfer of business, knowledge management, women & innovation. In 2011-2012, the program will include thematic projects such as e.g. "Success-factor Knowledge", "Reinvent your company", "Applying new legal frameworks". Building up on other measures, the systematic introduction of entrepreneurship education was stepped up in the competence-based curricula. Nonetheless, the attitude towards entrepreneurship and risk-taking still remains a cultural challenge that will require more time to change.

The one-stop-shop for businesses is operational, though there is still some room for improving the conditions for start-ups. In spite of gradual reduction over recent years, the number of procedures (8) and time (up to 28 days) required to start a typical company are markedly above the OECD average. In particular, the licensing procedures[112], registration at courts and notary certifications[113], as well as the compulsory announcement requirements[114] would benefit from further streamlining. In this respect, the government has advanced in preparations to reform the private limited liability company (*GmbH),* which should enhance its attractiveness. The Austrian Corporate Governance Code has been adapted over the last years. Additional improvements could help further solidify investor protection, in particular for minority shareholders.

The banking sector dominates the financial market in Austria, and bank loans prevail as the main source of financing for industry. The relatively smaller stock market and venture capital (VC) industry do not generate sufficient availability of capital-raising alternatives. Total venture capital investments in 2009 were at 0.05 % of GDP, against the European average[115] of 0.19 %. Although the government succeeded in stabilising the banking sector during the financial crisis, the banks have restricted their lending policies and the forthcoming additional capital needs (Basel III) of the banking sector risk further limiting lending, in particular to SMEs. Various financing and guarantee schemes using public funds are already in place and are being operated e.g. by the Austria Wirtschaftsservice (AWS). Acting as a fund of funds, the AWS invests in VC funds participating in high-tech innovative start-ups. To prop up the availability of early-stage financing, in 2010 the government launched additional "Venture Capital Initiatives", worth EUR 15 million for high-tech start-ups and 6 million for the Cleantech-Fund. The development of VC industry and thus also the access to private non-banking financing could further be improved through reforms increasing the attractiveness and transparency of the legal forms used for (i) venture capital funds and (ii) for investment vehicles, and also by (iii) analyzing and mitigating possible disincentives caused by different tax treatment.

As regards public procurement, in 2009 the government eased the access of SMEs to procurement by temporally having increased the threshold for direct awarding of contracts from EUR 40 000 to EUR 100 000. This measure is still in force, however will not be extended beyond 2011.

### 4.19.6 Conclusion

Austria scores well in the overall competitiveness of its economy, the labour productivity is clearly above the EU average, and it need not cope with any major bottlenecks in the short run. In the context of a developed high-income country however, it faces relative structural weaknesses in

111 Mittelstandsbericht 2010.

112 Betriebsanlagegenehmigungen.

113 Notariatsaktspflicht.

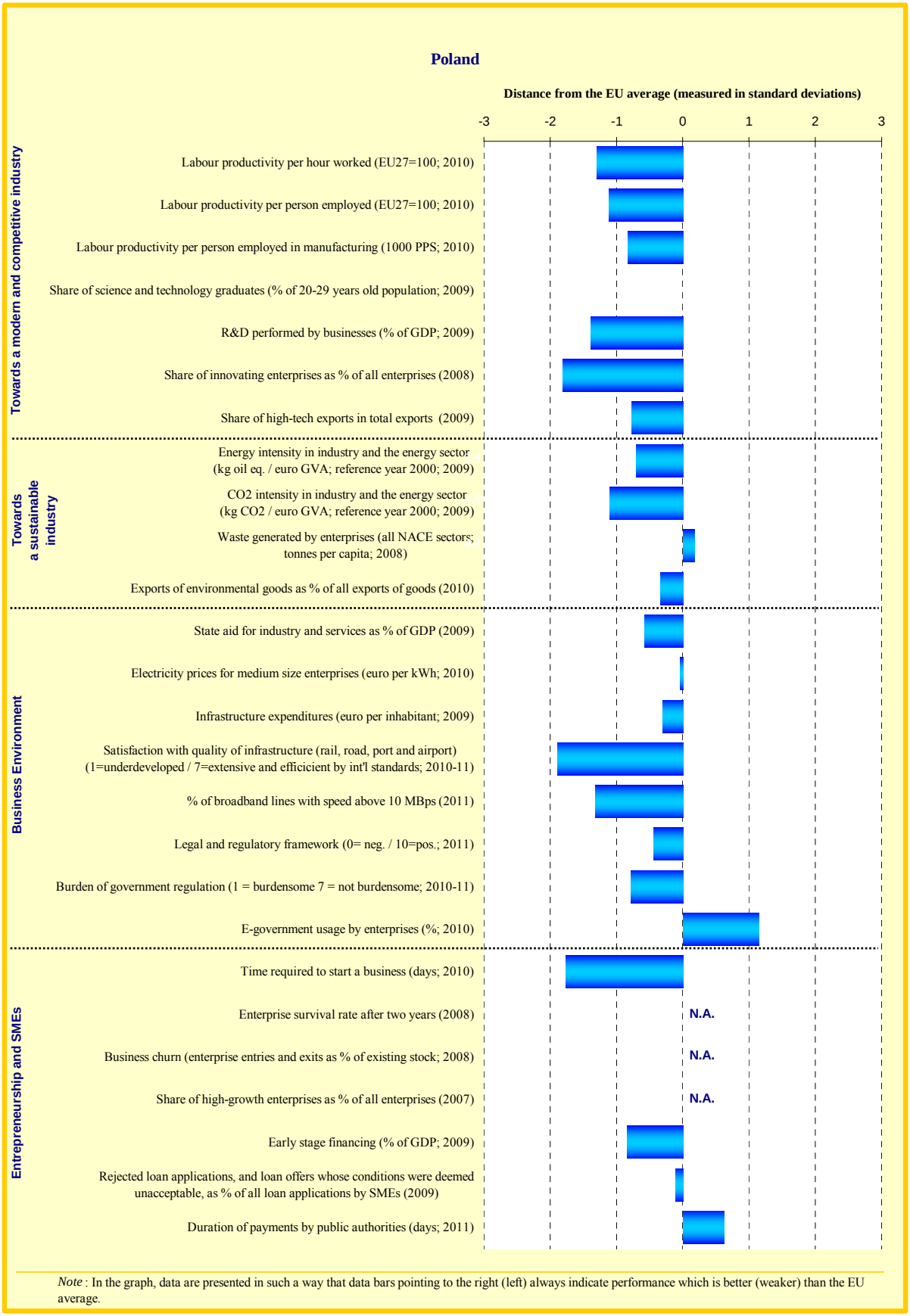
114 Veröffentlichungspflichten (Wiener Zeitung).

115 European Private Equity and Venture Capital Association.

some areas, which may harm the long-term potential of its economy.

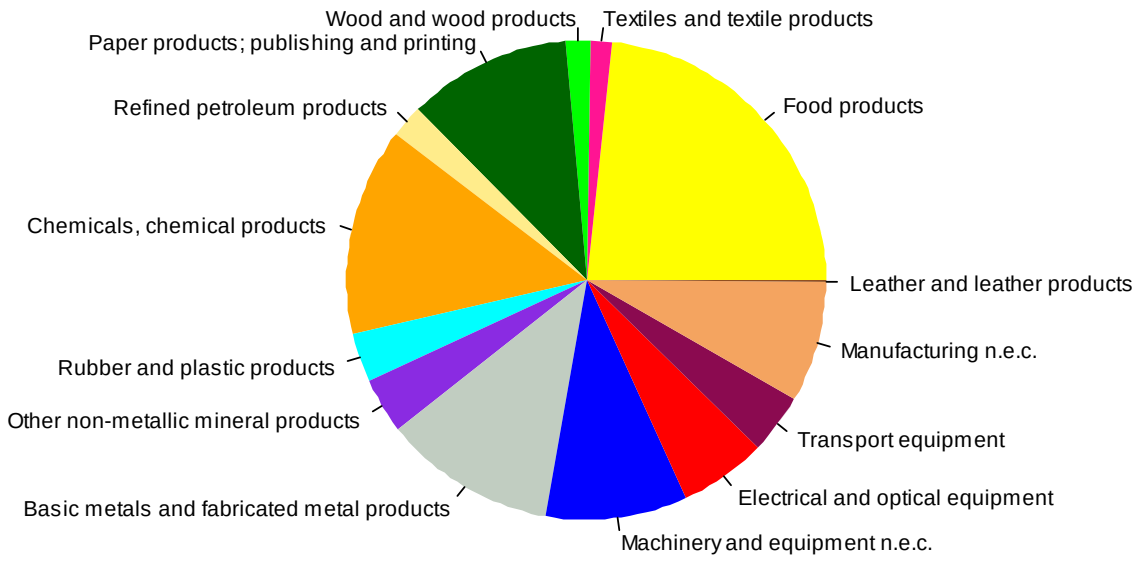
The knowledge triangle (education, research and innovation) is one of the areas in need of priority action. Better performance and interaction, and more effective public spending in these policy areas are instrumental to fully exploit the potential contribution of R&D to the competitiveness of its economy, and thus facilitate the structural shift towards more skill-intensive higher-value-added activities. The favourable business environment could be made even more attractive by streamlining administrative procedures for start-ups, higher availability of non-banking financing, and by improving the corporate governance practices.

## 4.20 Poland




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Poland (2005)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.20.1 Introduction[116]

*Trade and industry specialisation*

Manufacturing plays a more important role in Poland than in the EU as a whole (18.5 % against 14.9 % in 2009). Analysis at the manufacturing sector level shows that Poland is not specialised in technology-driven industries, but in most of the other industry types, such as marketing-driven (processing and preserving of fruit and vegetables, soap and detergents), labour-intensive (wood products, leather clothes) and mainstream manufacturing industries (domestic appliances, lighting, batteries). At the more aggregated sector level, Poland features low specialisation in the high innovation and high and medium-high education sectors, but above average relative shares in the low to medium (medium-high in innovation intensity) segments of these sectors, such as in tobacco, wood, non-metallic minerals, as well as textiles and rubber and plastics (medium-high innovation intensity).

Taking account of its industrial structure, Poland's R&D intensity is below average, as is its position on the quality ladder as evidenced by low shares in high price segments and high shares in low price segments across industries. This profile is very similar to its group of lower income countries featuring trade specialisation in knowledge-intensive industries (group 3), while in terms of industry specialisation Poland really is between countries specialised in labour-intensive (group 4) and countries specialised in knowledge-intensive industries. However, Poland has no trade specialisation in technology-driven industries, a lower specialisation in labour-intensive industries and a higher relative share in mainstream manufacturing compared to group 4, making its structure more akin to group 3.

Most prominent sectors in Poland

[116] For main sources used see the methodological annex. The cut-off date for all data and qualitative information is 31 August 2010.

| Highest relative value added (2007) |
|---|
| Furniture, jewellery, musical instruments, sports goods, games and toys |
| Water supply |
| Wood and products of wood and cork |
| **Change in the relative value added (1999/2007)** |
| *Increasing specialisation* |
| Recycling |
| Real estate activities |
| Rubber and plastics |
| Decreasing specialisation |
| Research and development |
| Coke, refined petroleum and nuclear fuel |
| Tobacco products |

*Structural change*

In terms of change, Poland has strongly increased its relative value added share in technology-driven industries (computers, optical instruments) and in mainstream manufacturing (domestic appliances), as well as its exports in education and innovation intensive sectors (computers, communication equipment) while its specialisation in labour-intensive industries (leather clothes, wearing apparel) has decreased.

Manufacturing production in Poland rebounded fast after the recent economic crisis, being 8 % higher in April 2011 than its pre-crisis peak. The impact of the crisis on Poland's economic structure was limited. Nominal unit labour costs have increased by 16% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. While labour productivity per hour worked has gradually increased over the last years, it is still considerably below the EU27 average.

Overall, Poland is clearly catching up with respect to competitiveness; its pattern of change has established it more firmly in country group 3. However, R&D investments have not yet followed the positive trend.

### 4.20.2 Towards an innovative industry

Compared with other European countries, Poland is one of the least innovative economies, ranked as a moderate innovator by the Innovation Union Scoreboard 2010. In particular, it has a relatively low share of innovating enterprises and of business investment in R&D. On the other hand, it scores around the EU average on the share of science and technology graduates.

Although the level of investment in innovation is rising, Polish companies in general rarely base their business strategies on innovation and tend to focus rather on short term investments in new machinery and equipment. This is partially caused by low absorptive capacities and lack of long term vision among entrepreneurs, especially in case of SMEs. This situation is also a result of frequent changes and uncertainty of the legal framework which discourages companies from more strategic planning.

Recently Poland has adopted comprehensive reforms of science and higher education sectors with an aim to boost research and innovation and improve the functioning of the tertiary education. The reform of science sectors has introduced more competitive rules for funding of research and decentralised implementation of science policy by establishing a National Science Centre dealing with basic research and a National Research and Development Centre in charge of applied research and cooperation with industry. According to the reform, the priority areas of research are to be defined in National Research Programme and strategic research programmes. The prioritisation of research projects and research agenda are to be assured through technological foresight that should identify growth potentials of industrial and service sectors and key technologies for the future. The initial strategic research programmes and projects, which engage science units and entrepreneurs, include carbon capture and storage and nuclear related technologies. There are also attempts to promote smart specialisation of the regions but it seems that more coordination will be necessary to ensure more realistic and coherent planning of research policies at the local level.

The reform of higher education has created a special pro-quality fund for higher education, additional funding for the so-called *"national leading scientific centres"* (abbreviation in Polish: *"KNOWs"*). The reforms have also introduced changes aimed at better use of the potential of the science units (i.e. research institutes and the Polish Academy of Sciences and its institutes), improvement in quality of the scientific research conducted at the institutes and in quality of education, improvement in management efficiency (i.e. improving the legal framework for reorganisation, commercialisation and liquidation of institutes) as well as greater autonomy of universities. Further initiatives are planned to increase the internationalisation of Polish science (i.e. new mechanisms supporting mobility of researchers and knowledge transfer).

The government is currently evaluating the ongoing innovation support measures. It will integrate the results of the evaluation in the new innovation strategy that should be adopted before the end of the year. It should allow focussing on the most effective support measures by the government. In the immediate a new support measure will be developed to help more effective management of clusters by providing targeted training to cluster

managers.

An outstanding challenge is the need to radically increase funding both for public and private research. The difficult fiscal situation might impede planned increases in spending on public R&D. Important part of public support comes from the structural funds through the Operational Programme – Innovative Economy and the Regional Operational Programmes. To match the plans of increased R&D support from public sources an important increase of budgetary spending would need to take place, which is currently difficult given the budget austerity plans. The underinvestment of the private sector is even more worrying and more ambitious policy schemes such as fiscal incentives for R&D that are considered by the government are more than necessary.

Workforce education remains one of the major obstacles for firm operation in Poland. Apart from advanced technical or vocational skills, it is often general competences that the young graduates are missing, such us responsibility and reliability, commitment, team working or self-management. The skills shortage is not only a result of the underperforming education system, but also of an ongoing restructuring of the economy that makes demand for skills rather unstable. The latest reform of general education with more focus on learning outcomes and the recent reform of tertiary education address many of these gaps. Concerning the low science and technology graduate numbers compared to industry needs, since 2008 the Ministry of Science and Higher Education has run an intensive programme to support universities and students of selected courses of interest for industry using the structural funds. The reform of higher education put particular emphasis on strengthening links between labour market needs and didactic offers, i.e. participation of employers in teaching and in evaluating its outcomes as well as obligatory and systemic monitoring by universities of their graduates' careers. What remains to be dealt with is improvement of life long learning system including adaptability of employees and expansion of early childhood development.

Important challenges remain, such as assuring adequate funding, especially from national funds, implementing effectively new legislative proposals to improve science-industry cooperation, especially in sectors that have already invested significantly in R&D, and promoting multidisciplinary profile skills for innovation in order to ensure that the supply of innovation skills meets the industry demand.

4.20.3 Towards a sustainable industry

The structure of the industry and, in case of some industries, use of older technologies continue to contribute to higher energy and carbon intensity. Poland is performing worse than the EU average with respect to the share of environmental goods in export, but has managed to reduce waste generation of enterprises following a recent introduction of a national waste management plan. Nonetheless, Poland has taken few steps to use the crisis to green the economy. From the Polish perspective EU climate action proposals can be a real challenge and burden for Poland's industry.

The recent projections of the World Bank indicate that the 2020 national target (+14 % for non-ETS sectors, compared to 2005 levels) may not be reached if no adequate actions are taken. The main challenge to be faced in the energy sector is the problem of uncertainty of investors about the possibility of obtaining permission for new capacities that soon must replace the aging generation capacities. Together with old transmission networks they could lead to undersupply of energy and increases in energy costs for end-consumers and industry. Moreover, the majority of planned investments are to be still based on coal due. This issue may require more intensive policy measures to change this bias and to meet the 2020 emission targets. Considering limited competition on the Polish energy market and slow progress in development of international connectors of the electricity grid, this might also result in passing carbon price increases into electricity prices.

To address this issue Poland plans also to build its first nuclear power plant which should be launched in 2020. However, taking into account huge funding requirements and rather unfavourable climate for development of nuclear energy sources, the implementation of these plans could be rather difficult.

Poland has high expectations for the Clean Coal technologies that could make its energy production from coal much more ecological. Consequently, relevant legislation as well as research on potential deployment of these technologies is underway. Poland has even launched a Carbon Capture Storage (CCS) demonstration project for an energy power plant. However, the break-even point for CCS is estimated for a carbon price of EUR 60 per ton, which means that today CCS seems to be not a cost-effective technology, posing a considerable risk of a rise in energy prices.

According to the adopted legislation (climate and energy package), by 2020 15 % of energy consumption in Poland should come from renewable resources i.e. (5 % less than the target

for the EU). In December 2010 Poland adopted the National Renewable Energy Action Plan aimed at reaching this target. The plan is to be fully implemented, but still the main source of support for investments in renewable energy sources would be coming from the European funds.

In addition, Poland intends to adopt in 2011 the 2nd National Energy Efficiency Action Plan which will define clearly responsibilities, deadlines and budgets. The current measures include subsidies for investments in thermo-modernisation of buildings and a system of white certificates for energy providers. It is necessary, though, to stimulate investments in energy saving in public buildings with reduced need for the engagement of public budgets, which requires a clearer and more favourable legal framework for energy performance contracting. Besides, a special attention needs to be paid to road transportation, buildings and agriculture sectors given their weight in the national emissions and the current trend.

The development of CCS technologies, the Renewable Energy Action Plan should indirectly stimulate the green industry sectors in Poland. The investment in thermo-modernisation of buildings and the future energy efficiency norms would have a similar effect. The government will support investments in the field of energy efficiency, allocating PLN 224.7 million for this purpose in 2011, which should encourage industry to become more energy efficient and stimulate green industries further. The government will also analyse the industry's needs in terms of raw materials in view to increase the efficiency of the use of raw materials.

### 4.20.4 The business environment

Poland scores slightly below EU average in most indicators related to business environment, in particular concerning satisfaction with the quality of infrastructure.

Spending on a new transport network, co-financed with the EU funds has accelerated in 2010. Also there are substantial modernisation works of local road networks. The forthcoming Euro 2012 gives an additional stimulus to improve infrastructure of the hosting cities and of the transport networks connecting them. Nonetheless, yet again the planned investments have been revised down in 2010 and the availability of funds for new projects is uncertain taking into account the need to consolidate public finances. Furthermore, it seems that there is a lack of proper cost-benefit prioritisation of investments and projects are run based on the possibility to spend European funds. Two years after adoption of the master plan for railways in 2008 Poland prepared the necessary implementation document, which is currently being negotiated with the EC. The negotiations will lead to a revision of the plan in mid-2012. This time lag in implementation results in a slow modernisation and development of railway transport. Moreover, the spending of cohesion funds is strongly focussed on the development of the road networks rather than railways. It is reinforced with recent requests of the Polish government to reallocate some structural funds initially planned for railway development to road constructions. The new integrated transport strategy to be adopted in 2011 is expected to address those issues and better balance new investments priorities in various transport modes.

As far as the gas market is concerned, the lack of possibility of third party access (TPA) is still an outstanding problem and Poland needs to further invest in gas interconnectors and domestic transmission pipelines in order to successfully address energy security and market liberalisation challenges. The construction of the gas terminal in Swinoujscie is ongoing, in spite of controversies over the Northstream pipeline that might be blocking the entry to the port for the largest tankers. The terminal is to be finished in 2014.

Despite some progress made in energy market competition and energy infrastructure, Poland's energy market is still rather isolated from the rest of the EU. The competition is limited by slow progress in development of international interconnections of the electricity grid and strong presence of the state. Given the high maturity of the existing power generation capacity and underinvestment in distribution grid, they might become soon a bottleneck to growth in Poland. Available projections of demand and supply of power indicate the need to significantly increase import of energy in Poland and to modernise interconnections with neighbouring countries. More efforts may also be needed to open up the Polish energy market to outside competition and to increase the market's flexibility.

Concerning legal and regulatory framework, in March 2008, Poland adopted a target of reducing by 25 % the administrative burden on businesses until the end of 2011 in seven priory areas: environment, land development plan, social security, economic activity law, hallmarking law, employment law, and tourist services. In 2008 the first phase was accomplished i.e. mapping of information obligations (IO) in these priory areas. In the same year a new project – Package for Entrepreneurship – was introduced. On the basis of these two initiatives, some concrete solutions for reducing the administrative burden started being proposed: amendments in the Code of Commercial Law

making it cheaper to set-up up limited liability companies; changes in the Civil Code facilitating business transfer to next owners; introduction of e-judiciary for small law suits; or increasing transparency in the taxation system. Furthermore, a major business environment reform – the act on reducing administrative burdens on entrepreneurs and citizens – came into force in July 2011. The objective of the act is to abolish licences and permits, replace redundant attestations issued by public institutions with declarations of honour as well as some other changes like: reducing court fees related to civil law cases, introducing a consumer leasing, introducing a possibility for an entrepreneur (natural person) to transform into capital company or to transform a cooperative society into commercial company. Since the launch of the Package, 19 major acts of law have been either implemented or amended in favour of businesses, particularly SMEs. Several other bill projects are still in preparation, notably another act on reduction of administrative burdens.

Poland has also recently implemented e-judiciary for certain legal proceedings. Still contract enforcement is not very easy due to lengthy judicial proceedings and legal enforcements. Obtaining construction permit is another unfavourable factor for business operation. It is not only a complicated and lengthy process but also very costly compared to other European countries. This together with a lack of predictable and binding local zoning plans is one of the main challenges to be dealt with.

The Regulatory Reform plan for 2009-2011 promotes preparation of better Impact Assessments, including impacts on SMEs. The Ministry of Economy has been providing training on impact assessment preparation since December 2009 with an intended number of almost 3 000 public officials from different ministries to be trained until the end of 2011. Currently, The Ministry of Economy is working on e-consultations which, when implemented in 2012, will strengthen the role of public consultations in new regulations. A manual for conducting such consultations was adopted in July 2009. The weak point of the system is that there is no single institution which would represent SMEs in public consultations, such as SME associations. Despite these systemic improvements, so far there are only a few examples of proper applications of the impact assessment or public consultations.

eGovernment usage by enterprises in 2010 was above the EU average and has increased since 2005. eGovernment policy is part of a wider Information Society Strategy until 2014 (adopted in 2008) and is focused on improving basic infrastructure across all levels of government. The technical platform has been already created but the local authorities do not have qualified resources or strategies to develop e-government services at their level. The use of e-signature is mainly restricted to the social security declaration.

### 4.20.5 Entrepreneurship and SME policy

Polish SMEs wait shorter for a payment by public authorities compared to their EU peers. The time to start a business should also shorten thanks to the fact that from July 1st 2011 each entrepreneur can register the business online through the Central Register and Information on Business Activity[117]. There is a similar share of SMEs in Poland compared to the EU. The main difference consists in a higher share of micro enterprises at the expense of small ones. It is most likely the artificial effect of self-employment visible in the statistics in the form of micro enterprises, but could also be the symptom of an enterprise growth problem. The structure of Polish enterprises is dominated by micro-enterprises (especially those with up to 2 persons employed) mainly active in trade and services. Majority of SMEs in Poland do not have mid and long term development strategies or plans for innovative activities. As a consequence they are not eager to use external financial sources.

The entrepreneurship attitude is one of Poland's main strengths while access to finance is at the EU average level. All remaining areas of SME policies could be improved. Foremost, the general business environment could be made more business friendly. The business registration procedures need to be made finally more efficient and its costs reduced. The bankruptcy procedures are still very long, but could be made shorter thanks to the ongoing 'second chance' programme of the Ministries of Economy and of Justice. The innovation capacities of Polish enterprises are also behind EU's average and their involvement in the single market as well. In the latter domain the government claims to ensure better monitoring of the EU law applications, but will need to redouble efforts to reduce the worrisome transposition deficit of internal market directives.

Although the one-stop-shop for business registration was introduced in March 2009, it has not been evaluated positively due to the lack of an integrated IT system. Such an integrated IT solution was lunched in July 2011 and it enables setting-up a company fully online within 24 hours (zero-stop shop). The central commercial register created for this purpose may be expanded further with increased functionality giving an opportunity for

[117] www.firma.gov.pl

further efficiencies in the functioning of public administration.

The Polish Agency for Enterprise Development (PAED) implements at full scale the project of its network of SME information and advisory centres. More than 100 of these centres located across Poland not only provide information, signpost to other more targeted information providers, but also offer tailored advisory services to entrepreneurs and start-ups.

To stimulate innovation in Polish SMEs the government has simplified access to the so called 'technology credit'. It could be a positive factor encouraging catch-up innovation, but its effects will need to be monitored. In particular, innovation in SMEs needs to be effectively supported by measures improving the innovation environment.

SMEs in Poland do not have yet access to public procurement equal to EU average. For this reason, to facilitate SME access to public procurement, legislative changes were made, the Public Procurement Office introduced further IT solutions and also launched a training programme for SMEs. The government took some limited measures to improve access to finance: one of the available sources in this respect is ERDF acting through the financial engineering instruments, the JEREMIE programme in particular. In principle, these lending operations should be directed to support more innovative investments. Further measures might be necessary to ease access to capital given a more restrictive attitude of banks towards lending.

4.20.6 Conclusion

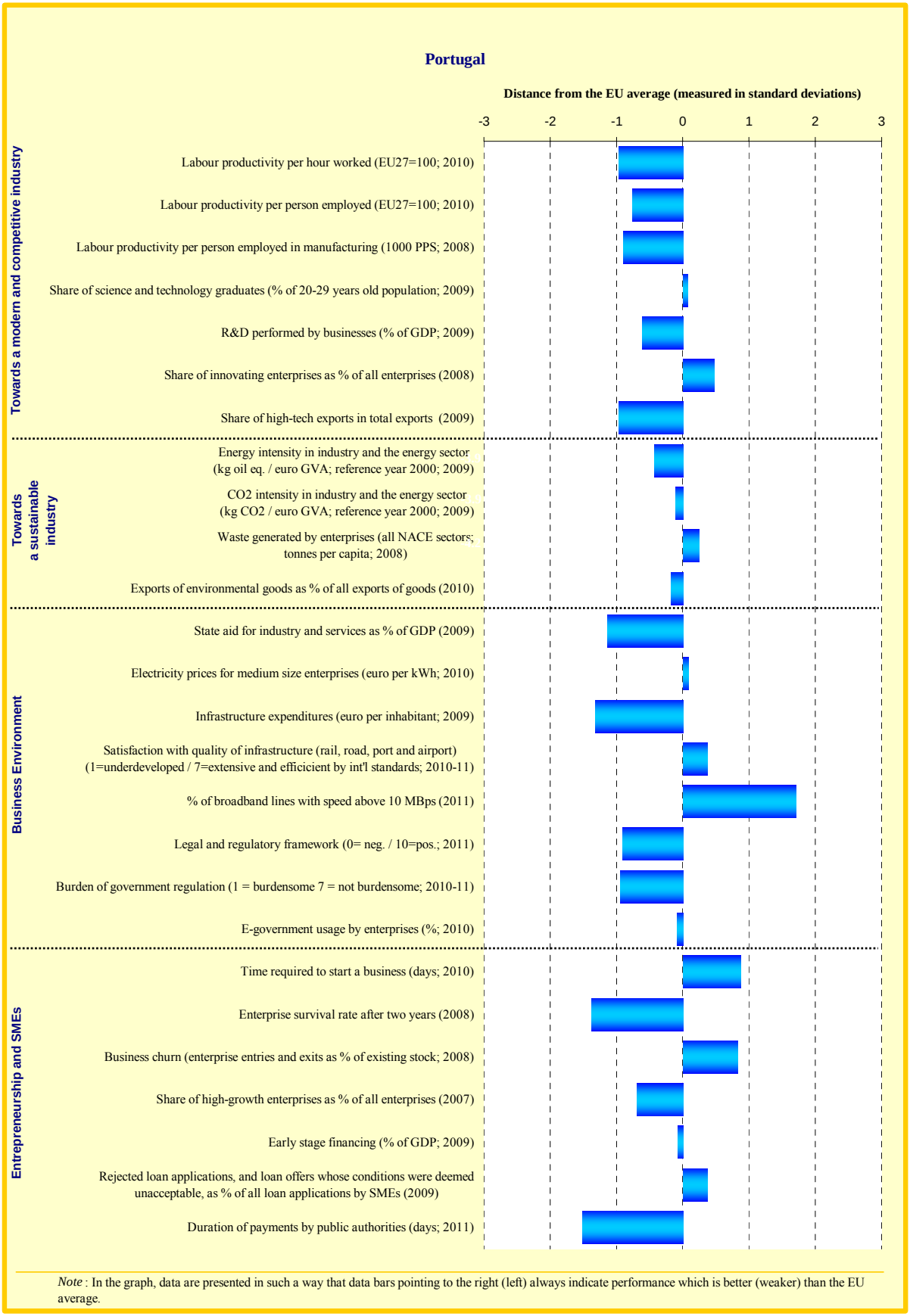
The Polish economy withstood well the crisis and continues to grow. Poland benefits from its position as a manufacturing hub for Europe and increasingly as a business service provider for many European and international companies. Yet, the country faces many challenges and could fare better with improved policies.

Despite government's efforts to solve some of these issues, entrepreneurs keep on complaining about persistent administrative burden and an inefficient administration apparatus. The general improvement of business environment requires more efficient and stable governance. This implies simpler and more transparent regulations, steadily improved efficiency of public administration and of the judiciary as well as enhanced e-government services.

Furthermore, underdeveloped transport infrastructure does not match the raising transportation needs of the expanding economy. Similarly the energy infrastructure is not adequate to facilitate competition or to assure stable and secure electricity provision. The latter will need to be upgraded especially to meet the environmental challenges and to replace the obsolete generation capacities without increasing the prices of energy excessively.

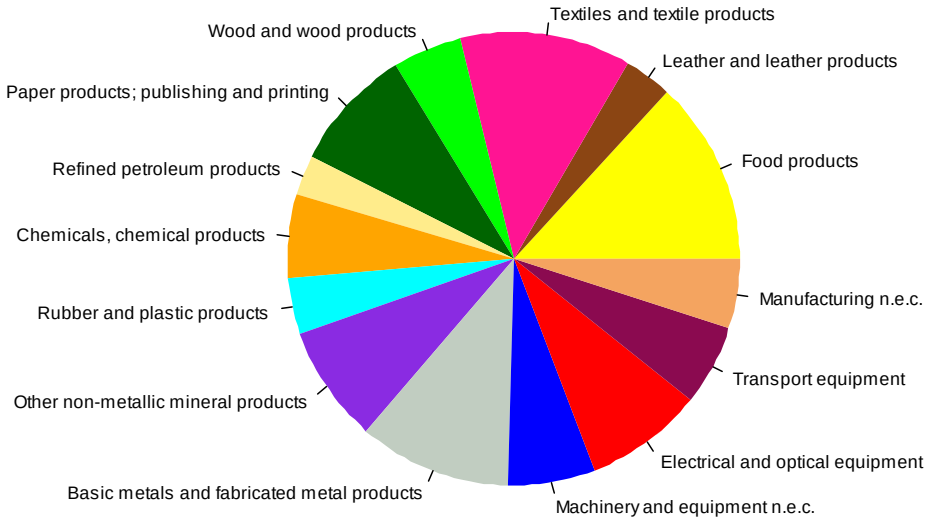
Finally, the low level of innovation becomes an increasingly important challenge to make the growth of the Polish economy more sustainable in the longer term. Adopting and creating new technologies and social innovations would help Poland to keep its economic activity up and to cope with external competition. To achieve this, industry needs to prepare and implement long-term development strategies and invest more in human capital development, innovation and R&D, and SMEs need more organisational skills to develop business in a fast changing environment. Incentives to develop growth poles and measures to link universities with industry more effectively would also help.

## 4.21 Portugal




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Portugal (2005)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

### 4.21.1 Introduction

*Trade and industry specialisation*

Manufacturing plays a similar role in Portugal than in the EU as a whole (14.6 % against 14.9 %). At the detailed manufacturing industry level, Portugal is highly specialised in labour-intensive (low-skill) industries (wood and cork, cutting and finishing of stone, made-up textile articles) as well as in capital-intensive (cement, refined petroleum) and marketing-driven industries (footwear). At the more aggregated sector level, Portugal features specialisation in low and medium-low innovation and education sectors (wood and cork, leather, wearing apparel). Its share of exports to the BRIC countries is low, thus not taking full advantage of the opportunities offered by these high-growth emerging economies.

Portugal's R&D intensity is slightly below average given its industry structure, while its position on the quality ladder is clearly below the EU average. While Portugal is very similar to its group of higher income countries specialised in labour-intensive countries in terms of specialisation, in terms of sectoral upgrading it shows better R&D, but worse quality performance.

Most prominent sectors in Portugal

**Highest relative value added (2007)**
Leather, leather and footwear
Wearing apparel, dressing and dyeing of fur
Textiles and textile products

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Tobacco products
Air transport
Recycling
Decreasing specialisation
Hotels and restaurants
Wearing apparel, dressing and dyeing of fur
Non-metallic mineral products

*Structural change*

In terms of change, Portugal has decreased its specialisation in labour-intensive (textile weaving, other wearing apparel and accessories) and technology-driven industries (electronic valves, electrical equipment), but increased specialisation in capital-intensive (cement, articles of concrete and cement, refined petroleum) and marketing-driven industries (luggage and handbags). At the sector level, the relative share of high education sectors has increased (computers, research and development, software, business services), while developments in high innovation sectors have been split between trade (decreasing) and value-added (increasing). The specialisation in low innovation and education sectors is unequivocally decreasing

(e.g. apparel, hotels and restaurants). Portugal has substantially improved its R&D intensity, taking into account its industrial structure, and moved into higher-quality segments across industries. However, the share of low quality segments has also been rising.

Manufacturing production fell by more than 20% during the crisis and has recovered only modestly (by 2.7 %) since then. The impact of the crisis on Portugal's economic structure was limited, with only technology-driven industries declining even faster than before the crisis.

Portugal has experienced an appreciation of the real effective exchange rate by 15% over the last decade, which is below the EU27 average (21%), indicating nevertheless a loss in cost and price competitiveness. Nominal unit labour costs have increased by 25% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. While labour productivity per hour worked has gradually increased over the last years, it is still about 35 percentage points below the EU27 average and about 49 percentage points below the Euro area average.

Overall, Portugal faces an unfavourable competitive position, while the pattern of change is mixed, with some areas improving (knowledge-intensive services, R&D, high-quality segments) but others deteriorating (knowledge-intensive manufacturing, low quality segments).

The vulnerability of the Portuguese economy, exacerbated by the economic and financial crisis, rendered sustainable refinancing difficult and led Portugal to request financial assistance on 7 April 2011. Financial assistance to Portugal (from EFSM, EFSF and IMF) was approved by the ECOFIN council on 17 May 2011 (on the basis of an agreed Memorandum of Understanding on specific Economic Policy Conditionality - hereafter MoU - programme). The MoU includes significant fiscal consolidation measures, efforts to safeguard the financial sector and ensure a smooth deleveraging process and a set of comprehensive and frontloaded structural reforms aimed *i.a*. at unlocking growth potential and creating more jobs and the conditions for future productivity growth. In particular, Portugal needs to create more favourable conditions for investment, innovation and entrepreneurship, to improve its overall business environment, foster competition, economic flexibility and speed up adjustment to structural change.

4.21.2 Towards an innovative industry

Portugal continued improving its overall innovation performance and is now leading the group of moderate innovators identified in the Innovation Union Scoreboard 2010. Its relative weaknesses are in a low business R&D investment and low high-tech-exports. On the other hand, its strength is a relatively high share of science and technology graduates. R&D expenditure reached 1.71 % of the GDP in 2009 (close to 1/2 in the private sector).

Portugal made a considerable effort and adopted a wide set of public policy measures promoting R&D and innovation in the recent years. Important structural measures included the Technological Plan, a sustained favourable tax credit framework for R&D expenses (SIFIDE is one the most competitive tax credit system for R&D in the EU27) and series of programmes and incentives, largely supported by EU funds, targeted at backing innovation and R&D investment by SMEs and their cooperation with research institutes and universities (e.g. through R&D and innovation vouchers) and public policy measures aiming at the promotion and development of clusters and technology and competitiveness poles) or implementation of technology clusters.

Measures recently adopted included granting additional tax advantages (through SIFIDE) for expenditures incurred by SMEs in contracting Doctorates, or the "Zero rate for innovation" programme, exempting innovative SMEs and start-ups from paying public services charges and fees.

Portugal has also started preparatory works and public consultations for a comprehensive strategic initiative on Entrepreneurship and Innovation, aiming the improvement of business environment, the reinforcement of linkages between science and industry, the creation of better conditions to attract venture capital investments and the development of an entrepreneurial and innovation culture in our society.

In line with the EU2020 Strategy, Portugal has launched the Digital Agenda 2015 in order to provide further impetus to the development of firms and high value added ICT products and services applied to different domains and economic sectors. The Digital Agenda 2015 is now being reinforced having in consideration the priorities of the new strategic initiative on Entrepreneurship and Innovation.

The challenges ahead include maintaining, to the extent possible (giving the demanding macroeconomic adjustments ahead), the efforts and investments in R&D and innovation, and at the same continue improving the efficiency and visibility of outputs and economic effects of

innovation. Continuing the efforts in reducing administrative burden, improving the efficiency of public services and promoting adequate access to finance - including effectively reinforcing the mechanisms of public and private risk capital and the attraction of international venture capital - are crucial framework conditions to attract and foster investments with high innovation potential.

4.21.3 Towards a sustainable industry

Portugal has adopted a series of comprehensive programmes and important initiatives promoting sustainable growth, renewable energies and some eco-industries. Further to the National Strategy for Energy 2020 presented in April 2010, Portugal adopted in July 2010 the National Action Plan for renewable energy (PNAER 2020). The PNAER aims at achieving an ambitious quota target of 31% of gross final energy consumption and 60% of electricity production from renewable sources by 2020 and sets out detailed targets and development plans and actions per different types of renewable energy (Hydro, Wind, Solar, Biogas and Waste, Biofuels, Geothermal, etc.). Portugal introduced significant incentives, made large investments and is one of the leading EU countries in the development of renewable energies (e.g. in 2010, 52 % of the gross electricity consumption was sourced from renewables). An example of the promotion of eco-industries is the MOBI.E programme (including tax incentives for the acquisition of electrical vehicles and the development of a pilot infrastructure that in June 2011 had 1 300 charging points -50 of which for quick charging- covering 25 municipalities) as a basis for the development of sustainable mobility in Portugal.

The National Strategy for Energy 2020 sets out a 20 % target for energy efficiency gain by 2020 (superseding the -2008-2015- 10% reduction in energy consumption target foreseen in the National Action Plan for Energy Efficiency adopted in 2008). Some of the specific measures adopted to improve energy efficiency include: i) a management system for energy intensive firms, put in place in 2008, covers now 850 industrial installations (representing around ¼ of the energy consumption by industry and construction). Installations submit and discuss energy rationalisation plans (including setting out minimum energy efficiency thresholds), are object of regular energy audits and benefit from some financial incentives for their energy related investments and expenditures; ii) Set up of the Energy Efficiency Fund in May 2010 (and definition of eligibility conditions in January 2011) aimed at supporting investments and equipment acquisition improving energy efficiency by companies and households. iii) The Energy Agency performs audits to houses and buildings resulting in 417 000 energy certifications up to May 2011; iv) promotion of smart electricity grids and launch of pilot experiences in some cities; v) some thematic energy efficiency awareness and information campaigns e.g. in transport, housing, work, etc.

The Ecological Public Procurement intends to incorporate ecological criteria in public procurement, environmental policy and sustainability, giving priority to climate change and the problem of CO2 emissions.

Energy efficiency, the coherence and cost-efficiency of energy related incentives adopted and their effect on competitiveness, in particular for the industry, continues to be an issue. Portugal will review existing energy related instruments, including taxation and energy incentives, introduce modifications to ensure that they provide incentives for rational use, energy savings and emissions reduction (MoU paragraphs 5.13-5.14).

4.21.4 The business environment

Portugal scores significantly above the EU average in the availability of high-speed broadband lines but below the average in other indicators related to the business environment such as the legal and regulatory framework.

Portugal has made e-Procurement mandatory for all contracting authorities and virtually all purchases (small value contracts may still be conducted on paper) since 1 November 2009. According to the latest figures, 75% of public procurement was carried out electronically in 2010.

The continued implementation of programmes such as the "Simplex", "Legislar Melhor" and e-Government initiatives has overall reduced administrative burden with positive effects on business conditions. Recent measures include a new ("Simplegis") programme adopted in 2010, aimed at simplifying and improving the quality of legislation, facilitate citizens and firms access to legislation (e.g. by publishing online summaries in plain language of legislative acts), and improving enforcement. An ex-ante impact assessment for all government legislative acts was introduced as from January 2011. An "SME test" (for evaluating the effects of new legislation on the competitiveness of SMEs, the large majority of companies in Portugal) is not included in the impact assessment. Examples of other positive initiatives recently adopted include: the "Zero Licensing" programme that is now being tested and will be fully implemented in 2012 (introducing a simplified electronic registration process, eliminating licences,

authorisations and other similar administrative acts for setting-up and running business activities such as shops, restaurants, bars); simplifications and a lower threshold (EUR 10 million instead of EUR 25 million) for projects to be granted PIN ("Projectos de Interesse Nacional") programme treatment (streamlined approval procedures). Examples of announced forthcoming initiatives include the "Simplex Exports" programme (aimed at reducing administrative burden for exporting companies) are also welcome.

Actions are being developed and reinforced in certain areas, such as dealing with construction permits, taxation complexity and compliance costs for firms, the full implementation of simplification programme for Municipalities ("Simplex Autárquico"), or the simplification of procedures to attract national and foreign investment. Other key areas include (as indicated in the MoU) improving the efficiency of public services, particularly in the judicial system and in the application of competition rules, promote competition and flexibility overall and in particular in the energy and transport sectors, other network industries, services and housing markets, broadening the scope of the "Zero Licensing" programme.

4.21.5 Entrepreneurship and SME policy

The SME sector in Portugal is relatively more important than in the EU as a whole and is dominated by micro firms (accounting for 40 % of total employment compared to the 30 % in the EU). Portugal performs significantly better than the EU average concerning the time required to start a business and the business churn but significantly worse concerning the firm survival after two years and duration of payments by public authorities.

Portugal adopted during the crisis a set of important measures easing access to finance to SMES (the large majority of Portuguese firms and highly dependent on bank credit for funding). Supported by Structural Funds' contributions, the series of credit lines "PME Investe" and "QREN Investe", targeted to specific sectors or exporting SMEs provided a total volume of credit of EUR 7.9 billion to 55 000 SMEs (including micro-sized companies) since July 2008 (total capacity of these credit lines EUR 9.7 billion). Other significant measures easing liquidity and financing constraints for SMEs included: reinforcement of the National Mutual Guarantee System (with total of EUR 5.7 billion outstanding guarantees in 2010, + 48 % compared to 2009) and credit export insurance lines; some progress in the reduction of late payments by public entities (although recently there was again a deterioration, particularly in some health care areas and in municipalities) and, as from 1st September 2010, mandatory payment of interest by the state and other public entities (including municipalities) in case of late payments; program of annual ("SME leader" and "SME Excellence") awards granted to best economic and financial SME performers, improving financing conditions for these SMEs; some efforts have been made in the promotion of venture capital funds, ~~and~~ including Business Angel initiatives; introduction of a number of fiscal simplifications and incentives for the recapitalisation of SMEs and programmes supporting reorganisation, concentration or the transfer of the ownership of SMEs (including management buy-outs or real state sale and lease back operations).

In this context, several measures were implemented specifically aimed at promoting exports and the internationalisation of SMEs, such as the programme “Internationalisation for Growth”, (“Internacionalizar para Crescer”) by AICEP Portuguese Foreign Investment Agency.

Portugal needs to effectively further develop alternative (equity related) funding mechanisms for SMEs, taking into account the current budgetary constraints. At the same time, it needs to monitor indebtedness, secure (re)financing in the short term to economically viable SMEs, particularly young and more vulnerable SMEs highly dependent on banking loans, promote liquidity conditions for business by timely implementing the New Late Payments Directive (as indicated in the MoU).

Portugal has a structural weakness in the quality of entrepreneurship and some measures have been adopted for the direct promotion of entrepreneurship skills: a training program for managers of micro and SMEs, aimed at improving their managerial skills; the Institute of Employment and Vocational Training runs a programme actively supporting entrepreneurship and self-employment, including by those receiving unemployment benefits; the EU structural funds through some programmes within the QREN are also being used to actively support entrepreneurship, including female entrepreneurship, through training and coaching measures oriented for SME managers and its human resources; a National Plan for Entrepreneurship Education ~~entrepreneurship was introduced in the curriculum~~ tested in ~~of~~ around 130 ~~secondary~~ schools between 2006 and 2009 is ~~this project is~~ currently being evaluated, aiming at the development of integrated measures to stimulate an entrepreneurial culture in schools.

Further proactive promotion of entrepreneurship is required and it is one of the concerns for the next months under the new strategic initiative on Entrepreneurship and Innovation. Possible areas of action include: exploiting further the existing

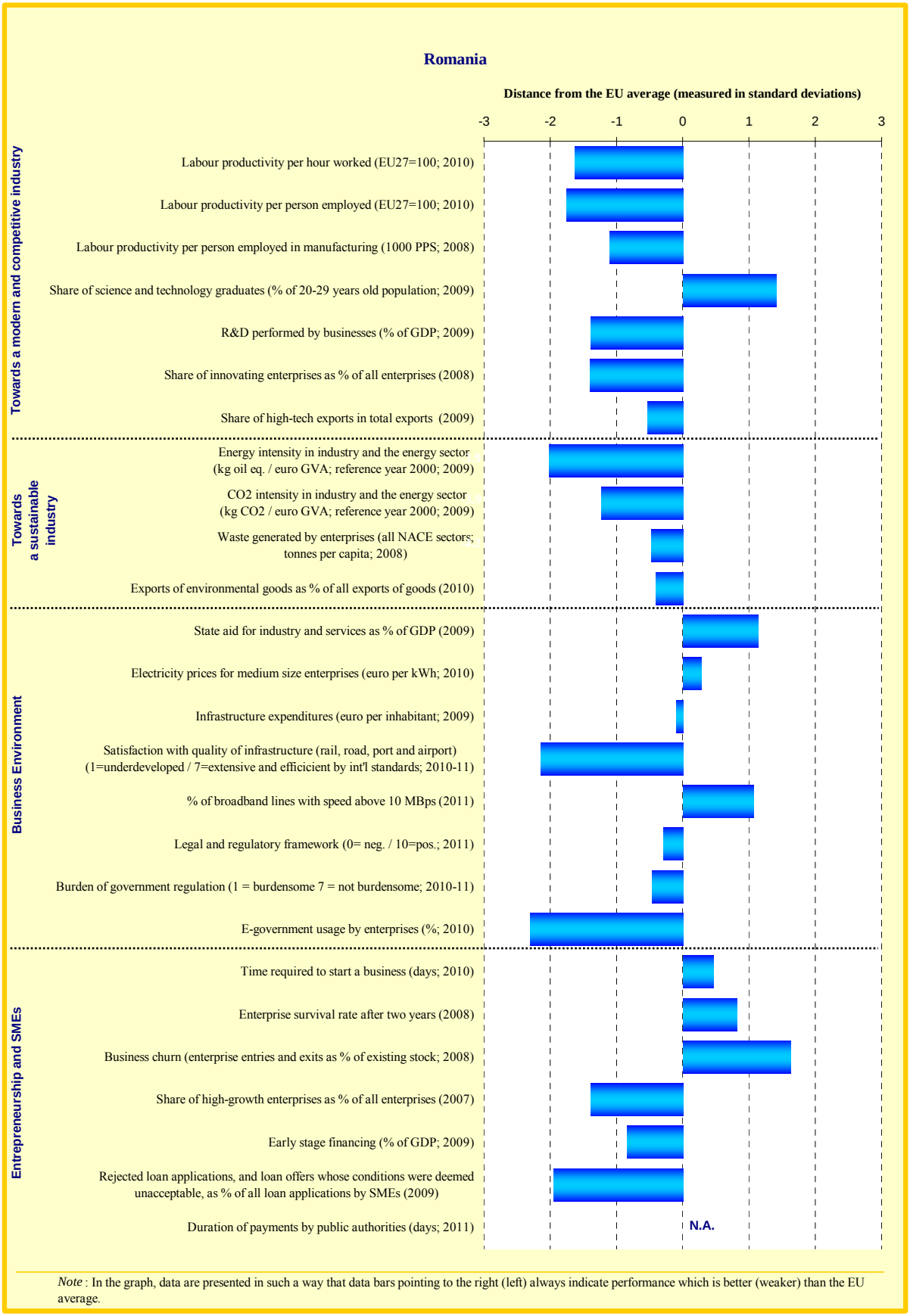
knowledge, experiences and good-practices (e.g. in its Research and University system and other initiatives from the civil society such as awards granted to the Portuguese Diaspora by Cotec); promoting second chance and a wider range of restructuring options in the revision of the insolvency law (foreseen in the MoU).

### 4.21.6 Conclusion

Portugal would benefit from maintained and reinforced efforts to promote research and innovation, from an integrated policy to boost entrepreneurship and overall skills development. Further, it could continue to support a gradual transition to a sustainable, low carbon, energy and resource efficient economy. Equally important is securing access to finance under regular conditions to economically viable SMEs, particularly young SMEs and start-ups, and effectively develop alternative funding and recapitalisation mechanisms for SMEs, including venture capital and business angels.

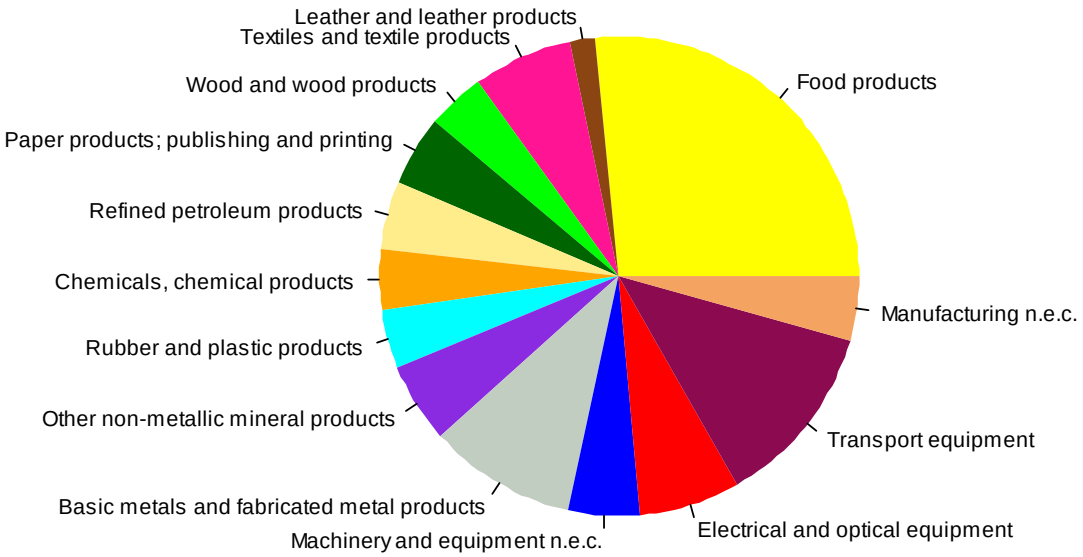
The full implementation of the set of structural measures included in the MoU (such as fostering competition, particularly in the services sector and network industries, further administrative simplification, burden reduction and greater efficiency of public services, notably in the judicial system) will improve business conditions, contributing to unlocking growth potential the creation of more jobs.

## 4.22 Romania




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Romania (2008)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.22.1 Introduction

*Trade and industry specialisation*

Manufacturing plays a bigger role in Romania than in the EU on average (22.4 % vs. 14.9 % of total value added). As a consequence, Romania ranks among the EU Member States with the highest share of manufacturing in GDP and the lowest share of market services. At the detailed manufacturing industry level, Romania is highly specialised in labour-intensive industries (preparation and spinning of textile fibres, sawmilling, wearing apparel and accessories), as well as in capital-intensive industries (cement), and marketing-driven ones (value-added only; footwear). At the more aggregated sector level, Romania features specialisation in low innovation and education sectors (wearing apparel, leather), but also in medium-high innovation sectors (textiles, basic metals).

In line with its group of lower income countries specialised in labour-intensive industries (group 4), Romania's R&D intensity considering its industrial structure is below average and its position on the quality ladder is far below the EU average.

Most prominent sectors in Romania

**Highest relative value added (2007)**
Wearing apparel, dressing and dyeing of fur
Leather, leather and footwear
Water supply

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of fuel
Computer and related activities
Real estate activities
*Decreasing specialisation*
Wearing Apparel, Dressing And Dying Of Fur
Water supply
Tobacco products

*Structural change*

In terms of change, Romania is again very similar to group 4, with strongly increased relative share of technology-driven industries (radio and TV transmitters and receivers) and of mainstream manufacturing (motorcycles and bicycles, isolated wire and cables), as well as of high-education and innovation-intensive sectors (communication equipment, software), and decreasing specialisation in labour-intensive industries (leather clothes, dressing and dyeing of fur, cutting and finishing of

stone) and low innovation and education sectors (apparel). Romania has climbed the quality ladder in labour-intensive industries, but not in technology-driven ones. Its sectoral R&D intensity is declining relative to the EU, probably partly as a result of the pronounced change in specialisation patterns towards the parts of the value chain in knowledge-intensive industries which are not knowledge-creating.

The impact of the crisis on manufacturing production was moderate (around -13 %). By April 2011 it had reached its previous cyclical peak. In Romania, the crisis seems to have accelerated structural change towards technology-driven industries at the expense of capital-intensive industries.

Romania has experienced a strong appreciation of the real effective exchange rate over the last decade (80%, compared to 21% in the EU27), indicating a loss in cost and price competitiveness. Here, the significant increase in nominal unit labour costs (326%) between 2000 and 2010 coupled with high inflation played an important role. While labour productivity per hour worked has gradually increased over the last years, it is still about 58 percentage points below the EU27 average.

Overall, Romania is clearly catching up with respect to competitiveness as evidenced by quickly changing structures, but needs to pay attention to sectoral upgrading in terms of quality and R&D.

### 4.22.2 Towards an innovative industry

Romania is classified as a modest innovator according to the Innovation Union Scoreboard 2010, with a performance well below the EU average, partly due to a relatively low share of innovating enterprises and low business investments in R&D. Still, its growth rate makes Romania one of the growth leaders in the 'catching–up' group of countries.

Romania's economy is characterised by the prevalence of low- and medium-technology sectors, with low demand for knowledge and with an underdeveloped innovation culture. The innovation infrastructure and mechanisms are still at an early stage of development. This situation is due to a large extent to chronically low public and private R&D and innovation expenditures (the latter may be somewhat underestimated since enterprises face few incentives to report such expenditures correctly). Low levels of business R&D and innovation both in large firms and SMEs, are rooted in turn, in several structural and managerial deficiencies, such as the reluctance of firms to take on financial and commercial risks arising from R&D and innovation, poor financial services and instruments to mitigate risks, little awareness of the funding opportunities for innovative enterprises that have recently become available, the excessive reliance on government funds, and the low share of funding attracted from EU funds and other sources.

The current set of innovation policy instruments in Romania includes direct instruments, which continue to be the dominant funding mechanism, and a few indirect instruments, such as tax incentives, which are still largely insufficient. There are three main instruments: (1) the *National Plan for RDI 2007-2013*, which is oriented towards enterprises with a view to support innovation, technological development and implementation of research results in industry, (2) tax allowances of up to 120 % of R&D and innovation investment (through an increase of the deductibility of R&D and innovation expenditure from 100 % to 120 %) and (3) accelerated depreciation on machinery and equipment used for R&D and innovation activities since January 2009. Moreover, the OP *Increase of Economic Competitiveness* provides support for several R&D and innovation activities with the aim of increasing the R&D capacity, stimulating the cooperation between R&D and innovation institutions and enterprises, and increasing the enterprises' access to R&D and innovation. In addition, the adoption at the end of 2010 of the Public-Private Partnership Law created the legal basis in order to foster investments, including those in R&D.

Given the reduction of public R&D and innovation spending in 2009 (50 % less than foreseen in the multiannual planning and 25 % less than in 2008) and with no significant changes thereafter, there are concerns about how to ensure adequate funding for ongoing research programmes and projects. In light of this, the Romanian government adopted in May 2010, in line with the conditionalities attached to the Memorandum of Understanding (MoU) of the EU financial assistance to Romania concluded in June 2009 in the framework of the EU-IMF adjustment programme, a plan setting out a number of measures with a view to improve the efficiency and effectiveness of R&D and innovation. These measures aim at facilitating the adjustment to more limited financial resources, ensuring the consistency of R&D and innovation policies and programmes, stimulating private sector activities, as well as establishing and implementing uniform procedures for monitoring and evaluation of R&D and innovation activities.

The challenge remains to increase the innovative potential of enterprises, particularly SMEs. Another major challenge is to improve technology transfer and the business support infrastructure (business

incubators, technology transfer offices, science and technology parks and clusters) which is still underdeveloped and poorly functional, in spite of recent significant improvements. In this respect, there are bottlenecks in the absorption of foreign technology as well as challenges to reduce high innovation costs, particularly for SMEs, which could be addressed through appropriate assistance programmes, the availability of information regarding technology, and facilitating access to financing instruments.

Moreover, partnerships among industry, university and R&D institutions could be improved and public funding could be used more to leverage private sector investments, strengthen links between business and research institutes and better adjust research to market needs.

A cross-cutting challenge is the shortage of a medium and highly skilled labour force. The high share of science and technology graduates and the quality of math and science education are not converted into competitive advantages, partly due to the higher-education system suffering from repeated institutional changes, and substantial brain drain. In this respect, a new National Education Law was adopted at the end of 2010 in order to substantially reform the education system.

### 4.22.3 Towards a sustainable industry

The sluggish restructuring of the industrial base which, prior to 1989, was characterised by a high-share of energy-intensive and non-sustainable industries and a poor energy-saving culture, has resulted in out of date technologies and equipment which does not meet contemporary environmental standards. In addition, foreign direct investment in manufacturing industries has shown a clear preference for low-technology and energy-intensive sectors. As a consequence, the environmental performance of the Romanian industry remains relatively poor. Although considerably improvements can be noted, energy-intensity in industry is still the third highest in the EU while the amount of waste per inhabitant generated by enterprises is almost twice the EU average. At the same time, exports of environmental goods score well below the EU average.

The main funding instrument for environmental policy is the Operational Programme *Environment* with a total budget of EUR 5.6 billion (EUR 4.5 billion EU contribution and around EUR 1.1 billion national public participation) over the period 2007-2013. The Operational Programme *Increase of Economic Competitiveness* provides also funding for the development of eco-efficient production, for increasing energy efficiency and for promoting renewable energy sources. Major recent initiatives with direct relevance to industry are the state aid scheme for promoting the upgrading of existing and the construction of new electricity and heat generating capacity, and the Rabla programme for stimulating the renewal of the car fleet.

On an institutional level, main developments include the government decision to implement the various Regulations and Directives on eco-design requirements for the energy performance of energy-using products as well as setting up the basis of the 2010-2013 roadmap for the implementation of the Romanian *Environmental Technologies Action Plan* (ETAP Romania). The *National Action Plan on Green Public Procurement* (GPP) which sets multi-annual green procurement targets for different categories of products and services will be finalised by the end of 2011. Targets are currently being discussed but no specific measures have been taken. Finally, an inter-ministerial working group was established in April 2010 in order to develop the Romanian strategy on electric cars, but again no action has been taken so far.

As one of the most energy-intensive economies in Europe, improving energy efficiency should be a key priority in Romania. Whilst some measures are already foreseen in the context of the Operational Program *Increase of Economic Competitiveness*, an ambitious and integrated strategy is now required to improve radically the energy efficiency of production in order to reduce energy dependency, curb $CO_2$ emissions and reduce costs for end-users. Moreover, complying with environmental standards, which is essential for industrial competitiveness, will require significant financial efforts to support the adoption of standards, upgrade productive processes, and implement environmentally friendly, eco-efficient technologies. Given scarce financial resources, further efforts should therefore be made to increase the use of EU Structural Funds.

### 4.22.4 The business environment

The business environment in Romania is characterised by weak administrative capacity at both central and local level. Insufficient structural and institutional reforms have resulted in a cumbersome regulatory environment, characterised by a lack of transparency in decision-making processes and significant red tape in all sectors of the public administration. The high number of authorisations and permits combined with delays in obtaining them, as well as the world's second highest number of tax payments (113) are responsible for the weak position of Romania in various international rankings. Moreover, the underdeveloped road and rail infrastructure is also a

drag on economic competitiveness.

In accordance with the requirements set through the MoU of June 2009the *Law on the reorganisation of public authorities and institutions, streamlining public spending and supporting the business environment* adopted in 2009, and the *Laws on salaries of the civil servants* adopted in 2009 and 2010 include several measures to reduce budgetary expenditure and to help businesses to overcome the economic crisis. Furthermore, in order to consolidate the achievements of the 2009-2011 EU-IMF adjustment programme, a precautionary EU-IMF programme for 2011-2013 was concluded in 2011. The new programme puts a strong emphasis on structural reforms in product markets (in the energy and transport sectors), namely to strengthen corporate governance of State Owned Enterprises (SOEs) and to improve the collection of the arrears in the economy based on quarterly targets. As a consequence, a new legal framework aiming at introducing private management in the SOEs is in place and a decision on the first 5 companies that will benefit from private management has been taken. In addition, the Government adopted the strategies for the privatisation of 4 SOEs in the enrgy sector and 1 SOE in the quarrying sector. In the context of the 2009 MoU, several structural reforms that should contribute to improving the business environment have been initiated over the period 2009-2010. A functional review of the public administration led by the World Bank – which aims at addressing both specific challenges in individual ministries and the systemic problems that may require a government-wide approach – started in 2010; it was carried out in two phases and finalised in May 2011. Based on its outcomes, both the government and the individual institutions under investigation have adopted action plans in order to implement the recommendations on how to streamline decision makings processes and strengthen strategic planning. However, to this day the government has taken no steps to implement its action plans (a first set of action plans of which was adopted already at the end of 2010).

Romania recently amended regulations related to construction permitting to reduce fees and expedite the process while property registration was expedited with the introduction of new procedures at the land registry and cadastre. Substantial amendments to Romania's bankruptcy laws were also made which introduce, among other things, a procedure for out-of-court restructuring negotiations.

Institutionally, reform efforts are underpinned by the creation of a National Competitiveness Council and the establishment of the Business Environment Department (DMA) within the Ministry of Economy, Trade and Business Environment (MECMA). The Department has prepared an *Action plan to improve the business environment,* which provides for a set of measures to support Romanian entrepreneurs. Some of the measures are merely conceptual, while others comprise substantial actions such as the introduction of a voucher scheme which allows SMEs to purchase consultancy services for innovation purposes, the creation of a credit facility, or setting-up companies by young entrepreneurs.

A *Better Regulation Strategy* for the period 2008-2013 was adopted in 2008. Romania assumed a national target of 25 % for administrative burden reduction by 2012 and the identification of information obligations was completed in June 2009 (4.430 information obligations were identified in 13 sectors). The present stage involves the measurement of administrative costs in 11 fields. In parallel, the development of a sector-specific methodology to improve *ex ante* impact assessments in the field of education and health was completed. It should also be noted that the number of taxes and tariffs in the area of para-fiscality has been reduced substantially from 491 in early 2009 to a total of 237 today. At the same time, the single statement regarding social contributions and record of insured persons were implemented by January 2011. Finally, work is ongoing to draft an *Administrative Code* and an *Administrative Procedure Code*.

Romania has also taken a number of measures to improve the quality of public services via Internet. Ambitious objectives for eGovernment and eBusiness have been set through the *Governmental Strategy for Broadband Communications Development in Romania* for the period 2009-2015, which was adopted in 2009. However, very little progress has been made in the implementation of this Strategy. Moreover, the creation of a national portal (eRomania) is under way, but has not made visible progress. It should be noted that in March 2011 was launched 'Ghiseul.ro', the electronic system for the payment of taxes, duties and fines, operational at present only in several local administrations.

While the size and scope of the government program for infrastructure investment appear rather ambitious, both the timeline for its implementation and its financial underpinnings are unclear. Furthermore, ICT up-take by enterprises and administration is still low, in particular in rural areas, in spite of a percentage of broadband lines with speed above 10 MBps above the European average.

By cutting red tape and developing the information

society, the measures already initiated or foreseen address some deficiencies in the business environment. However, strengthening administrative capacity remains the key challenge to be addressed. Thus, implementing timely and effectively the recommendations of the functional review of the public administration currently led by the World Bank is an important undertaking. Another major challenge is to continue and broaden the scope of administrative simplification initiated in the frame of the MoU conditionalities. Since many of the categories of authorisations and permits already simplified do not have a significant impact on businesses, particularly on SMEs, it is essential to further extend the inventory to other areas of the public administration and to work in close collaboration with stakeholders and the business community. Although a massive reduction in the number of taxes and tariffs in the area of para-fiscality has been implemented, the administrative and fiscal burden remains a challenge. Above all, a massive reduction of the number of tax payments is essential. Last but not least, sufficient and timely investment in transport and communication infrastructure will be critical to improving competitiveness and attracting investment in the longer run.

### 4.22.5 Entrepreneurship and SME policy

SMEs are prevailing in the Romanian economy and represent over 99 % of all enterprises. In recent years, the SME sector has consolidated its role in the economy in terms of the number of employees and the average turnover per enterprise although the crisis has left its mark. The recession has resulted in much more restrictive credit terms for SMEs and larger enterprises. Although the steady decline in private credit growth appears to have bottomed out, SMEs in particular suffer from insufficient access to bank financing as the latter appears to be crowded out by the financing needs of the public sector. The financing problems of SMEs are further compounded by excessive delays of VAT refunds and other payments to companies by state-owned enterprises and the government. All this is likely to have contributed to the number of SME bankruptcies, which increased in both 2009 and 2010. Being aware of these problems and in order to reduce payment arrears, the government has recently adopted a number of measures in order to address these issues. In this respect, good progress has been made by reducing the payment arrears by two thirds from 2009 up to present.

In the wake of the crisis, Romania had taken a small number of stimulus measures with a view to supporting businesses and help them weathering the crisis. Some of the measures announced in early 2009 have been adopted very late (e.g. the temporary tax exemption for reinvested profits), thus considerably delaying the expected effects while some have not been adopted at all. Financial support to SMEs is primarily being provided via multi-annual national programmes and guarantee instruments. Thus the National Credit Guarantee Fund for SMEs was capitalised and improved its guarantee activity, also as a result of the establishement of the Counter Guarantee Fund of Loans to SMEs in 2009. In addition, legislative measures were taken in 2009 to ensure the implementation of the *JEREMIE* initiative. Starting from February 2011 the guarantee facility under this initiative has become operational while the risk facility will be operational by the end of 2011. Moreover, there are several actions, financed by the OP *Increase of Economic Competitiveness*, which provide support for new investments, for the internationalisation of SMEs, for the implementation of international standards, and for advisory services. In addition, support for investment projects of micro-enterprises as well as for developing the regional business infrastructure is provided through the OP *Regional Operational Programme*. Finally, the projects financed through the OP *Administrative Capacity Development* aiming at implementing a coherent plan for improving the business environment, implementing at national level the Small Business Act, and developing an operational one-stop-shop pilot model were completed.

Regarding public procurement, the public procurement law was modified with the aim to accelerate and render more flexible the procedures for the absorption of European funds. In addition, an assessment of the participation rate of SMEs in the public procurement process was carried out, showing that over 55 % of contracts with a total value of EUR 4 billion were allocated to SMEs. At the same time, public procurement is not yet used proactively to foster innovation or the help greening of the economy and tender specifications sometimes stipulate conditions, such as experience with prior projects, which are difficult to fulfil for SMEs or market entrants with innovative products or services.

Romania's efforts to help SMEs to survive the economic crisis were hindered by the need for fiscal consolidation, which left little room for manoeuvre to launch costly recovery measures. Mitigating further high financing costs, overcoming the scarcity of credit and reducing the lack of working capital are therefore the main challenge in the short term. Related to this, Romania needs to increase support to enterprises, particularly SMEs, in accessing EU funds, as well as to reduce effectively payment arrears. Moreover, facilitating the access of Romanian companies to markets could help to

offset the decline in domestic demand. In this respect, using public procurement in a more proactive manner and further supporting the internationalisation of SMEs could be important steps.

### 4.22.6 Conclusion

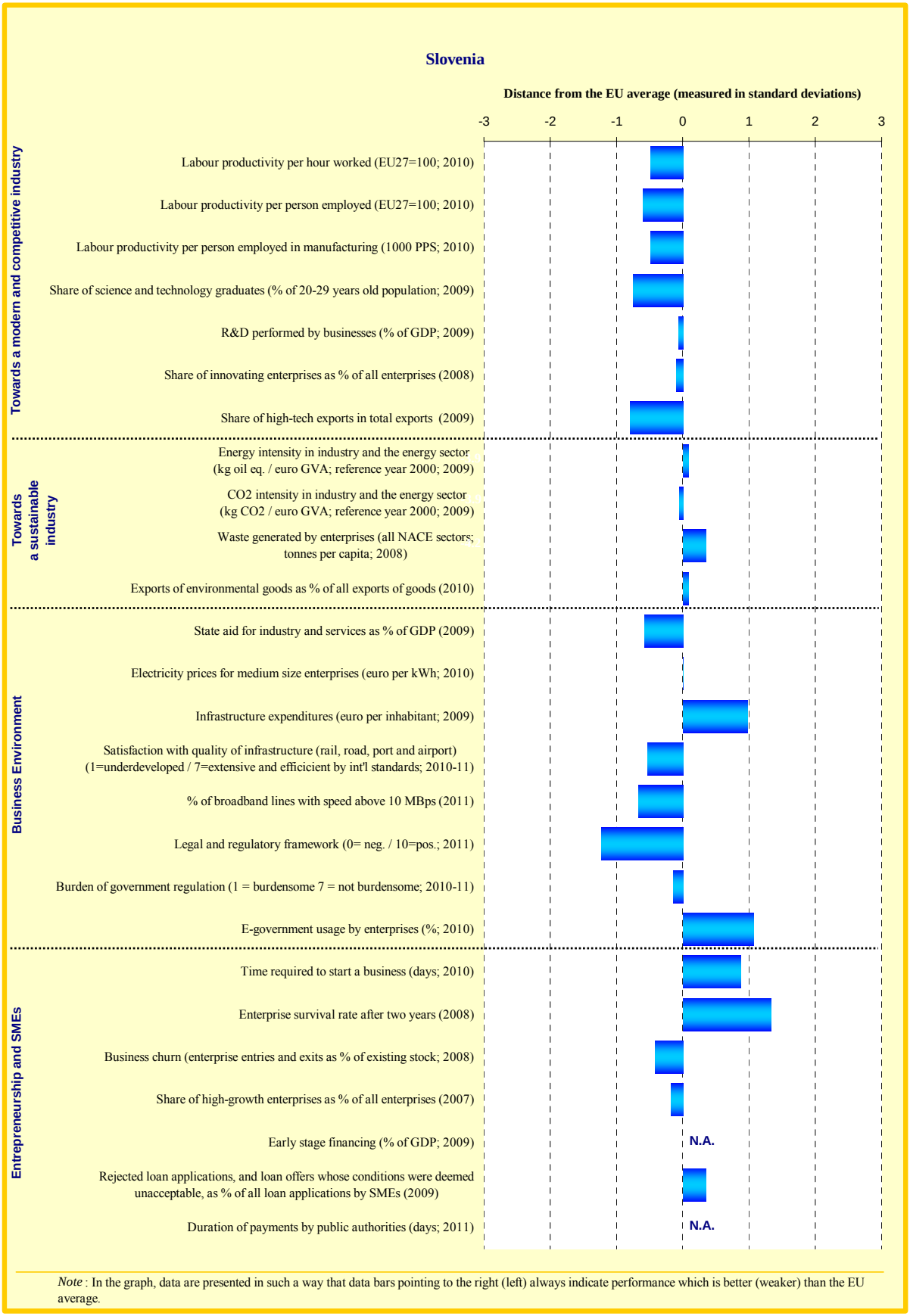
Whilst the short-term priority is to bring public finances under control and stabilise the macro-economic situation, the implementation of a number of urgent structural reforms should help to significantly improve the business environment. In this light, the effective and timely implementation of the measures included in the 2009 and 2011 MoU will be critical as it will help to pave the way for a return to sustainable growth.

An effective reform of the public administration at central and local level would be key since weak administrative capacity limits reforms, hinders the absorption of EU funds and is, in general, dissuasive for investors. Strengthening the efficiency, effectiveness and independence of the public administration should help improve the quality and enforcement of policies as well as the effective absorption of structural funds. Making an increase of the low rate of absorption of the EU Structural Funds a priority for economic policy would also allow increasing the necessary investment in infrastructure and human capital without an excessive burden on the national budget. Moreover, transparency in decision-making processes and accountability of public resource mobilisation and use are essential cross-cutting issues to consider. At the same time, it is also important to maintain some institutional stability and to abstain from rushing reforms unnecessarily since the success of reforms depends also on the ability of economic actors to adjust and get accustomed to new rules and procedures.

Nevertheless, improving the heavy regulatory environment and reducing the significant red tape in all sectors of the administration would contribute to unlocking the business potential and reducing costs of doing business. Furthermore, developing the weak transport (especially motorways) and communication infrastructure would be critical to improving competitiveness and attracting investments.

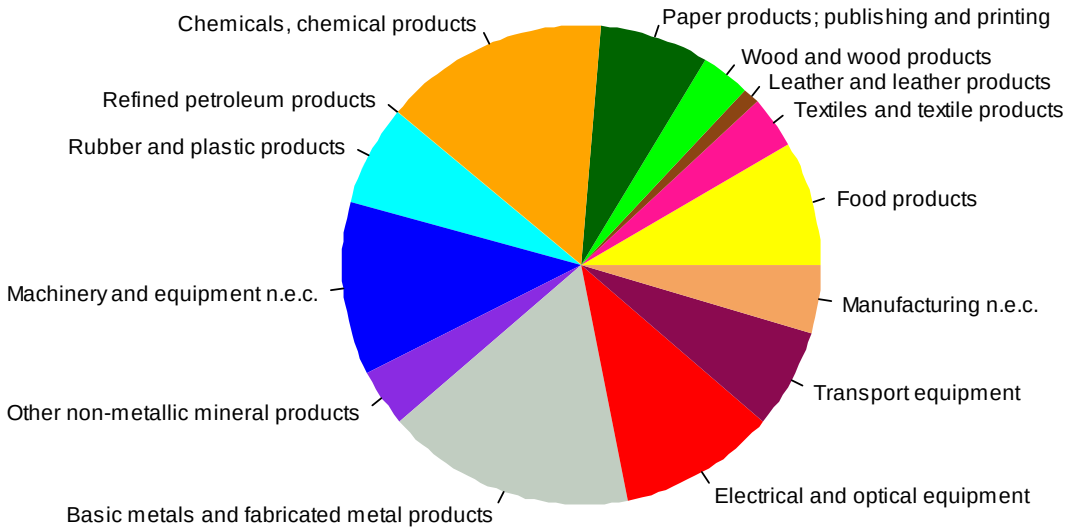
In the long term, the challenge will be to ensure a paradigm shift away from unskilled labour and energy intensive sectors towards more smart, low-carbon and resource-efficient activities. Upgrading productive capacities and processes, investing in environmentally friendly, eco-efficient technologies, increasing the innovative potential of enterprises, and upgrading labour force skills and improving vocational and higher education and training will be essential for the future competitiveness of the Romanian industry.

## 4.23 Slovenia




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Slovenia (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

### 4.23.1 Introduction

*Trade and industry specialisation*

Manufacturing contributes 19.6 % to total value added in Slovenia against 14.9 % for the EU on average (2009). At the detailed manufacturing industry level, Slovenia features specialisation in labour-intensive industries (sawmilling and planning of wood, made-up textile articles) and mainstream manufacturing (domestic appliances, other non metallic mineral products). At the more aggregated sector level, Slovenia is specialised in highly innovation-intensive sectors (machinery, electrical machinery, R&D) in value added only, but also in the low to medium range of education and innovation intensive sectors (e.g. wood and cork).

Slovenia's R&D intensity is below average given its industrial structure, as is its position on the quality ladder. However, in comparison with its group of lower income countries with export specialisation in knowledge intensive industries, Slovenia manages a higher R&D intensity and better quality performance in labour-intensive industries.

Most prominent sectors in Slovenia

**Highest relative value added (2007)**
Textiles and textile products
Leather, leather and footwear
Wood and products of wood and cork

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Recycling
Electricity and gas
Post and telecommunications
Decreasing specialisation
Supporting and auxiliary transport activities; activities of travel agencies
Leather, leather and footwear
Wearing apparel, dressing and dyeing of fur

*Structural change*

In terms of change, Slovenia has increased the relative share of technology-driven industries (computers, industrial process control equipment), as well as the relative value-added of mainstream manufacturing (domestic appliances, batteries) and capital-intensive industries (e.g., man-made fibres), but its specialisation in labour-intensive industries (builders' carpentry and joinery, apparel and accessories) has decreased. This has also been the case in low innovation and low education sectors (leather, auxiliary transport activities). Slovenia has

gained export share in the high-quality segments, but also in the low-quality segment in technology-driven industries; its R&D intensity considering its industrial structure has decreased relative to the EU.

Industrial production fell by 26.5 % during the crisis and has partially recovered since. In April 2011 it was 14.5 % lower than its previous cyclical peak. The crisis slowed down structural change towards technology-driven industries, favouring instead capital-intensive ones.

Slovenia has experienced a moderate appreciation of the real effective exchange rate over the last decade (12%, compared to 21% in the EU27), indicating nevertheless a loss in cost and price competitiveness. Nominal unit labour costs have increased by 53% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. Labour productivity per hour worked has gradually increased over the last years and is currently about 17 percentage points below the EU27 average and 31 percentage points below the Euro area average.

Overall, Slovenia is catching up with respect to competitiveness, but needs to pay attention to sectoral upgrading, i.e. increase R&D investments and output quality within existing industries.

### 4.23.2 Towards an innovative industry

According to the 2010 Innovation Union Scoreboard, Slovenia is part of the second most advanced group of innovative countries in the EU, the innovation followers and has a high rate of improvement. Its R&D as a share of GDP reached 1.9 % in 2009. Slovenia performs particularly well in international scientific co-publication, in public-private scientific co-publications, in innovative SMEs collaborating with others and in non-R&D innovation expenditure but not very well in business R&D innovation expenditures. In 2010, numbers of policy measures were introduced to overcome the implementation deficit, to reinforce the knowledge triangle: research, education and innovation and to further increase public spending on R&D.

In 2010, numbers of policy measures have supported public spending on R&D and intended to reinforce the knowledge triangle: research, education and innovation.

The Ministry of the Economy is co-financing 17 projects of Economic development centres. The projects sum up to EUR 425.483.576 and will be co-financed with EUR 179.581.344. Building on the knowledge base in Slovenia, the targeted areas cover wood-processing sector, new materials, ICT, automotive industry, pharmaceutical industry, biotechnology, energy, electric engineering and electronics industry.

More than EUR 120 million has been committed for 2009-2013 by the Ministry of Higher Education, Science and Technology to support investment in R&D in specialised technology areas. Priority technology areas were defined by the Government: User Platforms and Interfaces, Network Systems and Services, Food and Health Biotechnological Research and Innovation, Biomedical Engineering, Process Technologies, Sustainable Building Industry, Effective use of energy (smart grids). Seven competence centres were designed and are operational since 2010, bringing together competencies of the public R&D institutions and companies on the defined technology priority areas for joint strategic investment. In 2009, Ministry of Higher Education, Science and Technology launched the call for proposals for development of Centres of Excellence in the areas recognised as potential for Slovenia to reach international, worldwide excellence. Eight centres were selected and have been operational since 2010.

Despite considerable progress in the area of public procurement in Slovenia, public procurement is still under-used to support technological innovation. The government intends to use more systematically public procurement to promote areas where the Slovenian technologies and solutions could stand out, in particular in relation to social challenges and sustainable growth. For instance, EU cohesion policy funds are to be used to target sustainable construction and efficient energy use.

Financial instruments were introduced to support R&D and innovation investments. The Ministry of Higher Education, Science and Technology backed in 2010 the Slovenian Enterprise Fund with EUR 50 million enabling through commercial banks EUR 150 million of loans for R&D projects. The objective is to provide more investments and working capital to high technology projects. Additional EUR 35 million is invested by the Ministry of Economy to a holding fund promoting development of venture capital market. Moreover, a new holding fund for financial engineering instrument is being established by the SID Bank with EUR 50 million backed by the Ministry of Higher Education, Science and Technology and it will be operational later in 2011.

A new financing scheme has been launched for SMEs to develop their R&D and innovation activities, linked with IPR and design. It is worth highlighting that many applications were made in the field of design.

According to the Slovenian National Reform Programme, the number of graduates in the fields of natural sciences, technology and other sciences relevant for innovation is considered as too low. As a response, the NRP highlights numbers of measures, like training programmes in natural sciences and encouraging entrepreneurship among young doctors of science. As a response, a new measure was introduced recently by two relevant Ministries with EUR 20 million in 2011-2013 to strengthen competencies for R&D in companies, stimulate development of R&D departments and co-finance employment of researchers, engineers as well as both local and foreign high qualified personnel

Finally, Slovenia's academic research is still not sufficiently connected to corporate research and vice-versa. For instance, some of the largest and most competitive Slovenian firms have their own research departments and hardly interact with research institutions.

A rationalisation and simplification in the system of EU funds drawing is under way. Some significant steps were implemented and as a result the amount of funds for R&D and innovation increased in 2010. If properly implemented, it would generate a better absorption of EU funds and therefore reinforce R&D and innovation in Slovenia.

Proper coordination and collaboration between the various organisations is essential to avoid overlaps and make the R&D and innovation policy measures more transparent and user-friendly. In this respect, the Government plans to reorganise the implementing agencies and thereby increase their transparency and efficiency.

4.23.3 Towards a sustainable industry

The volume of emission-intensive industries in Slovenia dropped significantly because of the crisis. Some of the most emission intensive sectors, such as the aluminium one, have seen their production, and therefore their greenhouse-gas (GHG) emissions, reduce considerably. Along with the recovery, the GHG emissions have peaked up again in 2010. Due to high share of emission-intensive sectors, Slovenia has one of the highest propensities for high emission in the EU. In 2008[118], it ranked fifth among EU countries.

Slovenia was the 10th most energy-intensive EU country in 2009. Slovenia's gross inland consumption of energy divided by GDP represented 150 % of the EU average in 2009. In comparison with the EU average, Slovenia is characterised by the predominance of many energy intensive manufacturing sectors. In addition, intense road traffic due to transit of freight transport worsens the overall outcome.

Slovenia is the 10th country with the highest share of renewable energy in gross final energy consumption in 2008. In fact, the proportion of renewable as a share of total energy consumption has considerably increased in comparison with the rest of the EU. Slovenia benefits from highly favourable conditions as it has large hydro-electric installations and is rich in biomass.

In the area of energy efficiency, the Slovenian Eco-Fund and the Ministry of the Economy have launched calls for tenders targeting the public and private sector, and also households. Energy efficiency in buildings, supported by ad hoc financial mechanisms, is a priority. The use of decentralised renewable energy sources is also fostered.

With regards to renewable energy sources, investments are supported and in absolute terms until 2020 use of hydro and biomass are projected to increase the most. The measures are also meant to encompass energy distribution and transportation services including the building of 'SMART GRIDs'. Call for tenders in renewable energy will aim at developing co-generation, creating facilities using sustainable biomass (heat and power) and building district heating facilities.

A new coal-fired plant, implying an estimated EUR 1.2 billion investment is under way. And the second Slovene power company (that represent 22 % of installed generation capacity) is considering building a new nuclear power plant.

Green procurement: The use of green procurement could be more developed. EU cohesion policy funds are to be used to target sustainable construction and efficient energy use.

Waste recovery from production and services has represented about 60 % of waste in the last few years. The Government intends to further intensify the building of waste management plants and to promote waste prevention measures.

4.23.4 The business environment

Considerable progress has been achieved in different areas relative to the Slovenian business environment, for instance: on preventing illegal work, on public procurement, on setting up a business, on tax relief for intangible investment, on value added tax and on online tax declarations. The

118 UMAR-IMAD Development report 2011

single point of contact called VEM has been very successful. This one-stop-shop solution offers information, advice and mentoring. It has seen considerable improvement and the government wants to push it even further in the years to come.

International surveys point to areas that can still be improved, mainly with regards to the legal and regulatory framework. According to the Slovenia World Bank Doing Business rankings in 2011, Slovenia is ranked low with regards to registration of real estate and duration of procedures for dealing with construction permits. According to the IMD World Competitiveness report, Slovenia does not offer an attractive legal and regulatory framework. In fact, Slovenia is the worst performing EU country[119] for this indicator. Besides, governance standards are evaluated to be deficient in both the public and private sectors. The 2011 issue of the IMD competitiveness report evaluates the supervisory board of Slovene companies as one of the poorest among the countries that are benchmarked. It is not surprising therefore that the governance of state-owned companies will be under the responsibility of a new agency for the management of state-owned assets. Besides, a land register act has already been adopted. It offers a digital version of all the procedure of a registration and the access to the land register is free of charge and available in a decentralised manner (in every local court and notary instead of only the main land register).

Administrative burden is to be reduced by 25 % by 2012. There are five phases in the program and the third phase was finalised in June 2011. The fourth phase is going more or less according to plans, which means the deadline should be met. Concerning impact assessment, a resolution was taken by the parliament and the government in 2009. Technical support has been set up both internally and externally. The consultations take place online, so that the public can react. The implementation is unequal across ministries. Some are very good and others are lagging behind.

The competition protection office has become extremely under-staffed over the last 3 years. Only competition authorities of smaller countries such as Luxembourg or Malta have as few employees. While the office is to become fully independent in 2012, it is still questionable whether it will function at full scale. With the institutional changes planed for 2012, issues related to staff increase and their capacity-building are also to be resolved

The level of competition in many Slovenian services sector could be enhanced. High concentration and high mark-ups can be observed in certain services sector, notably food retail, construction, professional services and land transport. Slovenia still had the lowest share of knowledge-based market services in the EU in 2009. According to a survey of 58 countries from the IMD 2011 Global Competitiveness report, Slovenia is the second country with the highest threat of relocation of its services activities.

Administrative burden is also visible in the area of regulation of professions. Slovenia has one of the highest numbers of regulated professions in the EU. A report is underway (‘Deregulacija poklicev v RS – med javnim interesom in konkurenčnostjo, Deregulation of Professions in the Republic of Slovenia – Between the Public Interest and Competitiveness’) to provide an international benchmark of regulated professions by March 2012. Concomitantly, the European Commission is to offer in 2012 a proposal of a new legislation based on the results of an evaluation of the implementation of the Directive on the recognition of professional qualifications (Directive 2005/36/EC).

The Services directive is still not fully implemented. Single points of contact should see some improvements by autumn 2011, at first for for tourism, construction and crafts with a progressive extension to all services sectors by end of 2013.

Concerning Slovenia’s resources and infrastructure, several elements are worth highlighting. Despite the rise in unemployment resulting from the crisis, there is still a lack of qualified staff in the health, tourism, engineering and science sectors. Access to resource is also an issue in Slovenia, especially in the field of rare earth. Transport infrastructure has developed unevenly, with a strong road network and much less modern and developed railways. The priorities with regards to railway infrastructure in 2011 and 2012 are supposed to be modernisation, electrification and development of the second Divača-Koper track.

The Slovenian export promotion strategy is undergoing organisational changes. The previous trade promotion organisations (TPO) are now merged with JAPTI. In fact, JAPTI is going to be reorganised further. Its support activities for internationalisation will be shared differently among different organisations. The Slovenian embassies but also the chambers of commerce and business clubs will join forces. Concerning the content of the export promotion policies, cooperation with new emerging markets is promoted as Slovene firms generally turn to

[119] Cyprus, Latvia and Malta are not included in the ranking.

neighbouring EU and Balkan markets. Slovenian companies are already to some extent present in emerging countries. Nonetheless, foreign markets are more easily accessible for large than for small Slovenian companies. The barriers to internationalisation are mainly the fact that most Slovenian companies are small companies and cannot extend their activities abroad or produce large enough quantities of goods for certain markets. Among internationalisation measures, Slovenia also strongly supports direct foreign investment through national scheme. Besides, the insurance scheme for internationalisation offered by SID bank works well for companies. Exception are small companies that have to get private insurance schemes. Among other measurements, Slovenian business clubs abroad have been established and are a Slovene specificity; there are 17 currently operating, but not all of them are financed through country revenue. Most of them are in the Balkans in Russian regions.

In conclusion, the legal and regulatory framework is still the most problematic area of the Slovene business environment. Better regulation of professions should create new employment opportunities and better match between qualifications and jobs. Last but not least, better absorption of ERDF funding could play a role in strengthening the railway infrastructure.

### 4.23.5 Entrepreneurship and SME policy

Despite the long lasting effects on unemployment, the Slovenia's SME sector is expected to reach again pre-crisis levels in 2012. SMEs' production has progressively recovered since 2009. The breakdown of SMEs by size class in Slovenia is comparable to the EU average. A higher concentration of SMEs can be observed in manufacturing (15% vs. 11% in the EU) and construction (19% vs. 14%). Slovenia scores well for almost all Small Business Act dimensions and has addressed all of them except one. It performs better than the rest of the EU in entrepreneurship, think small first, state aid and public procurement, and Single market.

Despite some management buy-out scandals and difficult economic situation, the entrepreneurship culture in Slovenia is increasing. Entrepreneurship is even well perceived as 77.6 % of the Slovenian population had consideration for successful entrepreneurs in 2009[120]. Young people are more entrepreneurial and open. In 2009 and 2010, entrepreneurial activity dropped by 1.7 p.p, however, Slovenia ranked 10th in terms of early stage entrepreneurial activity compared to the 20 EU countries ranked by the Global entrepreneurship monitor. Slovenia is considered as more 'passive' in terms of entrepreneurship compared to its peer group. Necessity entrepreneurship is the lowest prevalent form of entrepreneurship while opportunity driven entrepreneurship is the most widespread. This is consistent with the fact that early stage entrepreneurs in Slovenia come from the highest household income category.

The Global entrepreneurship monitor found that female entrepreneurs are under-represented in Slovenia. Their share has even decreased in 2009 to represent 24.2 % of early stage entrepreneurs. As an answer, the government organised four female entrepreneurship events in 2010. The business organisations think that more could be done in this area. The forthcoming programs, still at pilot stage, are concentrated on mentoring vouchers for women and promotion of female entrepreneurship.

The public guarantee scheme designed as an answer to the crisis has not had the expected impact. SID bank, which has coordinated the use of the guarantee scheme through commercial banks, has only channelled a third of the amount available. The banks have passed on the funds to individuals rather than to companies. Although banks have tightened loan conditions, access to finance is generally not an issue for sound companies.

A lot of progress has been achieved in the field of financial engineering. In addition to SID Bank, the Slovenian Enterprise Fund implements guarantees with subsidies of interest rate - with this measure 890 projects have been already supported (with investments' value of EUR 378 million: loans EUR 243 million and guarantees EUR 153 million). Important progress has been in the field of equity financing: there are currently nine venture capital firms in Slovenia, including six supported by the Government through a EUR 26.7 million holding fund of the Slovenian Enterprise Fund and this measure is co-financed by the ERDF. The first investments by venture capital firms in SMEs are expected in the second half of 2011.

Compared to the 2010 edition of 'Member States competitiveness performance and polices', an act on prevention of late payments has already been voted. It provides a maximum 30 days payment deadline for public institutions and a 60 days payment for economic agents (with possible exceptions for 120 days). It has been in force since 16 March 2011.

Concerning the SBA, Slovenia has made a progress in the third principle, the 'Think Small First' principle' and SME envoy was nominated by the Ministry of economy. A proposal for 'SME Test'

[120] Global entrepreneurship monitor

has been prepared. The eighth principle 'Promote the upgrading of skills in SMEs and all forms of innovation' could also be developed further. In fact, the government's future priorities of the Small business act in Slovenia will consist of: 1. Access to finance, 2. Think small first legislation, 3. Innovation and skills, 4. Internationalisation.

A three year program targeting young people is supposed to foster creativity and innovation. The program is monitored jointly by the Ministry of economy and the Ministry of education and sports.

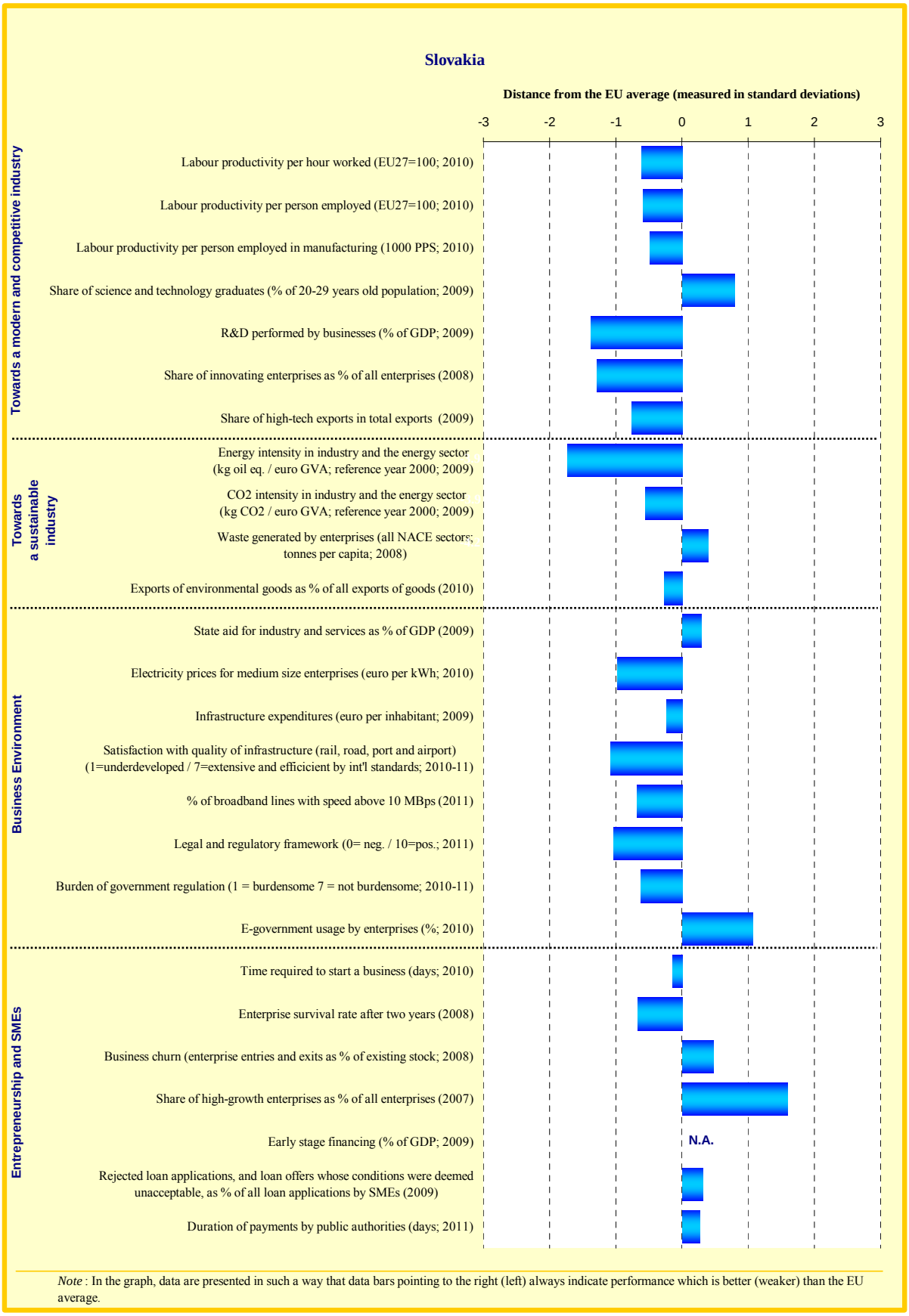
Summing up, several areas of the Small business act are still to be put into action. Nonetheless, the recent reforms in financial engineering and in late payment legislation are signs that the areas that were highlighted in the previous report have consequently started to be tackled.

### 4.23.6 Conclusion

Notwithstanding its size, Slovenia is faced with the challenge to increase both the competitiveness of its export and domestic sectors. Better regulation, especially in the area of services, can be achieved thanks to the revision of regulation of professions. Along with the proper implementation of the services directive and a fully-functional competition protection office, the potential of the services sector could be unleashed.

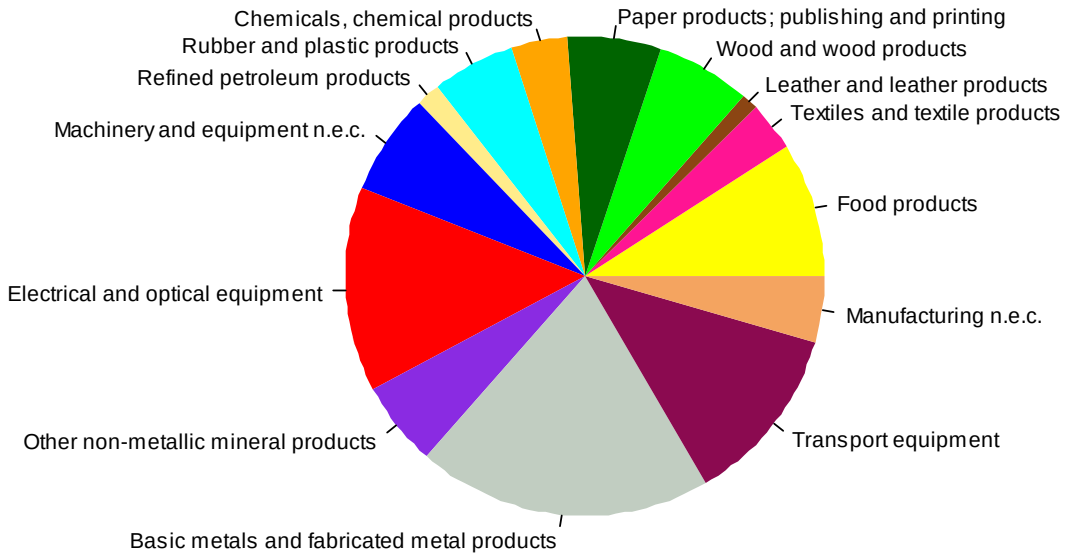
Slovenia was one of the first countries to allocate part of its EU funds to competitiveness programs (up to 40 %). Europe 2020 could facilitate further the alignment between competitiveness goals and EU funds allocations. Focusing on regions and sectors undergoing the most significant structural changes, such as the Pomurje region as one example, could be an opportunity to accelerate the restructuring processes.

## 4.24 Slovakia




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Slovakia (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.24.1 Introduction[121]

*Trade and industry specialisation*

The manufacturing industry in Slovakia accounts for 19.6 % of value added against 14.9 % for the EU on average (2009). At the detailed manufacturing industry level, Slovakia features industry specialisation in mainstream manufacturing (lighting equipment and electric lamps, wire and cable) and capital-intensive industries (Basic iron and steel) and trade specialisation in technology-driven (radio and TV receivers) and labour-intensive industries (manufacture of steam generators). At the more aggregated sector level, Slovakia shows specialisation in high and medium-high innovation sectors (communication equipment and motor vehicles), as well as in medium to medium-low education sectors (fabricated and basic metals). Slovakia features a high share of exports to the BRIC countries, especially Russia, by technology-driven industries.

Slovakia's R&D intensity is far below average when taking account of its industrial structure, indicating a position in the production-oriented part of knowledge-intensive industries. Slovakia features high shares of exports in the low price segment and low shares in the high price segment, indicating an unfavourable position on the quality ladder, similar to its group of lower income countries specialised in knowledge-intensive industries (group 3).

Most prominent sectors in Slovakia

**Highest relative value added (2007)**
Leather, leather and footwear
Basic metals
Electricity and gas

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Radio, television and communication equipment
Leather, leather and footwear
Basic metals
*Decreasing specialisation*
Electricity and gas
Coke, refined petroleum and nuclear fuel
Tobacco products

*Structural change*

[121] For main sources used see the methodological annex. The cut-off date for all data and qualitative information is 31 August 2010.

In terms of change, Slovakia has increased its relative value added and export share in technology-driven industries (radio and TV receivers and transmitters), as well as its value added specialisation in mainstream manufacturing (lighting equipment and electric lamps). Further, Slovakia has increased its relative value added share in high innovation sectors (computers, communication equipment, medical, optical and precision instruments) and has decreased its specialisation in labour-intensive low-skill industries (dressing and dying of fur) and low education sectors (wearing apparel). Slovakia has climbed the quality ladder in contrast with its peer group, but its R&D intensity, taking account of its industrial structure, has continued to fall.

Manufacturing output fell sharply during the crisis (-32 %) but recovered remarkably, being in April 2011 4.1 % higher than in its previous peak. In total, the impact of the crisis on Slovakia's economic structure was limited, slowing down the decline of capital-intensive industries and structural change towards technology-driven industries.

Slovakia has experienced a strong appreciation of the real effective exchange rate over the last decade (80%, compared to 21% in the EU27), indicating a loss in cost and price competitiveness. Nominal unit labour costs have increased by 33% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. While labour productivity per hour worked has considerably increased over the last years, it is still about 22 percentage points below the EU27 average and 35 percentage points below the Euro area average.

Overall, Slovakia is catching up with respect to competitiveness, however R&D trends constitute a cause for concern.

### 4.24.2 Towards an innovative industry

Slovakia has been classified as a moderate innovator according to the Innovation Union Scoreboard 2010, with a performance below the EU average. In particular, it ranks amongst Member States with the lowest share of R&D expenditure in relation to GDP.

Slovakia has a small and underdeveloped R&D system. Currently, large multinational companies operating within the country, with high productivity levels, mainly run their R&D activities abroad and limit liaising activities with Slovak research facilities. On the other hand, national companies, including SMEs, are characterised by low R&D expenditure. As a result, the production system is mainly dominated by technology imports. Aggregated across all sectors, the indicator has indeed experienced a steady decline from 0.66 % in 1999 to 0.48 % in 2009. R&D performed by the Slovak businesses has also declined and from 0.41 % in 1999 has reached 0.2 % of GDP in 2009.

The "Long term plan of the state science and technology policy by the year 2015", setting the national policy framework in terms of R&D, is expected to be updated in 2011 with a view to redefine fields of intervention and related measures. At the moment, the overall objective is the gradual shift from institutional to project-based R&D funding of both universities and research institutes including a rationalisation of the system (mergers of research institutes, promotion of higher specialisation). In order to proceed in this direction, a revision of the evaluation system is being carried out.

The legal Act on R&D incentives to the business sector, which was adopted in 2009 as part of anti-crisis measures, provides state aid for basic and applied research, feasibility studies, employment of qualified researchers, experimental development, establishment of a research laboratory and income tax relief. Out of 35 applicants, 14 companies have used the support so far, 4 starting in 2009 and the remaining in 2010. Incentives are conditional to the establishment of new laboratories (creation of workplaces) or the employment of researchers to be maintained for at least 5 years and will run until 2014. No further calls are open at the moment.

Innovation policy in Slovakia is currently based on two strategic documents: the Innovation Strategy for 2007-2013, which sets the general framework for intervention, and its translation into concrete measures via the Innovation Policy document, covering a three-year period. The document for 2011-2013 sets 3 priority areas (infrastructure; quality of human resources and support for innovation) and 13 measures such as: clusters; support to innovation for regional projects; human resources and SMEs trainings. A national project for increasing innovation of entrepreneurs is being prepared and discussed with coordinators of the OP Competitiveness and Growth.

A positive development in the governance of innovation policy seems to be the appointment in February 2011 of a High Government Representative for knowledge economy and information society.

The lack of coordinated intervention in the policy areas of research, education and innovation is, together with a weaker human capital formation, a fundamental issue that negatively affects the efficiency of the national innovation system. Responsibilities in these areas remain fragmented

and are shared between different ministries and their implementing agencies. In the period 2008-2011, the national budget for innovation has been diverted to other priorities due to the crisis and resources were channelled only via Structural Funds (OP Competitiveness and Growth). The system of innovation vouchers which was designed in 2009 and expected to be implemented in 2010 did not receive financial coverage so far. At the same time, the call for tenders to create Regional Innovation Centres (RICs) was launched for a budget of EUR 5 million and 7 applications were received from local governments but technical implementation did not start due to procedural and financing issues. Clusters have been mapped but not fully implemented, with an exception at regional level (cluster for software applications in the Kosice region).

In order to properly take into account concrete business needs in terms of innovation, an external audit on the most relevant institutional aspects is expected to be launched in June/August 2011. At the same time, undercapitalised companies may profit from new measures through JEREMIE (in particular venture capital funds).

4.24.3 Towards a sustainable industry

According to the reference indicator here adopted, Slovakia ranks third amongst the most energy intensive countries in the EU. In particular, despite significant recent improvements, relatively high energy intensity is still registered in the industrial sector (dominated by traditional manufacturing activities) to which relatively high carbon intensity in energy consumption is also associated.

Several actions have been undertaken over the past years in order to set both energy production and consumption activities on a sustainable path. Slovakia has progressively transposed at national level most of the relevant EU legislation and the overall legislative framework is now in place concerning energy efficiency, promotion of renewable energy sources (RES) and energy supply security.

The Slovak Energy Policy is the strategic document defining the long-term framework in terms of objectives and actions. Developed in 2006 for adapting policy intervention to the new national situation and to the adoption of EU directives, it covers a period of 25 years and is expected to be updated by the end of 2011.

As prescribed at the EU level, the second Energy Efficiency Action Plan (NEEAP) for the period 2011-2013 has been adopted in May 2011, setting a total energy saving target of 8 362 TJ, corresponding to a 2.7 % reduction in final energy consumption compared to the 2001-2005 average. Most of the energy savings are expected by the new document to be achieved in industry (about 30 %), public sector (27 %) and buildings (21 %) but measures are also foreseen with regards to electrical appliances and transport. In terms of the total public and private financial resources expected to be mobilised over the three years (more than EUR 4.5 billion), about 50 % will be absorbed by the transport sector, while EUR 316 million (7 % of the total) will be channelled towards industry via three measures focused on: innovation and technology transfer; increase in energy efficiency of industrial production and enforcement of the law on compulsory energy audits in industry (the latter accounting for about 90 % of the planned savings in the sector).

The assessment of the previous three-year period (2008-2010) reveals that the 2010 intermediate energy savings target of 3 %, corresponding to 12 405 TJ, has been achieved and, in particular, indicates the good performance registered for construction and manufacturing, although both still present big potential for energy consumption reduction.

The economic crisis had also an impact in determining positive results: a significant decrease in energy intensity was indeed registered both in 2008 and 2009. However, the crisis acted on top of a trend which was already undergoing, pushed by two important drivers for energy saving, namely: the increase in energy prices and the development of the regulatory framework.

Funds for implementing sustainable energy projects in the private sector (industry and households) were provided via national banks by the EBRD's Slovakia Sustainable Energy Financial Facility, created in 2007 with a provision of EUR 60 million, extended by additional EUR 90 million in 2010 due to high demand from beneficiaries and supporting 350 projects overall. In February 2011, the EBRD has announced a further EUR 15 million loan which will cover investment grants, accompanied by technical assistance to borrowers.

For better exploiting the energy efficiency potential across all sectors, a new data collection and monitoring system is expected to be launched in the second half of 2011.

Energy efficiency and environmental performance will become obligatory part of the selection criteria in public procurement as from January 2012. The Slovak Innovation Agency is in currently charge for their definition.

The National Renewable Action Plan published in October 2010 defines trajectories for the development in the use of RES up to 2020 and a final target of 14 % in gross final energy consumption. Since 2009, Slovakia has adopted legislative actions for supporting the production of electricity from RES, also as a response to major national concerns in terms of energy security and industrial diversification. However, the feed-in price mechanism put in place, while ensuring predictability for investors, has caused distortive effects on prices in the energy markets detrimental to business. Actions have been announced by the government in the NRP 2011-2014 for redefining the support schemes to RES as well as to domestic energy sources (coal) in order to maintain cost-effective incentives while limiting negative effects on the electricity prices.

4.24.4 The business environment

Business environment in Slovakia remains characterised today by important drawbacks, which may limit the attractiveness of the country and hinder the potential for higher economic activity levels. The situation is captured by the related set of indicators presented above. Compared to the EU27 average, Slovakia performs relatively well in terms of the share of enterprises using e-government services. However, a closer look at complementary indicators shows that the range of available services is limited and the country ranks in the latest positions at the EU level. The potential for further improvements in this area is indeed recognised within the NRP 2011-2014 in which legislative acts are announced, while a 'Revision of eGovernment Building - Medium Term Priorities Implementation Plan' has been approved early in 2011.

Low performance compared to the EU27 average is also registered with regards to the availability of high-speed broadband lines and to the level of satisfaction expressed by business representatives on the quality of transport infrastructures. According to the 2011 Doing Business survey by the World Bank, Slovakia ranks 41 out of 183 economies in the overall ease of doing business indicator and amongst the last EU countries in terms of cost and length of procedures for enforcing contracts and closing a business.

Legislation in Slovakia remains highly complex and subject to frequent changes. As an example, reported by analyses at national level, the 15 most important legislative acts governing business environment were amended more than once every two weeks, on average, in the last decade (2000-2010). This is associated with the overwhelming amount of laws and regulations for which targeted intervention is also needed. Efforts are to be oriented towards legislative simplification, the improvement of consultation practices in the design of primary and secondary legislation and developing impact assessment capacities.

In 2007 Slovakia adopted the Action Program for Reducing Administrative Burdens, establishing a target of 25 % reduction by 2012. Since 2009 important steps have been undertaken in order to define the legislative areas for most urgent intervention and of greater reduction potential, although concrete measures did not find proper implementation as a follow-up. At the end of 2010, a second phase of assessment has started and lead to the definition of a set of 94 measures, included in the Proposal of the Business Environment Improvement Policy, adopted by the Slovak Government in July 2011. With a main focus on administrative burden reduction, law procedures acceleration and improvement in impact assessment activities, the document proposes the implementation over the short- to medium-term (2011-2015) of a comprehensive better regulation agenda which has been lacking so far in the country. In this respect and based on past difficulties encountered in the domain, the concrete implementation and monitoring of the measures identified will prove of utmost importance.

In July 2010, an updated Unified Methodology to Assess Selected Effects was introduced, containing an obligatory methodology for evaluating the impact on the business environment and other four areas (public finance, social area, environment and information society/e-government), to be used by all departments when preparing legislative and non-legislative proposals. The actions undertaken seem then to go into the right direction although further efforts are still required for the new system to be fully deployed in practice by responsible authorities, contributing to make legislation more effective.

The transposition of the EU Services Directive was completed via a law in force since January 2010, also addressing the issue of the points of single contact which are now in places for both legal persons and professions since June 2010 as well as for sole traders. There are currently 50 one-stop-shop offices in Slovakia and 8 of them provide services also to EU persons. Proposals are currently under discussion concerning the simplification of the business licensing system and reduction of registration fees. The creation of electronic points of single contact is expected to be finalised by the end of 2011.

A major challenge is today represented by the limits to a truly cost-effective access to energy for business. By progressively transposing EU

regulations, Slovakia has formally liberalised its energy market but significant bottlenecks still persist. Electricity prices paid in Slovakia by industry and by medium-sized enterprises in particular, are indeed amongst the highest in the EU. High levels of upstream concentration in gas and electricity markets (e.g. the dominant producer accounts for more than 80 % of electricity generation) and low competition in the retail market; excessive use of price regulation; non-transparent regulatory framework and price formation process are some of the main issues characterising the current scenario. At the policy-making level, focus is currently given to the concrete implementation of the third EU Energy package.

A further obstacle to the improvement of the business environment in Slovakia is associated with poor enforceability of rights and underperforming judicial system. These bottlenecks have been clearly recognised within the NRP 2011-2014 and specific measures are expected to be implemented, in particular, in order to streamline civil court procedures; set deadlines for action by courts on selected matters; support the use of alternative methods of dispute settlement in commercial law; improve the qualification of personnel and the use of ICT solutions; ensure publicity to judicial decisions on internet. Effective implementation of these actions is essential.

As a way for improving transparency in public procurement, new rules have been introduced since February 2011, based on an e-auctioning system: public administrations, including regional and municipal governments, will have to publish all procurements, contracts and invoices above certain values on the internet and contracts will be valid only after publication. The reform certainly goes into the right direction for ensuring increased transparency in the public administration, fighting corruption and reinforcing trust of citizens and businesses.

Overall, a more efficient public administration and stronger institutions in general would be beneficial to the business environment in Slovakia.

#### 4.24.5 Entrepreneurship and SME policy

Although the Slovak banking sector has proved sound during the financial and economic crisis and initiatives have been taken at national level in order to support corporate cash flows, lending and guarantee conditions have inevitably tightened for enterprises, in particular SMEs, and the implementation of anti-crisis measures is expected only to continue until natural conclusion while their extension is currently not envisaged.

Overall, insufficient access of SMEs to suitable financing may represent in Slovakia an obstacle to the improvement of the business environment, growth and job creation. This holds true especially with regards to small and micro enterprises, innovative start-ups and entrepreneurs who have experienced bankruptcy.

Support provided by Structural Funds currently represents the main tool available to SMEs but a clear need arises for improving overall absorption capacity; simplifying and shortening length of procedures and increasing transparency and effectiveness. On the other hand, despite the support offered via public funds, the situation concerning the provision of guarantees remain problematic: the Slovak Development and Guarantee Bank (SRZB) which used to provide guarantees up to 80 %, after some defaults now only guarantees up to 65 % while conditions applied by commercial banks for applicants with insufficient collateral remain prohibitive.

Following new operating rules adopted by the government in 2010 and the start of a restructuring process of the National Agency for Development of SMEs (NADSME) in October, traditional financing instruments, such as a micro-credit scheme run by the Agency and implemented via partnership regional centres were suspended with the intent to centralise operations, including final approval of all credits to be allocated. The quick completion of such restructuring and the restart and possible reinforcement of related successful programmes are considered as of great importance.

A positive development for improving access to funding and introducing innovative financial instruments is certainly represented by the start, after several delays, of the concrete implementation of the JEREMIE initiative, financed from the EU Structural Funds under three 2007-2013 Operational Programmes and managed by the EIF through the Slovak Guarantee and Development Fund (SZFR). The latter was established already in 2009 and will work as a local state-owned entity, participated by SZRB and EIF (until 2015), aimed at ensuring support to SMEs financing also in the longer-term. Three calls for expression of interest from financial intermediaries are expected to be launched in the second half of 2011, and the first two will focus on portfolio guarantees and risk capital, for the amount of EUR 33 million and EUR 31 million, respectively. The effective and timely implementation of the scheme is now crucial and should be strongly pursued, as well as the setting up of a proper monitoring and evaluation

system.

Officially, today there is not an SME test in place and the 'think small first' principle is not concretely implemented by Slovak authorities. Under the responsibility of the Ministry of Economy, NADSME currently only conducts an annual assessment of the impact of new legislation on SMEs, that is, an ex-post evaluation.

Another important issue in Slovakia is associated to bankruptcy and the lack of services and funds available to companies in order to promote 'second chance'. In this respect, no specific developments have been registered lately and the attempt is still today to find solutions, amongst which the selection of a nominee who will be in charge of coordinating and boosting initiatives on ‘second chance’.

In terms of vocational training, Act 148 is in force since 2009, giving entrepreneurs the possibility of financing training at secondary and university level, therefore supporting the integration of entrepreneurship and specific skills into curricula. Projects were also organised by NGOs and co-financed by EU funds: over the period 2009-2010, pilot projects on “Quality in school” and “Success in life” involved more than 40 000 students of secondary schools and proved highly successful, inspiring the preparation for the future of a more permanent approach, provided that previous actions in the field were more of a “one off” nature.

However, in terms of entrepreneurship development, a weak link between educational system and the business environment still persists, generating a significant mismatch between skills demand and supply. Major obstacles are still represented today by the overall lack of funds (which mainly are of public nature); too low incentives for enterprises to cooperate with educational institutions and the lack of a broader strategy at national level, provided that responsibility for vocational education policies has been progressively transferred from the government to regions and then to municipalities, leaving room for uncoordinated actions, mainly carried out on a voluntary basis.

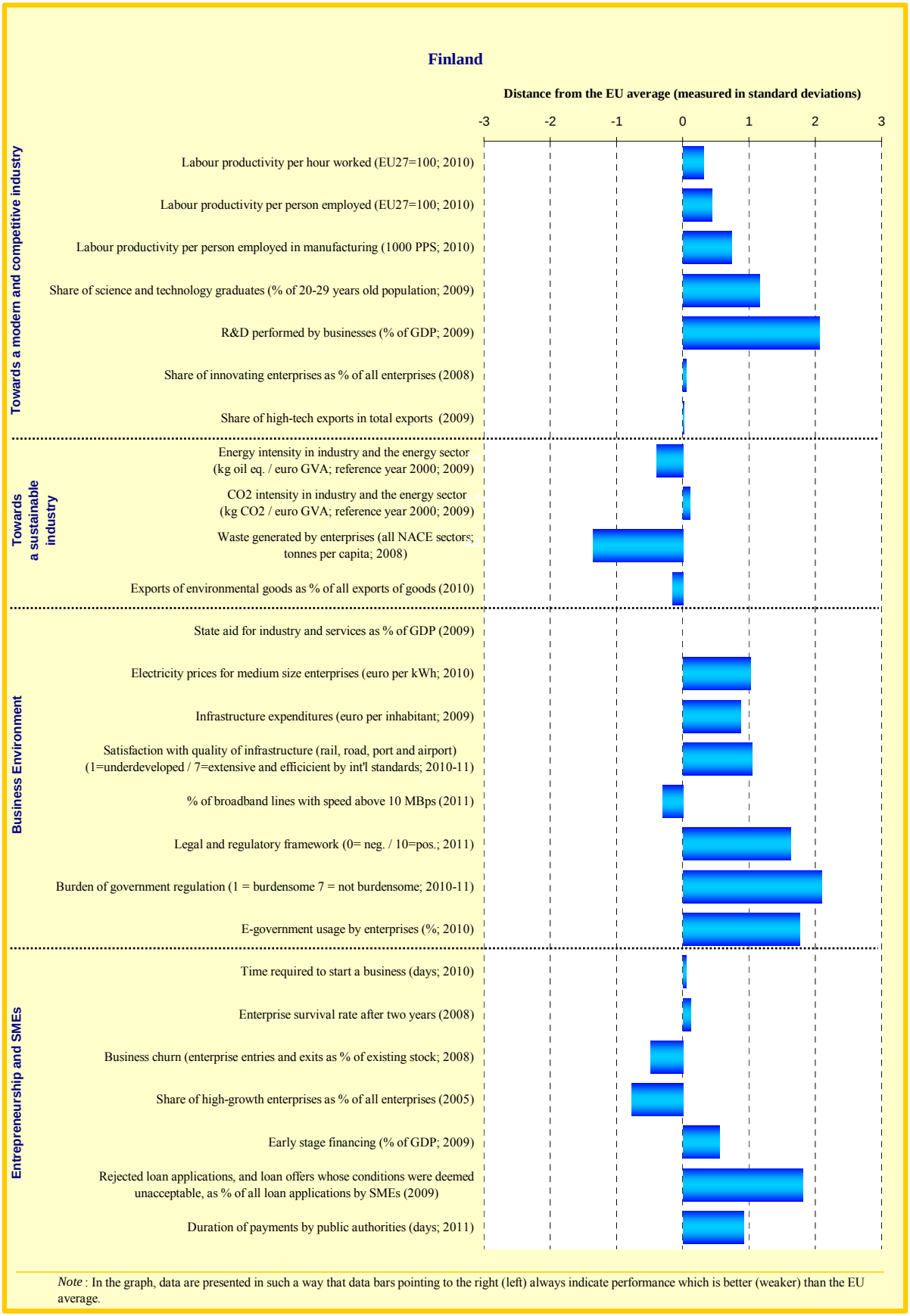
### 4.24.6 Conclusion

The economic and financial crisis has emphasised the importance of creating and sustaining in Slovakia the necessary framework conditions for ensuring substantial improvements in the business environment, as a fundamental prerequisite for growth and job creation. This holds particularly true in periods of complex economic recovery and public finances constraint. Calls for action and enhanced intervention in this respect are not new and mainly concern: the need for better regulation and reduction of administrative burden; the enforcement of legal rights; access to finance; the availability of human capital; energy prices for businesses and the efficiency of public administration.

Overall, today Slovakia has set the relevant legal framework for supporting the development of sustainable production and consumption models and the main focus should be on the effective implementation of available tools for greening the economic system. However, specific attention should be paid not only towards reaching environmental targets but also to the possibility of exploiting related business opportunities, therefore increase competitiveness, support innovation and job creation.

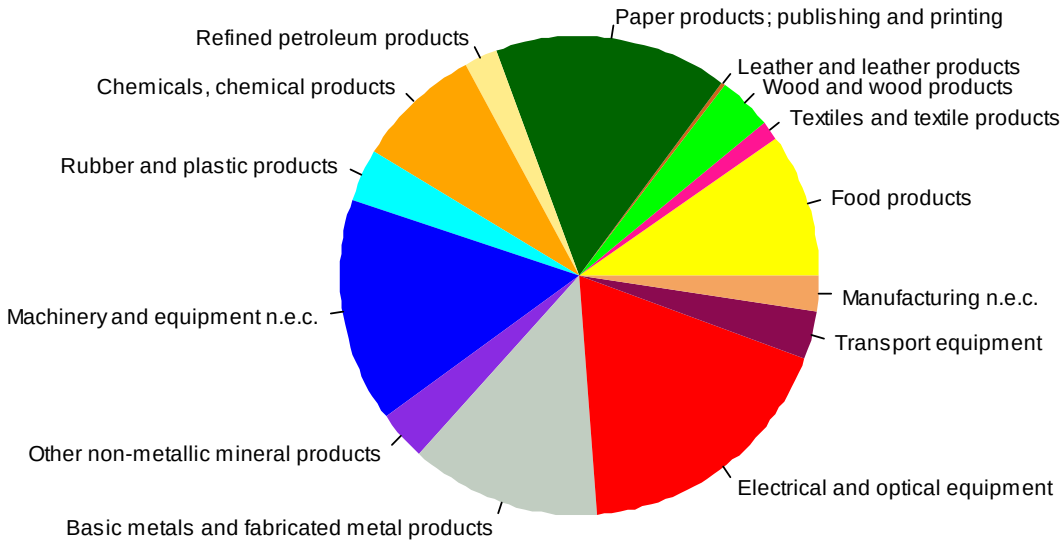
In terms of R&D and innovation, today the lack of a national coordinated approach adds up to the main challenges represented by a weaker human capital formation, low level of funding and quality of supported activities, highly bureaucratic procedures, low participation of Slovak enterprises to R&D and innovation programmes and weak ties between industry and academia sectors. All these issues would benefit from targeted responses.

## 4.25 Finland




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Finland (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.25.1 Introduction

*Trade and industry specialisation*

Finland belongs to the group of EU Member States, which is characterised by higher income and a specialisation in knowledge intensive sectors (group 1). The contribution of manufacturing to total value added is higher in Finland than in the EU on average (18.2 % against 14.9 % in 2009). In comparison with a year earlier, the importance of manufacturing has somewhat declined (22 % vs. 17 % of total value added in 2008). The economic and financial crisis, which led to an historical drop in Finnish manufacturing output, exports, and in industry value added in 2009, has had an impact on the industry driven structure of the Finnish economy. More than 40 000 jobs were lost in the technology industry alone.[122]

At detailed manufacturing industry level (NACE 3-digit), Finland is specialised in capital-intensive industries (manufacture of pulp, paper and paperboard), both in terms of value added and exports, as well as in mainstream manufacturing (agricultural and forestry machinery, electric motors) and labour-intensive industries (sawmilling and planning of wood, steam generators, building and repairing of ships). As regards exports and technology-driven industries (apparatus for line telephony), Finland features specialisation in value added only. At the more aggregated sector level (NACE 2-digit), Finland is specialised in highly innovation-intensive sectors (communication equipment) and, in exports, also in medium innovation-intensive sectors (pulp and paper, wood and cork). Finland is not specialised in high education sectors, due to low relative shares in R&D and in business services.

Given its industrial structure, Finland's R&D intensity and position on the quality ladder for technology-driven industries are well above the EU average. However, the quality indicators for labour-intensive industries are below the EU average (interestingly, the same applies to the other Scandinavian countries). Overall, within the group of higher income countries specialised in knowledge-intensive industries, Finland is more similar to countries featuring specialisation in knowledge-intensive manufacturing, such as

122 The Federation of Finnish Technology Industries, 27/05/2011, http://www.teknologiateollisuus.fi/fi/uutishuone/tiedotteet/2011-5/kilpailukyvyn-heikkeneminen-vaarantaa-suomalaiset-tyopaikat.

Germany, Austria and Sweden, than to countries specialised in knowledge-intensive services.

| Most prominent sectors in Finland |
|---|
| **Highest relative value added (2007)** |
| Radio, television and communication equipment |
| Pulp, paper and paper |
| Wood and products of wood and cork |
| **Change in the relative value added (1999/2007)** |
| *Increasing specialisation* |
| Radio, television and communication equipment |
| Coke, refined petroleum and nuclear fuel |
| Recycling |
| *Decreasing specialisation* |
| Post and telecommunications |
| Water transport |
| Pulp, paper and paper products |

*Structural change*

In terms of structural change, Finland has drastically reduced its trade specialisation in technology-driven industries (manufacture of TV and radio transmitters). This is in contrast with increasing industry specialisation and can be explained by the more recent trade data, which may reflect Nokia's problems with smartphones. Moreover, Finland has increased its specialisation in mainstream manufacturing (other transport equipment, forestry machinery) as well as in high innovation and education sectors (machinery, R&D, business services). Finland's R&D intensity is declining, considering its industrial structure, and its movement on the quality ladder is mixed, with some segments improving and others deteriorating.

Manufacturing production fell by some 27 % during the recent crisis and suffered sharp reversals at the beginning of 2010 and again in early 2011. In April 2011 manufacturing output was still 23.5 % lower than at its previous cyclical peak. Technology-driven industries saw a considerable slump, which may be explained partly by the crisis, but also by ongoing restructuring.

Finland has experienced a moderate appreciation of the real effective exchange rate over the last decade (11%, compared to 21% in the EU27), indicating nevertheless a loss in cost and price competitiveness. Nominal unit labour costs have increased by 22% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. Labour productivity per hour worked is about 11 percentage points above the EU27 average but 3 percentage points below the Euro area average.

Overall, while Finland enjoys a favourable position with respect to competitiveness, however, both structural change and trends within sectors (R&D intensity and quality upgrading) may present risks for competitiveness in the medium term.

4.25.2 Towards an innovative industry

Finland has a very good innovation performance that puts this country in the group of EU innovation leaders. Finland scores well above the EU average in terms of high quality scientific publications, patents and their contribution to a knowledge-base economy. Both public and private R&D expenditure is well above EU average. Despite high public R&D inputs, only a relatively small part of companies are active in regular innovation activities. Maintaining the level of R&D funding at a minimum of 4 % up to 2020 is a national goal in the context of the EU2020 Strategy, where the share of public investment should be at least 1.2 % of GDP and the share of private sector investment at least two thirds. The on-going restructuring in the ICT sector is expected to have an impact on the business R&D intensity, which may decrease already in 2012.

As an innovation leader Finland faces a particular competitiveness challenge. Finnish industry sectors, particularly firms in ICT, forest-based industries, and mechanical engineering have already reached the international productivity front. This implies that further growth requires experimental R&I, rather than achieving growth by relatively more simple catch-up strategies.

The main structural problem regarding internationalisation of the R&I system is the low share of foreign experts, researchers and students compared to most western European countries. Lack of foreign human capital poses a challenge in efforts to create an internationally competitive innovation environment. Although being among the scientific and technological leaders in Europe, Finland's internationalisation in science and technology still remains behind the reference group, notably in terms of technological cooperation. This may signal an untapped potential for progress that could benefit future competitiveness and growth. Other major challenges are a low volume of inward FDIs, a fragmented innovation support system, and a low number of innovative growth-oriented companies.

Against this background, the entire research and innovation system is currently undergoing reforms:

- In 2008, a new innovation strategy was adopted, which advocates transformation towards a broad-based innovation policy

with demand and user based elements.

- In 2009, a broad international evaluation of the Finnish innovation system was completed followed by an action programme for 2010-2013, which aims at improving the effectiveness of innovation policy by increasing the number of actors and by utilising innovations also in solving challenges in society.

- Comprehensive research and innovation policy guidelines for 2011-2015 were adopted by the Research and Innovation Council chaired by the Prime Minister setting out the national strategic guidelines for the next few years.

- Major policy developments include a possible R&D tax incentive for companies, a new strategy for the government funding agency (Tekes), and a major university funding reform.

- Diversification will be promoted by broad-based investment in expertise and research quality, for example through the Finland Distinguished Professor (FiDiPro) programme, which is a joint funding programme of Aalto University, the Academy of Finland and Tekes.

- Public-private partnerships (PPPs), or Strategic Centres for Science, Technology and Innovation (known as SHOKs)[123], will be used to speed up innovation processes and renewal in traditional industry sectors. An evaluation of the Strategic Centres of Excellence in Science, Technology and Innovation will begin in 2011.

The Finnish education system performs well in relation to all European benchmarks and headline targets. Finland scores well above the average on indicators measuring human resources in science and technology, which represents 34% of total employment and 29% of all degrees. Participation in lifelong learning has traditionally been very high in Finland (22.1% in 2009 while the EU average was 9.3%). In view of emerging new skills requirements and the demographic changes there is a need to ensure its adequate provision also in the future. Efficient foresight systems exist to predict the needs of the future labour market, but their results need to be put into practice also on a regional basis, which is a long-term challenge.

4.25.3 Towards a sustainable industry

The Finnish industrial sector is more energy-intensive compared to the EU average. The pulp and paper industry, as well as the iron and steel industries are the major industrial energy consumers in Finland. Finnish industry, research institutes and universities are working together to develop globally competitive technologies in energy and environment. The overall objective of The Finnish Energy and Environment Competence Cluster[124] established in 2008 is to leverage Finnish competitiveness to top level in international energy and environmental markets. Its research agenda includes reducing energy intensity in products and services and improving energy efficiency in industrial processes.

The Climate and Energy Strategy adopted in 2008 envisages that growth of energy consumption will be halted and reduced by 2020. According to the Climate and Energy Strategy Finland has set a primary energy saving target of 49 TWh. A Government Foresight Report on Climate and Energy Policy published at the end of 2009 supplements the strategy from 2020 onwards by setting long-term targets for priority areas, such as, reducing greenhouse gas emissions and energy efficiency of buildings. In June 2009, a broad-based Energy Efficiency Committee proposed 125 measures to achieve the 37 TWh of energy-savings by 2020. Based on the Committee's report, in February 2010 the Finnish Government adopted an Action Plan on intensifying measures to enhance energy efficiency to be implemented in 2010-2020. It is estimated that the greatest savings of energy could be achieved in industry and services (13.4 TWh) and transport (12.7 TWh) sectors. Finland plans to tighten energy efficiency regulations for new buildings from the beginning of 2012 by around 12 %.

Developing an efficient energy system has been a long-standing priority in the Finnish energy strategy driven by high domestic energy needs and scarce energy resources. Voluntary agreement schemes are applied in a drive to promote energy efficiency and the latest energy efficiency agreements for industries were signed for the period 2008-2016. During 1998-2008 Finnish companies have voluntarily invested nearly EUR 400 million in energy efficiency. The agreements will play a

123 "SHOKs" are Strategic Centres for Science, Technology and Innovation and operate in six strategic areas: forest, ICT, metals and engineering, energy and environment, built environment innovations, health and well-being.

124 CLEEN Ltd. is one of the Strategic Centres for Science and Technology (SHOKs).

central role in the national implementation of the EU Energy Services Directive applying to companies that are not part of the emissions trading scheme. The goal is to make their energy consumption 9 % more efficient by 2016. Moreover, the agreements are a part of the implementation of the EU climate action and renewable energy package[125]. The continuous modernisation of the energy system has helped Finnish energy related technology to reach world-class standard providing opportunities for energy technology exports, which has been growing in recent years.

Finland has signed up to an EU commitment to raise the use of renewable energy to 38 % of its overall energy production by 2020. Currently the share is about 30 %. To respond to this challenge, the Finnish government agreed in April 2010 to fund the growth of renewable energy, mainly wood-based energy, wind power, biofuels and heat pumps. The renewable energy package will include feed-in-tariff for wind, biogas, and small-scale combined heat and power production. In total, the support for renewable energy will be more than EUR 300 million per year by 2020[126]. On 1 January 2011, Tekes (the Finnish funding agency for technology and innovation) launched a new programme "Groove-Growth from Renewables", which will run from 2010-2014 with a total budget of EUR 96 million. The main objective is to find new ways of commercialising technology more swiftly by enhancing the business capabilities and international competitiveness of Finnish SMEs working on renewable energy.

The relative share of waste generated by Finnish enterprises is one of the highest in the EU. The largest amounts of waste are generated within the construction, and the mining and quarrying sector. The goal of the new Waste Act, which was adopted in March 2011, is to reduce the amount and adverse effects of waste and to promote sustainable use of natural resources. The waste tax, gradually to be raised in 2011 and 2013, is extended to cover all waste that is delivered to landfill sites which from a technical and environmental perspective could be utilised.[127]

In comparison with other industrialised countries, Finland's economy is extensively based on natural resources (such as forest, mineral ores, and peat). A report on "Building an Intelligent and Responsible Natural Resource Economy" was submitted to the Parliament by the Finnish Government in February 2011. It defines a vision for 2050 where Finland is pioneering the development of a responsible natural resources economy.

### 4.25.4 The business environment

Finland scores significantly above the EU average concerning almost all business environment indicator categories, with the exception of business churn and the availability of high-speed broadband lines, where it scores slightly below average. Regarding the latter indicator, as from 1 July 2010 Finland became the first country in the world to recognise broadband access to 1 Mbps (Megabit per second) as a universal legal right. The national broadband action plan 2009-2015 is ambitious aiming at making connections of very high speed (100 Mbps) available throughout the country to permanent residencies, business premises and government offices from 2015.

In Finland, the Better Regulation Strategy is embedded in the 2011 Government Programme and Government Strategy Document implementing them. It includes tools and processes, such as the forward looking legislative plan, the instructions on effective law drafting, legal quality and *ex ante* impact assessment, simplification and administrative burden reduction for businesses. The Prime Minister's Office and the Ministry of Justice are responsible for the monitoring of the Government legislative plan in accordance with the Government Programme.

Uniform *ex ante* impact assessment guidelines were adopted in 2007, which include assessing the impacts on SMEs, entrepreneurship and growth of enterprises. The responsibility of conducting an impact assessment is decentralised. The Ministry of Employment and the Economy has the lead in assessment of impacts on enterprises, including costs and earnings, competition and functioning of the market, SMEs, entrepreneurship and growth opportunities, investments and innovation and international competitiveness. These developments are a step in the right direction, but there is still scope for making the impact assessment more systematic through a uniform application of guidelines. In particular, the assessment of impacts on SMEs should be more strongly integrated into the legislative process instead of *ex-post* assessment.

Public consultation of stakeholders on new

125 http://www.energy-enviro.fi/index.php?PAGE=17&NODE_ID=19&LANG=1.

126 http://www.energy-enviro.fi/index.php?PAGE=2&NODE_ID=4&ID=3101.

127 Finland's National Reform Programme 2011.

regulations is based on guidelines adopted in 2010, and recent trends include electronic consultation in order to encourage a wider participation. Further efforts are needed to make the consultation process more standardised and to involve the maximum number of stakeholders. In this respect, the programme *Sähköinen asiointi ja demokratia* (e-services and e-democracy, SADe 2009-2013) will establish a modernised version of an interactive participation environment.

In March 2009, the Government approved an action plan 2009-2012 for reducing the administrative burden on businesses. The aim of the action plan is to reduce the administrative burden by 25 % compared to 2006 level by 2012. According to the baseline estimates, the overall administrative burden on businesses in Finland is slightly under €2 billion. In terms of the eight priority areas of the action plan, the greatest administrative burden is imposed by statutory employers' information obligations and taxation amounting to over one billion euro every year. One of the key methods of reducing the administrative burden on business is to develop eGovernment and projects are under way within all the priority areas of the action plan. The electronic communication services for central government are coordinated by means of the SADe programme, which aims at making electronic communication with all key services possible for both public and individual companies by 2013.

In 2010, Finland was one of the top performers in the EU on most eGovernment benchmarks. It has considerably improved online availability, especially for enterprises (from 50 % to 88 %) and leads in eGovernment usage and userfriendliness. Regarding eProcurement, Finland still lags behind the EU average, but has a mandatory notification database for ongoing public tenders and is developing non-mandatory common platforms for the other phases of eProcurement[128].

The one-stop-shop to start-up a company (in the Trade Register of the National Board of Patents and Registration (PRH) is fully operational.

Competition in services continues to be partly hindered by regulations, despite some recent loosening.[129] There are occasionally highly concentrated business structures, particularly in the wholesale and retail trade, which are reflected in a relatively high consumer price level, although a small domestic market and long transport distances may also be attributable to the higher consumer price level. The Finnish aggregate price level is the third highest in the EU, and the consumer prices for food and non-alcoholic beverages the highest in the euro area. More competition, particularly in the services sector, has become increasingly relevant for enhancing potential economic growth and stimulating innovation with impact on productivity. The R&D intensity in the service sector is currently relatively low, where 59% of companies are not active in regular innovation activities.[130]

### 4.25.5 Entrepreneurship and SME policy

Finland scores above the EU average on all indicators regarding entrepreneurship and SMEs, except on the share of high-growth enterprises as percentage of all enterprises. SMEs constitute the majority of all enterprises (99.8 %), of which micro-enterprises represent 93 %[131]. Although entrepreneurial activity in Finland is currently at an all time high (almost 50 firms/1000 inhabitants, 2009), the number of high-growth enterprises is low in EU comparison and some weaknesses exist in the conditions for entrepreneurship. For example, entrepreneurship culture is not supporting high-growth ventures, risk taking and learning from failure. Innovative high-growth companies are a key issue, which is addressed in several growth venture policy measures:

- A new financing instrument for innovative companies was launched by the Finnish Funding Agency for Technology and Innovation (Tekes) in 2008;
- The Vigo Start-up Accelerator for innovative fast growing companies was launched in 2009. Currently six accelerator enterprises are active on clean technology ventures, innovative human nutrition related businesses, web and mobile, life sciences and telecom information technology, media technology, B2B ICT and ICT enabled growth businesses;
- Fund for Growth Funds: Joint fund of private pension insurance companies and Finnish Industry Investment Ltd (2008);

128 2011, 9th eGovernment Benchmark Report, http://ec.europa.eu/information_society/newsroom/cf/item-detail-dae.cfm?item_id=6537.

129 Commission Staff Working Paper 2011, Assessment of the 2011 national reform programme and stability programme for Finland.

130 Research and innovation council of Finland: Research and innovation guidelines 2011-2015.

131 Estimate by FI Ministry of Employment and The Economy, 2008.

- Establishment of regional evaluation service of business ideas coming from private inventors (Foundation for Finnish Inventions, 2009);

- Growth Avenue: A joint "one stop shop" service for growth oriented-companies that have a clear strategy to internationalise of which there are five pilot projects testing whether to expand the service to national level.

- Proposed policy measures in growth venture policy include:

- Possible introduction of an R&D tax incentive for all enterprises to increase the number of start-ups with great growth potential and to promote the innovation culture among SMEs.

- Measures to improve access to equity financing (for example possible tax incentive for business angels, increased risk taking by public financing institutions, establishment of new sector specific VC funds (mining, forests, etc);

- Reforming the technology transfer structure and procedures of the universities.

At EU level, ERDF funding is supporting measures in favour of enterprise development and the innovation system (applied research and interaction and cooperation between research centres and enterprises).

Due to the structure of Finnish exports and exporting industry, peripheral location and small home market, appropriations to promote the internationalisation of companies have been increased and services have been enhanced. The FinNode network was expanded to India in 2011, internationalisation is promoted through several agencies (ex. Finpro, Tekes), financing instruments (Finnvera) and through State aid for joint internationalisation projects involving a minimum of four companies. A strategic programme in the forest industry aims to expand international business in the wood products sector and to increase cooperation with sector enterprises and advocacy groups. A strategy paper on the internationalisation of companies and export promotion 2011-2015 was published in 2011, which concludes that the current support system is fragmented and would benefit from streamlining in order to better cater to the needs of enterprises aiming at international markets[132].

A particular challenge relates to business-transfers due to the age structure of the entrepreneur population in Finland. About 28 % of entrepreneurs are over 55 years of age and over half of them are aged between 35 and 54 years. The current estimations show that about 10 000 businesses face a transfer of ownership every year. Action has been taken to raise awareness among aging entrepreneurs on the business transfer-related issues and available services, but sustained measures would be needed to ensure the transfer of viable businesses.

Entrepreneurship is included in school curricula both in lower secondary school curricula and in the upper secondary study programmes. Female entrepreneurship is promoted by strengthening business expertise, peer guidance and a business mentoring system. Conditions for cultural entrepreneurship will be improved and employment strengthened through measures in the Development Programme for Business Growth and Internationalisation of Creative Sectors 2007-2013, and in the Creative Economy Strategy. Entrepreneurship in the sports and exercise sector will be reinforced through a development strategy extending to 2020.

### 4.25.6 Conclusion

Overall, Finland enjoys a favourable position with respect to competitiveness, however both structural change and trends within sectors (R&D intensity and quality upgrading) may present risks for competitiveness in the medium term. Finland faces a number of challenges, in particular the globalisation driven restructuring, especially in the dominant ICT sector, has made it even more relevant to diversify the economy, attract FDI and promote high-growth companies and spin-offs that are internationalising successfully. Improving the external competitiveness of enterprises and industry is also important for employment creation.

Although entrepreneurial activity is high, the number of high-growth enterprises is low and weaknesses exist in the conditions for entrepreneurship. The national policy measures for improving the business environment and modernising the industrial base broadly address the main challenges. There are several policy initiatives for promoting innovative high-growth enterprises. Regarding improvement of conditions for entrepreneurship, a speedy implementation of the recently updated Small Business Act would be

[132] http://www.tem.fi/files/29592/YKE-linjaus_2011-2015.pdf.

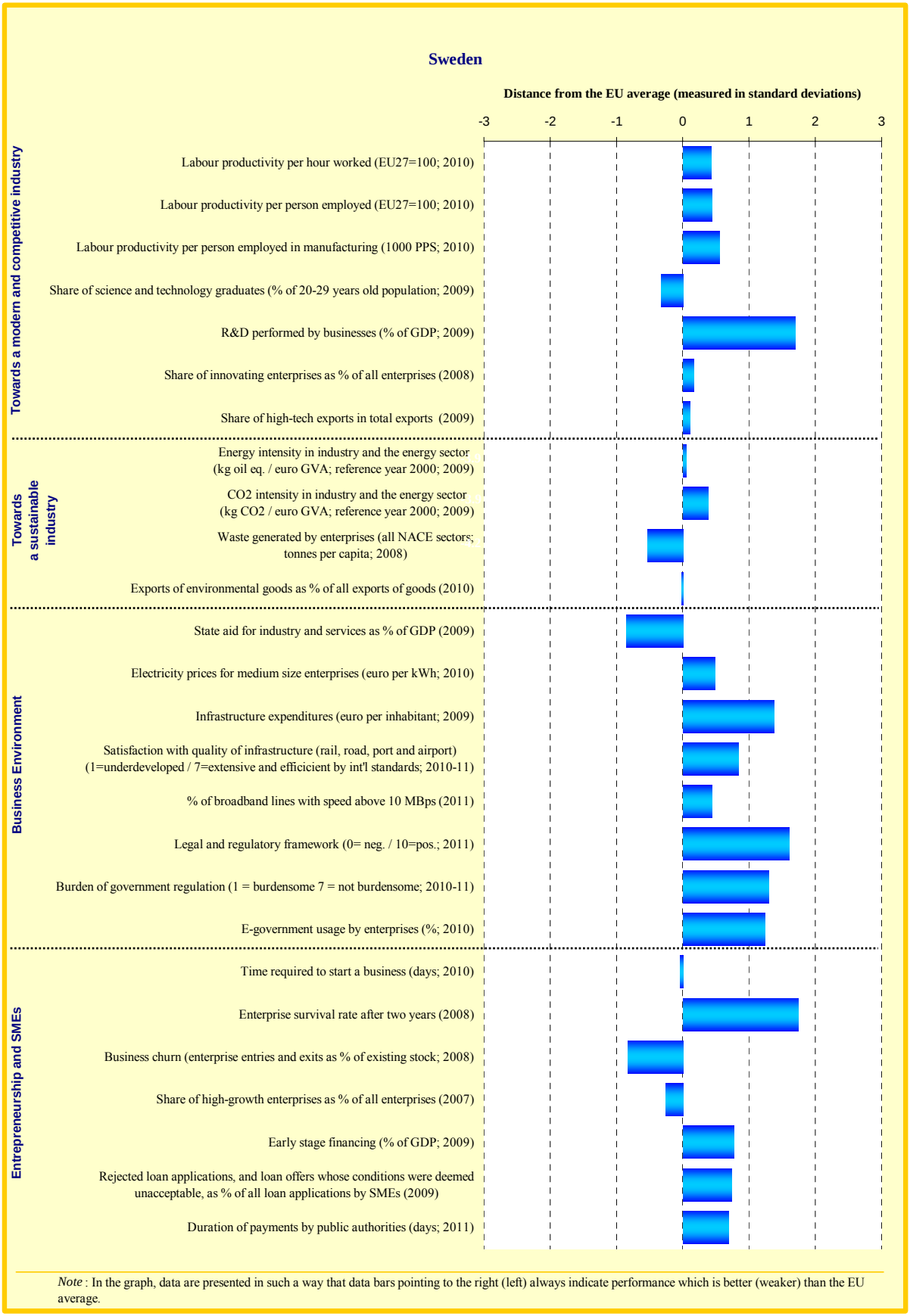
important. Measures to improving attitudes towards entrepreneurship and risk-taking and promoting SMEs access to public procurement, including implementation of the 'European Code of Best Practices', is in this context of particular importance.

Finland has showed commitment to a holistic development of its R&I system and is one of the EU innovation leaders. Nevertheless, there is scope for further streamlining the national innovation support system and developing framework conditions for a competitive innovation environment, attracting more foreign human capital and investments. The current schemes for supporting open innovation and user-driven innovation projects are still at an initial phase. The Strategic Centres for Science, Technology and Innovation are innovative initiatives aiming at leveraging Finnish competitiveness.

Finnish industry is relatively energy-intensive and implementing energy efficiency related policy measures would be important to reach the climate change targets, but also to help address commodity price shocks. The mid-term review of the National Climate and Energy Strategy foreseen by the end of 2011 is an opportunity to assess, whether the financing available for energy efficiency is appropriate. The proposed actions in the National Renewable Energy Action Plan may however be insufficient for reaching the national target of 38 % of renewable energy sources in final energy consumption by 2020, due to high reliance on biomass.

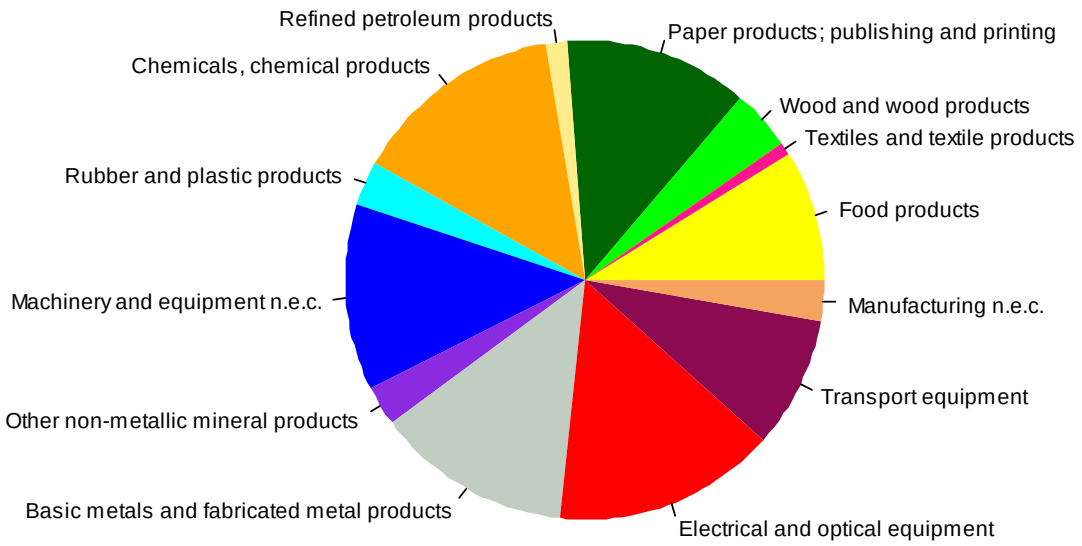
Existing business structures in the services market, particularly in the food, wholesale and retail trade, are occasionally highly concentrated. By redesigning the regulatory framework and removing restrictions, new entry to the service markets could be facilitated paving the way for more competition, productivity growth, and downward pressure on prices.

## 4.26 Sweden




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – Sweden (2009)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.26.1 Introduction

*Trade and industry specialisation*

The contribution of manufacturing to total value added is marginally higher in Sweden than in the EU on average (15.5 % against 14.9 %). At the detailed manufacturing industry level, Sweden features value added and exports specialisation in capital-intensive industries (pulp and paper, first processing of iron and steel), as well as in mainstream manufacturing (isolated wire and cable, general and special purpose machinery) in exports and in technology-driven industries (manufacture of TV and radio transmitters and receivers) in value added. At the more aggregated sector level, Sweden is specialised in highly innovation-intensive sectors (communication equipment, machinery, medical, precision, and optical instruments, R&D, software) and medium-high to medium education sectors (pulp and paper). In exports, Sweden features specialisation also in high education sectors, due to high relative shares in royalties and license fees, computer and information services and research and development.

Given its industrial structure, Sweden's R&D intensity is well above the average, as is its position on the quality ladder for technology-driven industries. By contrast, its position on quality indicators for labour-intensive industries is below the EU average (interestingly, just like the other Scandinavian countries). Its share of high-growth firms is above the EU average. Overall, within the group of higher income countries specialised in knowledge-intensive industries, Sweden is more similar to countries featuring specialisation in knowledge-intensive manufacturing such as Germany, Austria and Finland, rather than in knowledge-intensive services.

Most prominent sectors in Sweden

**Highest relative value added (2007)**
Pulp, paper and paper
Radio, television and communication equipment
Wood and products of wood and cork

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Renting of machinery and equipment
Real estate activities
Wood and products of wood and cork
Decreasing specialisation
Air transport
Motor vehicles, trailers and semi-trailers
Water transport

*Structural change*

In terms of change, Sweden has increased its relative share in labour-intensive industries (bodies for motor vehicles, sawmilling) while it has decreased its relative share of technology-driven industries (motor vehicles, aircraft and spacecraft, radio and TV transmitters and receivers); in exports, Sweden has gained relative shares in marketing-driven industries (prepared animal feeds, processing and preserving of fish, footwear). Furthermore, Sweden has increased its relative share of high education sectors and its relative export share of high innovation sectors (computers, R&D, computer and information services). As a consequence Sweden has improved its R&D intensity given its industrial structure, but has reduced somewhat its position on the quality ladder, as demonstrated in Figures 2 to 5.

The crisis seems to have had a limited impact on Sweden's industrial structure. Swedish industrial production fell by almost 25 % during the crisis, bottoming out in May 2009 (seasonal variations taken into account). The recovery since then has been strong but is still 9 % lower (April 2011) than at its previous peak.

Sweden is among the few Member States which have experienced a depreciation of the real effective exchange rate during the last decade (-9%, compared to an appreciation of 21% in the EU27), indicating a gain in cost and price competitiveness. Nominal unit labour costs have increased by 16% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. Sweden's labour productivity per hour worked is about 15 percentage points above the EU27 average and 2 percentage points above the Euro area average.

Overall, while Sweden enjoys a favourable position with respect to competitiveness, its pattern of change in specialisation and sectoral upgrading is mixed, improving in some areas while others deteriorate.

4.26.2 Towards an innovative industry

The Innovation Union Scoreboard 2010 ranked Sweden as one of four innovation leaders in the EU, its innovation performance being among the highest of all compared countries. The Swedish national innovation system shows clear strengths in several areas, including a stable macroeconomic environment, a well-educated workforce, a number of R&D-intensive multinational corporations, appropriate infrastructures, ambitious public investments in activities related to R&D and innovation, high levels of venture capital availability and state-of-the-art scientific performance. These strengths are reinforced by Sweden being highly integrated into global markets.

Sweden remains one of the top performers in the world in terms of R&D spending. Total R&D expenditure (BERD and public R&D spending combined) is predicted to have reached 3.8 % of GDP in 2010, well above the EU average and not far from the target Sweden has set itself for 2020 of around 4.0 %. The commercialisation of research results on the other hand remains a problem. In comparison with other countries around the world with very high R&D spending, Swedish researchers appear less able to turn their results into innovative and growth-enhancing products, processes and services (an observation known as 'the Swedish paradox'), so there appears to be room for improvement in the commercialisation of research results.

The share of science and technology graduates among 20-to-29-year-olds in Sweden stayed virtually unchanged from 2007 to 2009 (the latest year for which data are available) but meanwhile the EU average share has increased considerably and Sweden is now slightly below average, whereas in last year's assessment it was above average. The sectors of the economy in which Sweden specialises require high-intermediate skills; the risk of skill shortages therefore needs to be taken seriously. In this regard, the introduction of higher vocational education through the establishment in 2009 of the Swedish National Agency for Higher Vocational Education was timely and relevant. The introduction of 'Teknikcolleges' and their certification by social partners represent another step in the right direction.

A recent addition to the innovation landscape in Sweden is the creation of innovation offices at Swedish universities and equivalent institutions. A total of eight innovation offices have been set up with the aims of helping commercialise research results and innovations, stimulating entrepreneurship at universities, and assisting in the creation of spin-off companies. Eleven institutions have access to the services of the innovation offices and are legally bound to assist institutions without access in their commercialisation and entrepreneurship efforts. The creation of innovation offices is a positive development which may help address the commercialisation deficit of the Swedish R&D and innovation system. It would however seem appropriate to evaluate, by 2012 and on a regular basis thereafter, the activities of the innovation offices in order to draw lessons from the first years of operation and allow improvements to be made.

Another new initiative is the publicly-owned risk

capital company 'Inlandsinnovation' which is expected to start investing in 2011. Its purpose is to make risk capital available to innovators in the interior of central and northern Sweden in order to stimulate growth, strengthen competitiveness and create jobs in the region. As in the case of the innovation offices, a timely and regular evaluation of its activities should be foreseen so as to ensure its efficiency and avoid potential distortions such as crowding out existing risk capital in the region.

The Swedish Governmental Agency for Innovation Systems (VINNOVA) manages the 'Research and grow' research and innovation programme addressing SMEs and promotes eight Institute Excellence Centres creating the right conditions for research, development and innovation activity within areas of great importance for the future competitiveness and growth of the Swedish economy: wood-based materials and products; controlled delivery and release of chemical substances; advanced sensors, multi-sensors and sensor networks; optical fibres; process integration in steelmaking; casting technology; integrated components in imaging systems; networked systems.

Notwithstanding the strong Swedish R&D and innovation performance, a number of challenges remain, primarily in converting large investments in R&D into growth-enhancing productive innovations ('the Swedish paradox'). This challenge could be addressed by facilitating entrepreneurial activity.

Another challenge facing Sweden will be to take a more coherent and coordinated approach to the funding of innovation. There appears to be no shortage of funds and instruments set up for that purpose, but in some cases objectives overlap, while in other cases there are gaps. The forthcoming national innovation strategy could introduce a more coordinated approach to the multitude of instruments and funds so as to optimise their combined efficiency and close any gaps in the system.

### 4.26.3 Towards a sustainable industry

In comparison with most other industrial nations, Sweden has low emissions, per capita as well as in relation to GDP, largely due to its high proportion of hydroelectric and nuclear power production, as well as the increasing use of biofuels.

Sweden places great emphasis on the transition to an "eco-efficient economy", not only nationally but in the EU and worldwide. Nationally it implements a comprehensive policy mix focused on sustainable growth, energy and transport, climate change, environmental technologies and green taxes.

The Swedish environmental technology sector employs around 42.000 persons and in 2009 had a turnover of SEK 119 billion, 39 billion of which exported goods. According to a 2008 study the sector is highly diverse and made up of heterogeneous companies active in a wide range of industries, from knowledge-intensive and R&D-intensive services to traditional manufacturing companies. Sweden's carbon dioxide tax and other policy instruments with a similarly general scope drive sustainable development forward while at the same time being important for the development of environmental technologies.

The government prioritises such development and in its most recent Budget Bill proposed to allocate more funds for environmental technology, renewable energy and energy research.

The climate targets Sweden has set itself are to reduce greenhouse gas emissions by 40 % by 2020 (from their 1990 levels) for activities not covered by the EU emissions trading system; a 50 % share of renewable energy in total energy use by 2020; at least 10 % renewable energy in the transport sector by 2020 with a view to a vehicle fleet free of fossil fuels by 2030; a reduction in energy intensity by 20 % from 2008 to 2020. The government believes these targets, which are more ambitious than what Sweden is committed to do at the EU level, are within reach if the right policies are implemented and necessary resources made available. The government has identified the measures for research, development and demonstration of technology referred to above as important tools for reaching the climate targets. In its June 2011 assessment of Sweden's national reform programme 2011, the Commission considered the credibility of the foreseen reduction path difficult to assess due to a lack of detail in the programme.[133]

A national strategy for greener public procurement has been implemented, consisting of training of and support to procurement officers, stricter guidelines for government agencies and authorities, and ensuring that local and regional decision makers are fully involved and support the objectives.

Swedish enterprises continue to generate more waste per capita than enterprises in many other Member States, largely due to iron ore slag from its mining industry. The amount of waste generated by Swedish enterprises has however diminished considerably, from 12.4 kg in 2006 to 8.9 kg per inhabitant in 2008. Even so, the latter figure is almost twice the EU average.

[133] SEC(2011) 735 final, 7.6.2011.

### 4.26.4 The business environment

Sweden continues to score better than the EU average on all indicator categories for business environment, with the exception of the level of state aid which is still above the EU average.

The Swedish government undertook in 2006 to reduce administrative burdens for businesses by 25 % by 2010. However, the latest available information points to a reduction of just over 7 %. In addition, new legislation has meanwhile entered into force (in particular in the financial area) so that the actual administrative burden has remained relatively unchanged for many enterprises. The government has recognised the need to continue efforts to reduce the administrative burden for enterprises and has set a new target date, 2012, for the 25 % reduction. The new Regulatory Council, mandated with ensuring the quality of impact assessments and promoting administrative burden reduction in regulatory design, became operational in 2009 and has recently had its mandate extended until 2014.

Two new websites, www.verksamt.se and www.enklareregler.se, were launched in 2010. The former provides a one-stop shop for information for companies, the latter a forum where entrepreneurs can express their views on laws, regulations and procedures and subsequently see how their views are followed up.

eGovernment use by enterprises in 2010 was above the EU average. In January 2008, the Government adopted an eGovernment Action Plan focused on back-office integration and infrastructure development. Sweden has a non-mandatory national eProcurement platform.

In November 2009 the government presented a national broadband strategy. The objective is to achieve at least 90 % coverage of all households and businesses having access to at least 100 Mbps broadband by 2020.

Sweden has stepped up its pace of reform in increasing competition to address concerns expressed by the Commission as well as in other fora. In 2008 the government instructed the Swedish Competition Authority to undertake a broad review of the competitive situation and propose how to improve the situation. In 2009 the Competition Authority delivered its report, including an assessment of the state of play and 59 proposals for the government to consider.

The government and the parliament have since acted on around a third of the proposals, notably the phasing-out of the exclusive rights of SJ AB to operate profitable passenger train services; reforming the rent control system; new licensing processes in the energy sector; more competition in animal healthcare; and giving the Competition Authority the right to take legal action. Another third of the proposals are in the process of being implemented, whereas no action has so far been taken concerning the remaining third of proposals.

### 4.26.5 Entrepreneurship and SME policy

Swedish SMEs are even more dominated by microenterprises than in the EU overall – almost 95 % of all Swedish SMEs are microenterprises. As a consequence, small and medium-sized SMEs are slightly underrepresented in Sweden in comparison with other Member States: only 4.4 % of all Swedish SMEs are small and less than one percent medium-sized. Another aspect of the skewed size distribution of Swedish SMEs is that the average Swedish SME has just under three employees whereas the average EU SME employs 4.2 persons.

Most Swedish SMEs are active in the service sector. At 56 %, the service sector proportion is higher than the average EU share of SMEs in the service sector. Service sector SMEs only account for 40 % of Swedish SME employment and 45 % of SME value added though, suggesting that most Swedish service sector SMEs are smaller than other Swedish SMEs.

Turning to entrepreneurship, an interesting recent development is the new role given to a number of holding companies attached to universities in order to manage their purely commercial activities. With a view to increasing the commercial activities of universities and strengthening their entrepreneurial edge, a new law has been introduced giving more capital and greater coordinating powers to six such holding companies, combined with increased responsibilities for the commercial activities of universities with no such companies.

Sweden has also introduced a freedom-of-choice reform in the provision of social services and primary health care, in some places replacing previously existing public procurement contracts or publicly-run services. The purposes of the reform are to empower service users to determine which service provider to use, increase quality and efficiency in the provision of services, promote a greater variety of providers and stimulate entrepreneurship in these sectors.

The overall birth rate of new firms is lower in Sweden than in other Member States and so is the overall exit rate, meaning that business churn is low and possibly indicating a lack of dynamism. While the survival rate of new businesses is higher than

the EU average, relatively fewer SMEs grow to become large companies in Sweden than in other Member States. The proportion of high-growth companies is also lower than the EU average.

As the Swedish economy is coming out of the crisis, the previously existing credit rationing has been lifted and companies are increasingly having sufficient access to risk capital.

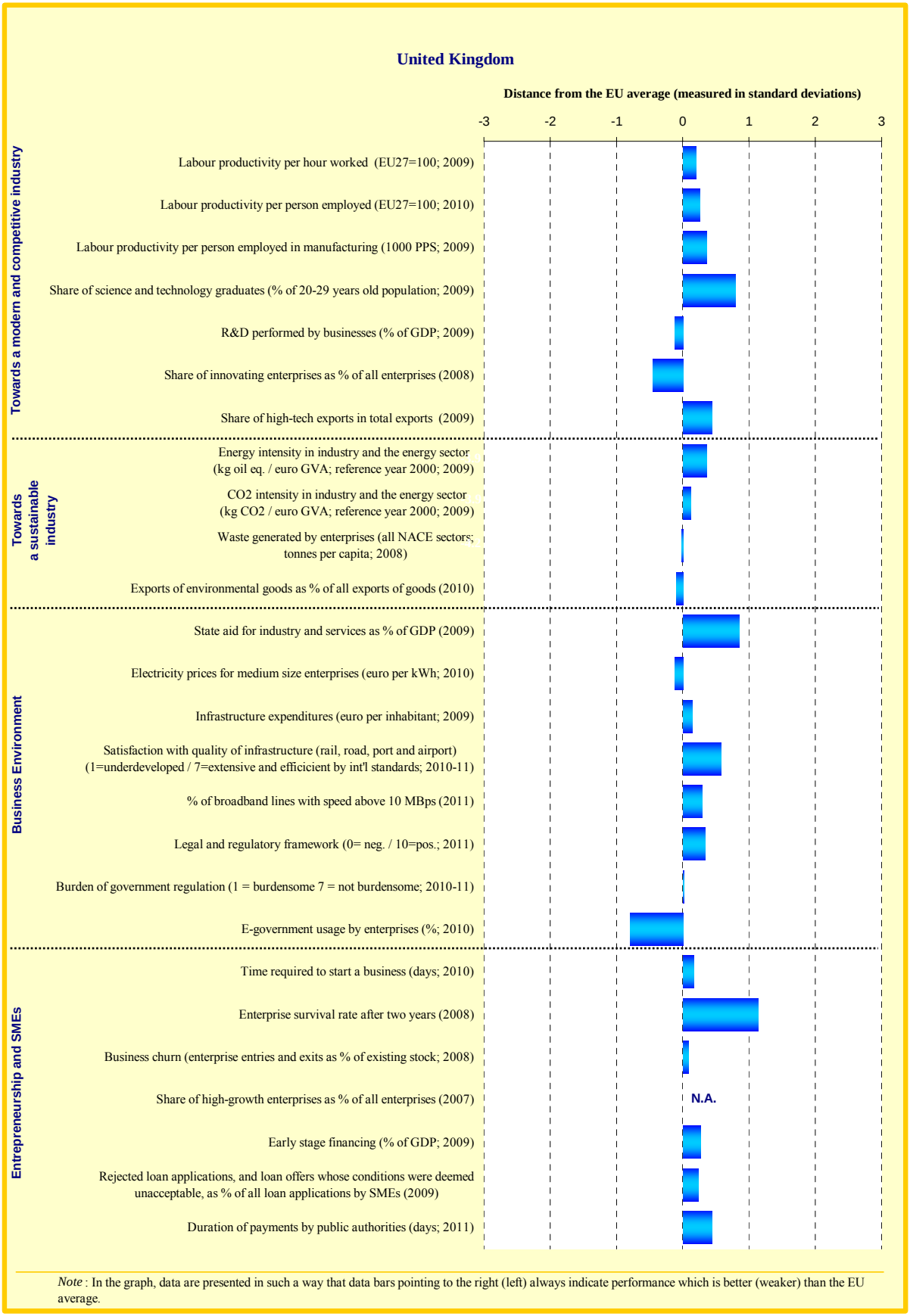
Sweden has undertaken to implement the ten principles of the Small Business Act as well as a series of actions to improve the business environment of SMEs. While Sweden's performance across the ten Small Business Act principles is generally above the EU average, the development since 2005 is characterised by a high degree of stagnation, or even deterioration in comparison with other Member States. Unlike some other Member States, Sweden has not yet adopted a plan for the national implementation of the Small Business Act. Nevertheless, in 2011 the government tasked the Swedish Agency for Growth Policy Analysis with evaluating the implementation of the Small Business Act in Sweden.

Although SME tests – an important element of the Think Small First principle of the Small Business Act – are systematically carried out in Sweden, current SME consultations do not include a size class breakdown (into micro, small and medium-sized enterprises). There is therefore a risk that the concerns of the 95 % of SMEs which are in fact microenterprises (up to nine employees) are not fully taken into account. The rigour of the cost and benefit analysis contained in Swedish SME tests could also be strengthened.

### 4.26.6 Conclusion

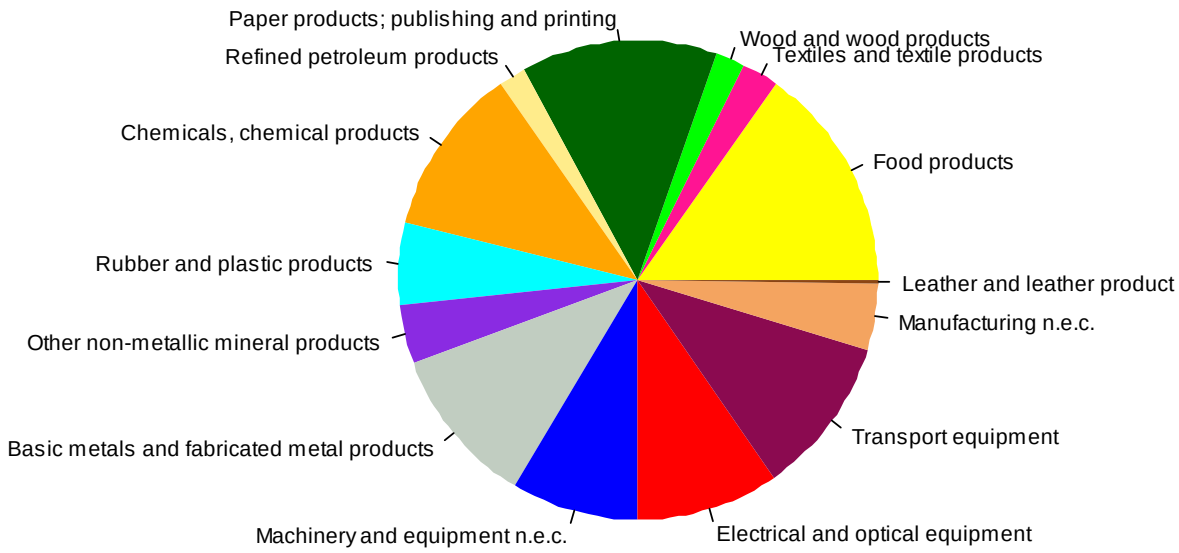
Sweden remains one of the most competitive economies in the world and is identified as an innovation leader in the EU. Though it faces no major challenges to competitiveness, Sweden should consider its long-term skills needs, especially in science, technology, engineering and mathematics (STEM) and what measures can be taken to avoid shortages, bearing in mind negative demographic developments and prevailing gender imbalances among STEM graduates. Secondly, despite having high total R&D spending by international standards, Sweden has a less impressive record in the commercialisation of research results and innovations. It may need to consider how to align R&D and innovation closer to the needs of markets and of society at large. Sweden could also take further measures to improve competition, reduce the administrative burden to reach the national target, and establish a more coherent framework for research and innovation funding.

## 4.27 United Kingdom




*Note* : In the graph, data are presented in such a way that data bars pointing to the right (left) always indicate performance which is better (weaker) than the EU average.

**Sectoral specialisation of manufacturing – United Kingdom (2005)**




*Note* : n.e.c. (not elsewhere classified)
*Source*: Eurostat

4.27.1 Introduction

*Trade and industry specialisation*

Manufacturing contributes 13 % to UK's total value added against 14.9 % for the EU on average. At the detailed manufacturing industry level, United Kingdom is specialised in technology driven industries (aircraft and spacecraft, computers, radio and TV receivers, instruments for measuring, pharmaceuticals) both in value added and exports terms. It is also specialised in marketing-driven industries (grain mill products, publishing and printing) in value added. At the more aggregated sector level, the UK is specialised in educationally highly intensive industries (financial services, research and development, software) and in sectors with medium innovation intensity (air transport, business services). The UK achieves a high share of exports to the BRIC countries, indicating further export growth potential.

The UK's R&D intensity is below the EU average, given its industrial structure, but showing particularly high sectoral R&D intensity in pharmaceuticals and transport equipment (aircraft). Its position on the quality ladder is mostly above the EU average, with the exception of the low quality segment in technology-driven industries, where it is on par with the EU average. Overall, within its group of higher income countries specialised in knowledge-intensive industries, the UK is more similar to France, Belgium and the Netherlands with its specialisation in knowledge-intensive services.

Most prominent sectors in United Kingdom

**Highest relative value added (2007)**
Research and development
Computer and related activities
Air transport

**Change in the relative value added (1999/2007)**
*Increasing specialisation*
Real estate activities
Research and development
Tobacco products
Decreasing specialisation
Office, accounting and computing machinery
Other transport equipment
Radio, television and communication equipment

*Structural change*

In terms of structural change, the United Kingdom has further increased its industry specialisation in high education sectors (R&D, business services), but decreased its export specialisation (computers

and telecommunications equipment), as well as its relative share in labour-intensive industries (wooden containers, leather clothes) and in highly innovation intensive sectors (communication equipment). It has increased relative value added in marketing driven industries (processing of fish) and revealed comparative advantage in capital-intensive industries (nuclear fuel, coke oven products). The UK has increased its export share in the high price segments of labour-intensive and technology-driven industries, pointing to a favourable movement on the quality ladder. However, it has slightly decreased its R&D intensity, when taking into account its industrial structure.

Manufacturing output fell by 15 % during the course of the crisis and has partially recovered since then, reaching in May 2011 a level 6.1 % lower than at its previous cyclical peak. In the UK, the crisis has clearly favoured technology-driven and labour-intensive industries, at the expense of the other industry types.

The UK is among the few Member States which have experienced a depreciation of the real effective exchange rate during the last decade (-13%, compared to an appreciation of 21% in the EU27), indicating a gain in cost and price competitiveness. Nominal unit labour costs have increased by 33% between 2000 and 2010, compared to an increase of 14% in the EU27 and 20% in the Euro area. The UK's labour productivity per hour worked is about 7 percentage points above the EU27 average but about 7 percentage points below the Euro area average.

Overall, the UK enjoys a favourable position with respect to competitiveness, but its pattern of structural change sends mixed signals, with some areas improving while others are deteriorating.

4.27.2 Towards an innovative industry

The UK's strong innovation performance is confirmed by its fifth rank in the Innovation Union Scoreboard, which places the UK with an above EU average performance at the top of the group of innovation followers. The British research and innovation system is characterised

by strong performance over a range of research and innovation indicators, such as high quality publications, high quality patents for which it obtains high licence and patent revenues from abroad or the high share of the population working in knowledge intensive activities. On the other hand, the system underperforms in terms of public and private R&D investment as a share of GDP.

Amidst significant overall expenditure cuts, the UK government has indicated that support to science and research will be a top priority. The Comprehensive Spending Review (CSR) announced that current spending on the core government science R&D budget will be fixed in cash terms at GBP 4.6 billion per year for the next four years (2011-2015). Nevertheless science investment spending will be reduced by some 40 %. Moreover, some departmental R&D spending has been reduced sharply e.g. on defence and it is likely that this will also seriously affect private sector R&D spending.

The R&D tax credit is the biggest single funding mechanism provided by Government to support business investment in R&D. The latest R&D tax credit data shows that the schemes supported almost GBP 11 billion of R&D investment in 2008-09 by UK companies. An estimated GBP 980 million of support was provided to around 8 350 companies undertaking qualifying R&D activity that year. The Government published a consultation on the schemes in November 2010, and announced a number of changes to the scheme at Budget 2011, including increasing the SME rate from 175% to 200% in 2011 and to 225% in 2012. In June 2011, the Government launched a further consultation to improve the working of the scheme.

In the Plan for Growth published in March 2011, the UK announced measures on investment incentives, support for SMEs and for the promotion of skills. Other new areas of policy development include:

The announcement of a series of reductions in the main rate of corporation tax from 28 % to 23 % by financial year 2014-15 to improve incentives for firms to invest.

Pre-commercial public procurement through a competitive Small Business Research Initiative (with budget GBP 20-30 million per year), where SMEs will compete for funds to undertake innovation projects with high relevance for the public sector.

A review of rules and formats to facilitate access to government data (e.g. mapping data, crime statistics) to allow the development of new business opportunities.

In technology policy, the UK has published the "Blueprint for Technologies" document in November 2010. The Technology Strategy Board (TSB) will become the Government’s main channel to support business-led technology innovation and will be provided with additional funding of over GBP 200 million to establish a network of high quality Technology and Innovation Centres. The

TSB's strategy for national business innovation 2011-2015 was published in May 2011. The focus is particularly on stimulating a range of new and emerging technologies, including high value manufacturing, advanced materials, nanotechnology, bioscience, electronics, photonics and electrical systems, and ICT.

The abolition of the Regional Development Agencies will result in a centralisation of innovation funding and some strengthening of the role of the Technology Strategy Board. In addition, the Coalition government is putting special emphasis on improving access to private sector financing for highly innovative SMEs through e.g. the bank-led Business Growth Fund and other national equity funds.

The overall research and innovation (R&I) intensity in the UK has been relatively stagnant for some time and is below the EU average. This is partly explained by the nature of the highly service-intensive economic structure of the UK, but there is nevertheless a case to increase R&D to move towards a more sustainable and knowledge-intensive economy in order to preserve future growth and competitiveness. In the context of the current weakness in some parts of the labour market, a major opportunity is to create jobs in more R&I- and knowledge-intensive sectors.

4.27.3 Towards a sustainable industry

The UK scores above the EU average on all sustainable industry related indicators, except on exports of environmental goods.

The UK is committed to promoting a low carbon economy and has published a Low Carbon Industrial Strategy in July 2009, which deploys a comprehensive range of policies to support the transition to a low carbon future. A low carbon review was also included in the Government's Plan for Growth published in March 2011, which set out the key actions required to put the whole economy on a low carbon, resource-efficient path. The UK will introduce a package of measures during 2011 for the energy intensive setor, whose international competitiveness is most affected by UK energy and climate change policies.

In the 2011 budget the government has strengthened its commitment to the low carbon economy with the announcement to establish a Green Investment Bank[134] in 2012 with GBP 3 billion of initial funding[135]. It would be the first such institution in the world with the mission to exclusively fund green projects. The Electricity Market Reform sets out key measures to attract investment, reduce the impact on consumer bills, and create a secure mix of electricity sources. Key elements of the reform package include a carbon floor price, a long-term Feed-in-Tariff, a Capacity Mechanism, and the use of an Emissions Performance Standard.

To promote energy efficiency improvements the government is preparing the roll-out of the "Green Deal", a finance mechanism, which allows consumers to pay back the cost of energy efficiency improvements through their energy bills. It is designed to enable private firms to offer consumers energy efficiency improvements to their homes, community spaces and businesses at no upfront cost, and recoup payments through a charge in instalments on the energy bill. The programme should be monitored on regular basis and the funding realigned if necessary[136]. The Government also uses a range of policy levers, such as the climate change levy, carbon reduction commitment, and climate change agreements to incentivise energy efficient behaviour amongst UK businesses.

Under Directive 2009/28/EC on the promotion of the use of energy from renewable sources, the UK has committed to reach a target of 15 % of renewable energy sources in final energy consumption and a 10 % share of renewable energy in the transport sector by 2020. In 2010 the UK submitted its National Renewable Energy Action Plan, which outlines the current and future measures to be used to follow the trajectory for developing renewable energy sources established in the Directive and sets sectoral targets. A step to implement this plan and complete the transposition of the Directive would be to clarify the support regime to be applied in both the heating and the electricity sectors which, together with the Electricity Market Reform, should ensure the creation of a stable regulatory environment that promotes the development of new markets in green goods and services[137].

The Government has also published a draft Carbon Plan, which is a cross-Government action plan on climate change setting strict actions and deadlines

134 http://www.bis.gov.uk/policies/business-sectors/low-carbon-business-opportunities/gib

135 http://climatechange.cbi.org.uk/news/the-budget-and-the-low-carbon-economy

136 Commission Staff Working Paper 2011, Assessment of the 2011 national reform programme and convergence programme for the UK.

137 Commission Staff Working Paper 2011, Assessment of the 2011 national reform programme and convergence programme for the UK.

over the coming 5 years[138]. The draft plan takes account of the existing first three UK carbon budgets covering the period from 2008 to 2022 and the final version will also take into account the fourth carbon budget (for 2023-2027), which was set into law in June 2011.

### 4.27.4 The business environment

On business environment indicators, the UK scores above the EU average on all except on E-government usage by enterprises, and electricity prices for medium-sized enterprises. The UK scores clearly better than the EU average concerning state aid.

The Government introduced a 'one-in, one-out' rule in the Coalition better regulation document published on 20 May 2010. The rule requires that no new domestic regulation is brought in without other regulation being cut by a greater amount. In 2010 the Government announced the intention to reduce the costs of administrative burden by a further GBP 6.5 billion in 2010-15. This objective builds on the previous five-year Programme on Administrative Burden Reduction ending in 2010, which delivered more than GBP 3.5 billion of net annual savings, representing a reduction of over 26.5 % in administrative burden placed on business by government. A periodically updated Forward Regulatory Programme is implemented to improve regulatory outcomes with impact on UK businesses. In March 2010, the Government published an update of its first Forward Programme issued in October 2009[139]. The Spring 2010 Forward Programme covers 12 months starting from April 2010 and includes large announced measures that are expected to be implemented after April 2011, where average annual costs or benefits are greater than GBP 50 million. In addition, in the Plan for Growth published in March 2011, the Government announced a moratorium on new domestic regulation for micro-businesses and start-ups for the next 3 years. The Government also announced its intention to scrap proposals for specific regulations, which would have cost business over £350m a year. The Government is also launching a public thematic review to reduce the stock of regulation, and the first results have led the Government to propose scrapping or simplifying more than 160 regulations from the retail sector.

The *ex ante* impact assessment policy has been updated. An SME Test has been integrated into the national decision making process whereby all new regulatory and policy proposals require in their impact assessment and explanatory memorandum consideration of exemptions or simplified enforcement for small businesses. A guidance document on the Small Firms Impact Test and a handbook for officials on regulating for small businesses have also been published. In addition, the introduction of a forward-looking planning tool has been announced to allow companies to predict more clearly the effect of upcoming regulation. Public consultation of stakeholders on new regulations is embedded in the Code of Practice on Consultation. It is estimated that in 2009 only 14 % of Impact Assessments in the UK included quantified effects on SMEs. Nevertheless, the quality of Impact Assessments has been improving.

Despite significant improvement over the period 2005-2009, take-up by businesses of eGovernment services is still below the EU average. The UK has implemented a decentralised eProcurement policy, whereby contracting authorities are free to decide on their own procurement strategies. A non-mandatory national portal "Buying solutions" is permitted to procure on behalf of all UK contracting authorities[140]. It includes an electronic marketplace containing details of Public Sector supplier contracts, a Purchase to Pay solution and a pan-Public Sector data warehouse e Procurement. The UK has started to implement the European Code of Best Practices to facilitate SMEs access to public procurement[141], for example:

Recent initiatives include the launch of the 'Contracts Finder' in early 2011, an online facility for public sector contract opportunities over £10,000 (including a feed from the OJEU Tenders Electronic Daily).

The UK Government has also announced a Government eMarketplace, whereby Government Departments can raise requests for low value projects enabling easier registration for SMEs.

The BusinessLink network operating since 2007 is the government's website for businesses of all sizes. By 2011 all business-related content from 95 % of government websites has been moved onto the BusinessLink website resulting in a single

138 http://www.decc.gov.uk/en/content/cms/tackling/carbon_plan/carbon_plan.aspx

139 http://www.bis.gov.uk/assets/biscore/better-regulation/docs/10-p96a-governments-forward-regulatory-programme

140 "Digitizing public services in Europe: Putting ambition into action", 9th Benchmark Measurement, December 2010. Report prepared for European Commission.

141 http://ec.europa.eu/enterprise/policies/sme/small-business-act/files/sba_review_en.pdf

online government resource for businesses[142] The BusinessLink is primarily becoming an online service and is the portal for accessing the UK's point of single contact under the Services Directive.

### 4.27.5 Entrepreneurship and SME policy

The UK scores above the EU average in all the entrepreneurship and SMEs related indicators, for which data is available. However SMEs access to finance remains a significant issue for the UK. The economic crisis has had long lasting effects on access to finance for SMEs, particularly for small firms. The UK banking sector was badly hit by the financial crisis and many banks still remain with substantial public shareholding and/or benefit from the UK government's asset protection scheme. Despite recent policy efforts, the Bank of England recently noted that credit conditions for small companies generally remain tight, both in terms of cost and availability and that lending to SMEs continued to contract in the second half of 2010[143]. The UK has recently put in place a number of measures to improve SME access to finance including state sponsored investment vehicles and reaching an agreement with UK banks requiring them to increase their gross lending to SMEs, for example:[144].

- The highest profile measure was project Merlin, a deal negotiated between the UK government and HSBC, RBS, Lloyds and Barclays (plus Santander for the lending targets).

- The Government published the *Financing Business Growth* green paper[145] in November 2010. It includes a range of measures to support access to finance for SMEs including an extension of the Enterprise Capital Funds (ECFs) programme by GBP 200 million over the next four years, providing more than GBP 300 million of investment into the equity gap for early stage innovative SMEs with the highest growth potential, after taking private sector contributions into account.

- The Government also announced continued support for the Enterprise Finance Guarantee (EFG) Scheme to enable over GBP 2 billion of new lending to viable SMEs, over the next 4 years.

- To help build up SME demand for equity finance and growth capital, the Government announced that it will roll out a network of Business Coaching for Growth services across England from January 2012.

The *Plan for Growth* in March 2011 also includes action to facilitate access to finance for new and growing businesses, including through tax measures[146].

As regards the internationalisation of SMEs, the Export Credits Guarantee Department (ECGD) has implemented three new products, which share risks with banks in providing financial services to exporters: a bond support product, an export working capital product and a foreign exchange credit support product. ECGD has also extended the scope of its Export Insurance Policy (EXIP) to cover products other than just capital goods. It is not possible to predict levels of demand for the products at the outset, but the Government will review the new ECGD products in the light of experience at the end of the year[147]. The Government is also launching the Export Enterprise Finance Guarantee (ExEFG) and promoting its use to SMEs. The scheme is aimed at viable SME exporters with an annual turnover of up to GBP 25 million and which require export finance. Under the ExEFG the Government will guarantee lenders to facilitate the provision of short-term export finance lines of up to GBP 1 million to exporting SMEs. The ExEFG is being launched on a pilot basis based on a GBP 40 million facility.

The Government is also introducing a package of measures to support exporters through UK Trade and Investment (UKTI), the UK's trade and export promotion agency. UKTI will deliver a new range of support to help SMEs with an ambition to break into overseas markets. This will include promotion of "Passport to Export", which helps SMEs new to exporting to build their trade capacity. Around 1 250 companies a year benefit from the Passport to Export programme and companies on the programme will receive up to GBP 1 000 match funding to carry out activities in their action plans.

142 https://online.businesslink.gov.uk/Horizontal_Services_files/business_link_annual_review_0910.pdf

143 Commission Staff Working Paper 2011 - Assessment of the 2011 national reform programme and convergence programme for the UK

144 Commission Staff Working Paper 2011, Assessment of the 2011 national reform programme and convergence programme for the UK, and UK NRP 2011.

145 Green Paper: Financing Business Growth: http://www.bis.gov.uk/assets/biscore/corporate/docs/f/10-1242-financing-business-growth-response.pdf

146 UK NRP 2011.

147 UK NRP 2011.

The Government will use the Foreign and Commonwealth Office and UKTI to provide UK businesses with local intelligence on high value projects overseas and intensive support to win these deals.

Regarding entrepreneurship promotion, the Local Enterprise Growth Initiative (LEGI) was implemented until March 2011 and a total of EUR 482 million was allocated to the programme up to 2010/2011 helping the most deprived local areas, through enterprise and investment. In December 2010, an independent evaluation of the LEGI programme[148] concluded that LEGI has had a positive impact on enterprise activity, especially start-ups, however its impact on worklessness has been less evident.

Moreover, to promote entrepreneurship as a viable route off benefits, the Jobcentre Plus scheme is delivering the New Enterprise Allowance (NEA), which will be available to individuals who have been claiming Job Seekers" Allowance (JSA) for six months or more. Following piloting in six local authorities, the scheme will be available nationally from autumn 2011. GBP 80 million will be made available for up to 40 000 JSA claimants to take up NEA by the end of 2012-13.[149]

The women's enterprise ambassadors' network involves more than 1 000 ambassadors. Moreover, an Enterprise Network works to improve the quality and quantity of entrepreneurship education in schools and colleges in England and has a sustainable network of 54 Enterprise Learning Partnerships (ELPs). The National Council for Graduate Entrepreneurship (NCGE) has developed its University Enterprise Networks which bring together universities, private sector businesses, and the regional agencies in projects to promote entrepreneurship to students and post graduates.

### 4.27.6 Conclusion

Overall, the UK enjoys a favourable position with respect to competitiveness, but its pattern of structural change sends mixed signals, with some areas improving while others are deteriorating. The UK faces a number of challenges, in particular, its economic performance depends to a higher than average degree on the financial services industries, whilst the manufacturing base is comparatively small.

There is a commitment towards building a comprehensive policy approach to the transition to agreen and growing economy, which requires substantial investment in key green sectors. The Green Investment Bank has potential to become a key component in the transition to a green economy, complementing other green policies to allocate additional capital.

The UK has an excellent record with respect to better regulation and the business environment and has continued to give priority to making further progress. However, eGovernment and eProcurement still leave room for improvement relative to other EU Member States.

The UK has recently put in place a number of measures to improve SME access to finance. It would be important to implement measures already announced and continue to work to improve the availability of bank and non-bank financing to the private sector and in particular to SMEs, while recognising potential challenges on the demand side. It would also be important to encourage competition within the banking sector and explore with the market ways to improve access to non-financing such as venture and risk capital and debt issued on public markets.

148 http://www.communities.gov.uk/publications/regeneration/lgipfinalreport

149 UK NRP 2011.

# 5 ANNEX: METHODOLOGY AND INDICATORS USED

The report uses a number of indicators and industry classifications in order to make a systematic and consistent presentation of specialisation patterns (section 2 on Structural Change and introduction of country chapters) and of developments in Member States regarding various other aspects relevant to industrial competitiveness (section 3 and indicators graph opening the country chapters). Below are the methodological details on the classifications and the indicators as well as the datasets underlying the graphs of the report.

## 5.1 Industry classifications and indicators used in section 2 and introductions of country chapters

### 5.1.1 Detail of industrial classifications

#### *5.1.1.1 Manufacturing 3-digit classifications*

##### *Factor-input classification*

The classification groups individual industries according to their typical combinations of factor inputs, in order to reveal information about differences across industries with regard to the dominant modes of creating competitive advantage in specific marketplaces. In particular, the typology is directed towards distinction between (i) exogenously given competitive advantages based on factor endowments and (ii) endogenously created advantages based on strategic investment in intangible assets such as marketing and innovation. The new classification is based on Eurostat's revised NACE classification at the 3-digit level[150].

##### *Data and the choice of variables*

The clustering process is based on the following four variables, which are designed to span four orthogonal dimensions of how to spend available units of productive inputs:

- wages and salaries
- physical capital
- advertising
- research and development

Ratios to total value added have been calculated for wages and physical capital. Expenditures on advertising and R&D are represented by their ratios to total sales. The latter are derived directly from balance sheet data. All four variables have been used in their standardised form, i.e. transformed by calculating the difference to the mean divided by the standard deviation of the variables. Data sources are DEBA (labour and capital inputs) and COMPUSTAT (advertising and R&D). Since all four dimensions of input data were available only for the US, the clustering process is exclusively based on US data. Correlations between the four variables are low or non-existent.

[150] For more details see Peneder (2002).

*Statistical clustering*

Cluster analysis classifies individual observations, depending on their relative similarity or nearness to an array of different variables. The basic idea is one of dividing a specific data profile into segments by creating maximum homogeneity within and maximum distance between groups. For the current analysis one hundred NACE 3-digit manufacturing industries are taken as observations, while the four factor inputs given above determined the discriminating variables.

A two step procedure was applied. In the first step, a non-hierarchical optimisation cluster technique, based on the iterative minimisation of within group dispersion, was used to provide a more aggregate picture of typical input combinations, which resulted in 32 clusters.

In a second step, the 32 clusters from the first partition were taken as individual observations on which a hierarchical clustering algorithm was applied. In the following iterative process, clusters are formed according to the average linkage between groups, which aggregates the distances of all single pairs between an observation outside and each observation inside the cluster.

The final solution of the hierarchical clustering algorithm groups all observations into four categories, each one related to particularly high values in one of the four dimensions. After applying several variations on both (i) the measures for distance/similarity and (ii) the clustering algorithm itself no successful alternative partition to this solution emerged. Finally, a number of industries which had no particularly pronounced reliance on any of the input variables were placed in a residual category called ‘mainstream’ manufacturing. This more or less represents the input combination of a ‘typical’ 3-digit manufacturing industry.

*The typology*

Finally, precisely 100 NACE 3-digit manufacturing industries have been completely categorised under the following five mutually exclusive groupings of mainstream manufacturing, particularly labour-, capital-, advertising- and research intensive industries. Like any broad classification, this typology must be interpreted with care, since industries within these five categories are still heterogeneous and exhibit combinations of some or all these variables. A full list of industries is in **TABLE A**.

A full list of industries is in **TABLE A**. The classification of trade data can be done along the lines of the value added classification, there are only minor differences – overall, 6 value added industries are missing in the trade classification, while 2 industries are present in the trade but not in the value added classification.

## TABLE A: Industries used for 3-digit manufacturing industries

| Nace | | Factor inputs | Labour skills |
|---|---|---|---|
| 151 | Meat products | 4 | 1 |
| 152 | Fish and fish products | 4 | 1 |
| 153 | Fruits and vegetables | 4 | 1 |
| 154 | Vegetable and animal oils and fats | 4 | 1 |
| 155 | Dairy products; ice cream | 4 | 1 |
| 156 | Grain mill products and starches | 4 | 1 |
| 157 | Prepared animal feeds | 4 | 1 |
| 158 | Other food products | 4 | 1 |
| 159 | Beverages | 4 | 1 |
| 160 | Tobacco products | 4 | 1 |
| 171 | Textile fibres | 3 | 1 |
| 172 | Textile weaving | 2 | 1 |
| 173 | Finishing of textiles 1) | 1 | 1 |
| 174 | Made-up textile articles | 2 | 1 |
| 175 | Other textiles | 1 | 1 |
| 176 | Knitted and crocheted fabrics | 1 | 1 |
| 177 | Knitted and crocheted articles | 1 | 1 |
| 181 | Leather clothes | 2 | 1 |
| 182 | Other wearing apparel and accessories | 2 | 1 |
| 183 | Dressing and dyeing of fur; articles of fur | 2 | 1 |
| 191 | Tanning and dressing of leather | 4 | 1 |
| 192 | Luggage, handbags, saddlery and harness | 4 | 1 |
| 193 | Footwear | 4 | 1 |
| 201 | Sawmilling, planing and impregnation of wood | 2 | 2 |
| 202 | Panels and boards of wood | 2 | 2 |
| 203 | Builders' carpentry and joinery | 2 | 2 |
| 204 | Wooden containers | 2 | 2 |
| 205 | Other products of wood; articles of cork, etc. | 2 | 2 |
| 211 | Pulp, paper and paperboard | 3 | 3 |
| 212 | Articles of paper and paperboard | 1 | 3 |
| 221 | Publishing | 4 | 3 |
| 222 | Printing | 4 | 3 |
| 223 | Reproduction of recorded media 1) | 4 | 3 |
| *231* | *Coke oven products 2)* | 3 | 3 |
| *232* | *Refined petroleum and nuclear fuel 2)* | 3 | 3 |
| *233* | *Nuclear fuel 2)* | 3 | 3 |
| 241 | Basic chemicals | 3 | 3 |
| 242 | Pesticides, other agro-chemical products | 5 | 3 |
| 243 | Paints, coatings, printing ink | 1 | 3 |
| 244 | Pharmaceuticals | 5 | 4 |
| 245 | Detergents, cleaning and polishing, perfumes | 4 | 3 |
| 246 | Other chemical products | 5 | 3 |
| 247 | Man-made fibres | 3 | 3 |
| 251 | Rubber products | 1 | 1 |
| 252 | Plastic products | 1 | 1 |
| 261 | Glass and glass products | 1 | 1 |
| 262 | Ceramic goods | 2 | 1 |
| 263 | Ceramic tiles and flags | 3 | 1 |
| 264 | Bricks, tiles and construction products | 2 | 1 |
| 265 | Cement, lime and plaster | 3 | 1 |
| 266 | Articles of concret, plaster and cement | 1 | 1 |
| 267 | Cutting, shaping, finishing of stone | 2 | 1 |
| 268 | Other non-metallic mineral products | 1 | 1 |
| 271 | Basic iron and steel, ferro-alloys (ECSC) | 3 | 1 |
| 272 | Tubes | 1 | 1 |
| 273 | Other first processing of iron and steel | 3 | 1 |
| 274 | Basic precious and non-ferrous metals | 3 | 1 |
| 275 | Casting of metals 1) | 2 | 1 |

| Nace | | Factor inputs | Labour skills |
|---|---|---|---|
| 281 | Structural metal products | 2 | 2 |
| 282 | Tanks, reservoirs, central heating radiators and boilers | 4 | 2 |
| 283 | Steam generators | 2 | 2 |
| 284 | Forging, pressing, stamping and roll forming of metal 1) | 2 | 2 |
| 285 | Treatment and coating of metals 1) | 2 | 2 |
| 286 | Cutlery, tools and general hardware | 4 | 2 |
| 287 | Other fabricated metal products | 1 | 2 |
| 291 | Machinery for production, use of mech. power | 1 | 4 |
| 292 | Other general purpose machinery | 1 | 4 |
| 293 | Agricultural and forestry machinery | 1 | 4 |
| 294 | Machine-tools | 2 | 4 |
| 295 | Other special purpose machinery | 1 | 4 |
| 296 | Weapons and ammunition | 1 | 4 |
| 297 | Domestic appliances n. e. c. | 1 | 3 |
| 300 | Office machinery and computers | 5 | 4 |
| 311 | Electric motors, generators and transformers | 1 | 3 |
| 312 | Electricity distribution and control apparatus | 5 | 3 |
| 313 | Isolated wire and cable | 1 | 3 |
| 314 | Accumulators, primary cells and primary batteries | 1 | 3 |
| 315 | Lighting equipment and electric lamps | 1 | 3 |
| 316 | Electrical equipment n. e. c. | 2 | 3 |
| 321 | Electronic valves and tubes, other electronic comp. | 5 | 3 |
| 322 | TV, and radio transmitters, apparatus for line telephony | 5 | 3 |
| 323 | TV, radio and recording apparatus | 5 | 3 |
| 331 | Medical equipment | 5 | 3 |
| 332 | Instruments for measuring, checking, testing, navigating | 5 | 3 |
| 333 | Industrial process control equipment 1) | 5 | 3 |
| 334 | Optical instruments and photographic equipment | 5 | 3 |
| 335 | Watches and clocks | 4 | 3 |
| 341 | Motor vehicles | 5 | 2 |
| 342 | Bodies for motor vehicles, trailers | 2 | 2 |
| 343 | Parts and accessories for motor vehicles | 3 | 2 |
| 351 | Ships and boats | 2 | 2 |
| 352 | Railway locomotives and rolling stock | 2 | 2 |
| 353 | Aircraft and spacecraft | 5 | 4 |
| 354 | Motorcycles and bicycles | 1 | 2 |
| 355 | Other transport equipment n. e. c. | 1 | 2 |
| 361 | Furniture | 2 | 2 |
| 362 | Jewellery and related articles | 2 | 2 |
| 363 | Musical instruments | 4 | 2 |
| 364 | Sports goods | 4 | 2 |
| 365 | Games and toys | 4 | 2 |
| 366 | Miscellaneous manufacturing n. e. c. | 4 | 2 |

| | |
|---|---|
| 1..Mainstream | 1..Low skill industries |
| 2..Labour intensive industries | 2..Medium skill/blue collar workers |
| 3..Capital intensive industries | 3..Medium skill/white collar workers |
| 4..Marketing driven industries | 4..High skill industries |
| 5..Technology driven industries | |

1) Only value added. 2) Value added: only Nace 23 (2-digit) available.

#### *5.1.1.2 Manufacturing and services 2-digit classifications*

##### *Education intensity*

This taxonomy classifies forty-nine manufacturing and service industries according to their educational workforce composition[151]. It derives from statistical cluster techniques applied to data for the US, Germany, France, the UK and Austria. For that purpose, an industry's workforce was segregated by the individual's highest level of educational attainment, for which the shares in total employment, wages or hours worked were calculated. In summary, the taxonomy separates the five following mutually exclusive classes of industries:

- Low educational intensity: agriculture, food, textiles and clothing, wood and products of wood, mineral products, basic metals and metal products, construction, sale & repair of motor vehicles, or hotels and catering.
- Medium-low educational intensity: rubber and plastics, manufacturing of jewellery, games and toys, furniture etc., recycling, retail trade, inland and water transport.
- Intermediate educational intensity: mining, pulp and paper (products), printing and publishing, mechanical engineering and apparatus, electrical machinery, motor vehicles and other transport vehicles, electricity, gas and water supply, wholesale trade, communications, real estate, renting of machinery, public administration and other services.
- Medium-high educational intensity: oil refining, chemicals, radio, TV and communication equipment, medical, precision and optical instruments, transport equipment, air transport.
- High educational intensity: computer and related activities, financial intermediation, software, research and development, other business services, and education.

A full list of sectors is in **TABLE B** below.

[151] For the theoretical underpinnings of the taxonomy see Kegels et al., (2008, p. 20) and for the detailed methodology see Peneder (2007).

## TABLE B: Sectors used for the 2-digit manufacturing and services education taxonomy (EDU)

| | | EDU | | | |
|---|---|---|---|---|---|
| | | Peneder 2007 | EUKLEMS | OECD STAN | Eurostat SBS |
| | | 7-scale | | 5-scale | |
| code | desc | | 5-scale | | |
| TOT | TOTAL INDUSTRIES | | | | |
| AtB | AGRICULTURE, HUNTING, FORESTRY AND FISHING | 7 | 5 | | |
| A | AGRICULTURE, HUNTING AND FORESTRY | | | | |
| 1 | Agriculture | | | | |
| 2 | Forestry | | | | |
| B | FISHING | | | | |
| C | MINING AND QUARRYING | 4 | 3 | 3 | |
| 10t12 | MINING AND QUARRYING OF ENERGY PRODUCING MATERIALS | | | | |
| 10 | Mining of coal and lignite; extraction of peat | | | | |
| 11 | Extraction of crude petroleum and natural gas and services | | | | |
| 12 | Mining of uranium and thorium ores | | | | |
| 13t14 | MINING AND QUARRYING EXCEPT ENERGY PRODUCING MATERIALS | | | | |
| 13 | Mining of metal ores | | | | |
| 14 | Other mining and quarrying | | | | |
| D | TOTAL MANUFACTURING | | | | |
| 15t16 | FOOD, BEVERAGES AND TOBACCO | 6 | 5 | | 5 |
| 15 | Food and beverages | | | 5 | |
| 16 | Tobacco | | | 5 | |
| 17t19 | TEXTILES, TEXTILE, LEATHER AND FOOTWEAR | 7 | 5 | | |
| 17t18 | Textiles and apparel | | | | |
| 17 | Textiles | 7 | | 5 | 5 |
| 18 | Wearing Apparel, Dressing And Dying Of Fur | 7 | | 5 | 5 |
| 19 | Leather, leather and footwear | 7 | | 5 | 5 |
| 20 | WOOD AND PRODUCTS OF WOOD AND CORK | 7 | 5 | 5 | 5 |
| 21t22 | PULP, PAPER, PAPER, PRINTING AND PUBLISHING | 4 | 3 | | |
| 21 | Pulp, paper and paper | 4 | | 3 | 3 |
| 22 | Printing, publishing and reproduction | 4 | | 3 | 3 |
| 221 | Publishing | | | | |
| 22x | Printing and reproduction | | | | |
| 23t25 | CHEMICAL, RUBBER, PLASTICS AND FUEL | | | | |
| 23 | Coke, refined petroleum and nuclear fuel | 3 | 2 | 2 | 2 |
| 24 | Chemicals and chemical | 3 | 2 | 2 | 2 |
| 244 | Pharmaceuticals | | | | |
| 24x | Chemicals excluding pharmaceuticals | | | | |
| 25 | Rubber and plastics | 5 | 4 | 4 | 4 |
| 26 | OTHER NON-METALLIC MINERAL | 6 | 5 | 5 | 5 |
| 27t28 | BASIC METALS AND FABRICATED METAL | 6 | 5 | | |
| 27 | Basic metals | 6 | | 5 | 5 |
| 28 | Fabricated metal | 6 | | 5 | 5 |
| 29 | MACHINERY, NEC | 4 | 3 | 3 | 3 |
| 30t33 | ELECTRICAL AND OPTICAL EQUIPMENT | | 2 | | |
| 30 | Office, accounting and computing machinery | 2 | | 1 | 1 |
| 31t32 | Electrical engineering | | | | |
| 31 | Electrical machinery and apparatus, nec | 4 | | 3 | 3 |
| 313 | Insulated wire | | | | |
| 31x | Other electrical machinery and apparatus nec | | | | |
| 32 | Radio, television and communication equipment | 3 | | 2 | 2 |
| 321 | Electronic valves and tubes | | | | |
| 322 | Telecommunication equipment | | | | |
| 323 | Radio and television receivers | | | | |
| 33 | Medical, precision and optical instruments | 3 | | 2 | 2 |
| 331t3 | Scientific instruments | | | | |
| 334t5 | Other instruments | | | | |
| 34t35 | TRANSPORT EQUIPMENT | | 3 | | |
| 34 | Motor vehicles, trailers and semi-trailers | 4 | | 3 | 3 |
| 35 | Other transport equipment | 3 | | 2 | 2 |
| 351 | Building and repairing of ships and boats | | | | |
| 353 | Aircraft and spacecraft | | | | |
| 35x | Railroad equipment and transport equipment nec | | | | |
| 36t37 | MANUFACTURING NEC; RECYCLING | 5 | 4 | | 4 |
| 36 | Manufacturing nec | | | 4 | |
| 37 | Recycling | | | 4 | |
| E | ELECTRICITY, GAS AND WATER SUPPLY | 4 | 3 | | |
| 40 | ELECTRICITY AND GAS | 4 | | 3 | 3 |
| 40x | Electricity supply | | | | |
| 402 | Gas supply | | | | |
| 41 | WATER SUPPLY | 4 | | 3 | 3 |
| F | CONSTRUCTION | 6 | 5 | 5 | 5 |
| G | WHOLESALE AND RETAIL TRADE | | | | |
| 50 | Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of fuel | 6 | 5 | 5 | 5 |
| 51 | Wholesale trade and commission trade, except of motor vehicles and motorcycles | 4 | 3 | 3 | 3 |
| 52 | Retail trade, except of motor vehicles and motorcycles; repair of household goods | 5 | 4 | 4 | 4 |
| H | HOTELS AND RESTAURANTS | 7 | 5 | 5 | 5 |

5-scale: 1. High – 2. Med-high – 3. Med – 4. Med-low – 5. Low.

7-scale: 1. Very high - 2. High - 3. Med-high - 4. Intermediate - 5. Med-low - 6. Low - 7. Very low.

**TABLE C: List of service sectors and their respective identification within the two taxonomies innovation and education intensity for trade in services data**

| Taxonomy | EBOP | Sector name | Classification |
|---|---|---|---|
| Innovation | 262 | Computer and information services | High |
| | 266 | Royalties and license fees | High |
| | 279 | Research and development | High |
| | 245 | Communication services | Med-high |
| | 260 | Financial services | Med |
| | 210+2181 | Air transport (including space transport) | Med |
| | 273-279 | Other business services (273-279) | Med |
| | 253 | Insurance services | Med-low |
| | 206 | Sea transport, freight | Low |
| | 214-2181 | Other transport (without space transport) | Low |
| Education | 262 | Computer and information services | High |
| | 266 | Royalties and license fees | High |
| | 279 | Research and development | High |
| | 260 | Financial services | High |
| | 273-279 | Other business services | High |
| | 210+2181 | Air transport (including space transport) | Med-high |
| | 253 | Insurance services | Med-high |
| | 287 | Personal, cultural and recreational services | Med-high |
| | 291 | Government services, n.i.e. | Med-high |
| | 245 | Communication services | Med |
| | 272 | Operational leasing services | Med |
| | 206 | Sea transport, freight | Med-low |
| | 214-2181 | Other transport (without space transport) | Med-low |
| | 249 | Construction services | Low |
| | 236 | Travel | Low |

### 5.1.2 Calculation of indicators

#### *5.1.2.1 Domestic Economy Indicators*

##### *Value added shares (VA)*

This indicator[152] measures the share of value added of an industry or a sector in total value added of a country.

For this indicator, two databases are used, OECD STAN and EU KLEMS. OECD STAN has no EU aggregate. Aggregates of value added are built by converting sectoral nominal value added of the countries into power purchasing parity-based value added with aggregate OECD PPPs for each year of the series, then summing up over the 21 EU countries available.

As regards missing values in the databases at sectoral level, the main issue is that in some countries, not the full sectoral detail is available as in other countries and as necessary for applying our sectoral classifications. These gaps are filled by attributing the amount of the larger aggregate available to individual sectors according to the shares of the individual sectors in the same aggregate of the EU average.

Groups are weighted by value added shares.

| Data for VA, summary | |
|---|---|
| Country coverage | EU 25 (EU KLEMS; EU 27 excl. Romania and Bulgaria); USA, Japan, South Korea<br>EU 21 (OECD STAN; EU 27 excl. Bulgaria, Cyprus, Malta, Latvia, Lithuania and Romania), Switzerland |
| Time coverage | 1999-2007 |
| Sector coverage | See annex on industrial classification, manufacturing and services sectors (NACE 2-digit level) |

##### *Relative valued added (RVA)*

This indicator measures the share of value added of an industry or a sector in total value added of a country, relative to the share of the same industry or sector in total value added of the EU.

Values above 1 indicate “industry specialisation”, i.e. a higher share of sector i in value added of country j than in the EU, values below 1 indicate a lower share. For the summary tables in the country annex, the logarithm is taken as for RCA to facilitate comparison between trade and industry specialisation.

The main database used for the RVA is Eurostat SBS, which includes all the EU Member States with the exception of Malta. To provide international comparison, the US was included using data from the Census Bureau (Annual Survey of Manufactures). Mapping of the North American Industry Classification System to the EU NACE grouping was not possible at the detailed industry level. For this reason the larger aggregate was split into individual industries according to the shares of the individual industries in the same aggregate of the EU average. Groups are weighted by value added shares.

[152] The formulas used and more methodological details can be found in the study "Structural change and the competitiveness of EU Member States", WIFO, forthcoming.

| Data for RVA, summary | |
|---|---|
| Country coverage | EU 26 (EU 27 excluding Malta) (Eurostat SBS); USA (Census Bureau, Annual Survey of Manufactures) |
| Time coverage | 1999-2007; 2008 only for the USA |
| Sector coverage | See annex on industrial and sector classification, manufacturing and services sectors (NACE 2-digit level) as well as manufacturing industries (NACE 3-digit level). |

#### *5.1.2.2 Foreign trade indicators*

##### *Cost Competitiveness Index*

Cost competitiveness is measured as the inverse ratio of annual unit labour costs in aggregate EU27 (labour compensation per unit of output) to annual unit labour costs in 36 main trading partner countries of EU 27.

Unit labour costs are calculated with a common currency using the average annual exchange rate of the EURO against the currencies of the trading partners as measured by the nominal effective exchange rate (NEER).

A nominal effective exchange rate is the exchange rate of a currency (here the Euro) vis-à-vis other currencies (here those of the 36 partners[153]) weighted by their share in the country's international trade.

If $ULC_{EU}$ and $ULC_{W}$ are respectively, the unit labour cost values for a given year for the EU27 and for the set of trading partners, then the cost competitiveness index is defined as:

$$I = \left( \frac{ULC_{EU} * NEER}{ULC_{W}} \right)^{-1}$$

##### *Revealed comparative advantage*

The revealed comparative advantage (RCA) indicator measures export specialisation by comparing a sector's share in total exports for a given country with that for the EU27 as a whole. The indicator can also be interpreted as a "normalised" export market share of the given country for a selected sector, as it compares the market share in total EU27 exports gained in a specific sector with the average export market share that the country reached in total exports, the sum over all sectors.

For the final indicator the logarithm of this relation is taken, therefore values above 1 signal that relative to the EU27 average, the country specialises in exports in the selected sector. The change in RCA is defined as the absolute difference of the value of the RCA indicator in time 0 and time t. The indicator is calculated for three partner regions, total exports, extra-EU27 exports as well as intra-EU exports. RCA figures are considered separately for exports

[153] The list of the 36 trading partners can be found on the Europa website at: http://ec.europa.eu/economy_finance/db_indicators/competitiveness/data_section_en.htm

in manufacturing goods and exports in services. The data source for the former is the Eurostat Comext database, results are presented on 2- and 3-digit NACE 2003 level as well as for the factor input taxonomy, the time period covers 1999 to 2010. The data source for the analysis of RCA indicators in service exports is the Balance of Payment (BOP) database from Eurostat. Trade in services data are much more limited referring to the disaggregation level as well as the time horizon. Results can therefore be presented just for 11 service sectors, and for the time period 2004 to 2009. Additionally the RCA indicator is computed for two new taxonomies (innovation and education type) which combine trade in goods and trade in services. However, as these two new taxonomies, rely on detailed sector information for trade in services, availability is even more restricted, therefore the results are not available for all 27 EU member states and/or all years between 2004 and 2009.

*Export shares in total manufacturing as percent*

This indicator refers to the share of exports by one selected sector in relation to total country exports. The indicator is again calculated for total exports, extra-EU27 exports as well as intra-EU exports; for trade in manufacturing goods (both on 2- and 3 digit NACE 2003 level as well as for the factor input taxonomy) and trade in 11 services sectors and additionally for the two new taxonomies (innovation and education type). The data source and time coverage is the same as above for the calculation of RCA indicators.

*Price segments*

The aim of the analysis of price segments is to identify whether individual countries focus more on high, medium or low price segments within given industries and whether this relation has changed over time. Changes in the strategies to move into the highest price segments within industries are signalling an "intra-industry" upgrading. The price segments for manufacturing exports are defined at the 6-digit NACE 2003 level for three selected time points (1999, 2007, 2009). Manufacturing exports data are taken from the Eurostat Comext database. All 27 individual EU member states are covered, for each member state all reported bilateral exports values and quantities are used. Whenever both information on export values as well as quantities were available and above a certain threshold (EUR 10 000 for values and 2 tons for quantities) export unit values are calculated as the ratio of values to quantities and expressed in kg/€. Afterwards for each 6-digit NACE level the 33.3 and 66.7 percentile[154] of the distribution of all bilateral export unit values of all 27 individual EU member states are defined as cutting points for the three price segments (high, medium or low). The boundaries are identical for all countries at the 6-digit level, but different for the three selected time periods (1999, 2007, 2009). These boundaries are then used to classify each bilateral export value at the d 6-digit level into one of the three price segments, for example trade values with a unit values below the 33.3 percentile threshold form therefore the low price segment category. In the end, exports values are summed up to different aggregation levels (the two taxonomies factor input and revealed quality elasticity type as well as for total country exports) for each price segment category. The resulting aggregated export values for the low, medium and high price segment are than expressed as the respective share in total exports of the analysed country. For Malta and Luxemburg a smaller set of unit values was available, therefore the result for these countries should be interpreted with caution.

*World export market share*

[154] These results give the value below which 33.3/66.7 % of the export unit value observations are found.

The figures exclude intra-EU trade values. The indicator measures for each analysed sector/taxonomy the market share of exports of the examined country/country group relative to a proxy for total worldwide exports in this sector/taxonomy. The proxy for "world export" differs for trade in goods and services. For services exports the aggregate of the following regions and countries are taken as proxy for "world export", besides all individual EU27, EFTA, NAFTA and BRIC countries, Croatia, other OECD[155] as well as selected Asian[156]), and African[157]) and Central and South American[158]) countries. This definition comprises approximately 64.5 % of total world exports in services in 2004 and 65.6 % in 2009. Data source for export of services is Eurostat Balance of Payments statistics, the time period 2004 to 2009 and 11 service sectors are covered. The applied proxy for worldwide manufactured goods exports comprises approximately 90 % of total world goods exports in 1999 and 80 % in 2009. Data for goods exports are taken from the UNO Comtrade database, the years 1999 to 2009 are covered in the analysis, the indicator is calculated for trade in manufacturing goods on the 2 and 3-digit NACE 2003 level as well as for the factor input taxonomy.

## 5.2 Indicators used in section 3 and the introductory graph of country chapters

### 5.2.1 R&D decomposition

*Comparison of structural and country effects of R&D intensities across countries*[159]

Direct comparisons of R&D expenditures relative to GDP are flawed as especially the business R&D expenditures (BERD) are heavily influenced by the industrial structure of each country. Smith and Sandven (1998) have proposed a decomposition that identifies country and sector effects in BERD, thus making it possible to compare R&D intensities in the business sector across countries. Additional manipulations permit to take into account the effect of structural change on R&D intensities.

The aim of this analysis is to present a comprehensive picture of the influence of structural change on the development of R&D intensities in the business sector in the EU 27 countries and important non-EU countries. In order to carry out this comparison data from different sources have been consolidated into one data set.

Data for R&D decomposition, summary

| | Data source | | | |
|---|---|---|---|---|
| | OECD STAN Value added | Eurostat Value added | OECD ANBERD | Eurostat BERD |
| Country coverage (ISO 3166 country codes) | AT BE CZ DE DK ES FI FR GR IE IS IT LU NL NO PL PT SE SI AU CA IL JP KR MX NZ US | BG CY EE HU LT LV MT RO SK TR | AU CA IL NZ SE | BE BG EE GR JP KR LU MT LT LV PL SK CZ CY |
| Time coverage in consolidated data set | 1998-2005: GR<br>1998-2006: AU BG* CA ES JP* PT* UK | | | |

155 OECD34 without Australia.

156 Indonesia, Hong Kong, Kuwait, Malaysia, Singapore, Thailand.

157 Egypt, Morocco, South Africa and Tunisia.

158 Argentina, Colombia, Costa Rica, Panama and Peru.

159 Details on the decomposition methodology and on data manipulations can be found in the study "Structural change and the competitiveness of EU Member States", WIFO, forthcoming.

| | |
|---|---|
| | 1998-2007: AT BE DK FR KR NL NO SE TR* US<br>1998-2008: CY CZ EE FI HU IE IS LT LV PL RO SI<br>1998-2009: IT SK DE<br>1999-2005: NZ<br>2000-2006: IL<br>2002-2008: MT |
| Sector coverage in consolidated data set (NACE rev. 1.1 | Larger aggregates:<br>01-99, 15-37, 50-74, 75-99, 50-99<br><br>*Breakdown:*<br>01-05, 10-14, 15-16, 17-19, 20-22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36-37, 40-41, 45, 50-52, 55, 60-64, 65-67, 70+71+74, 72, 73 |

### 5.2.2 Definitions of the indicators

Table E: Indicators

| **Name of Indicator** | | **Definition** |
|---|---|---|
| ***Towards a modern and competitive industry*** | | |
| | Labour productivity per hour worked | Gross Domestic Product in Purchasing Power Standards per hour worked relative to EU-27 (EU-27=100)<br>*Source: Eurostat* |
| | Labour productivity per person employed | Gross Domestic Product in Purchasing Power Standards per person employed relative to EU-27 (EU-27=100)<br>*Source: Eurostat* |
| | Labour productivity in manufacturing per person employed | Gross value added in Purchasing Power Standards per person employed<br>*Source: Eurostat* |
| | Unit labour costs in manufacturing | Development (2000=100) of the following ratio: Total compensation of employees in manufacturing (in nominal values) divided by total valued added in manufacturing (in constant prices).<br>*Source: European Commission (AMECO-Database 2000-2005) and OECD (2005-2009)* |
| | Share of science and technology graduates | Number of new science and technology graduates (levels 5 and 6 of the "International Standard Classification of Education ISCED 5-6") divided by 20-29 years old population.<br>The term "science" includes the following fields of education (ISCED): life sciences, physical sciences, mathematics, statistics and computing, while technology refers to graduates in engineering, manufacturing and construction.<br>The indicator includes new tertiary graduates in a calendar year from both public and private institutions completing graduate and post graduate studies compared to the age group of 20-29 years old population that corresponds to the |

| | | |
|---|---|---|
| | | typical graduation age in most countries.<br>*Source: Eurostat* |
| | R&D performed by businesses | The indicator covers all expenditures for R&D performed within the business enterprise sector (BERD) on the national territory during a given period, regardless of the source of funds.<br>The data on this indicator are gathered by Eurostat which applies the guidelines laid out in the Frascati Manual, the "Proposed standard practice for surveys of research and experimental development" (OECD, 2002).<br>Note: Gross domestic expenditure on R&D is composed of Business enterprise expenditure on R&D, Higher education expenditure on R&D, Government expenditure on R&D and Private non-profit expenditure on R&D.<br>*Source: Eurostat* |
| | Share of high-tech exports | Share (in %) of intra- and extra-EU27 exports of all high technology products in total intra- and extra-EU27 exports.<br>High technology products cover the following: Aerospace, Computers-office machines, Electronics-telecommunications, Pharmacy, Scientific instruments, Electrical machinery, Chemistry, Non-electrical machinery, Armament.<br>*Source: Eurostat.* |
| | Share of innovating companies | Enterprises which have introduced during an observation period of three years new or significantly improved goods, services and/or processes, marketing or organisational innovation or a combination of those, divided by the total number of active enterprises at the end of the observation period.<br>*Source: Community innovation surveys (CIS). Enterprises with less than 10 employees do not belong to the total population covered by CIS.* |
| | Trade balance of goods (% of total exports of goods) | Net exports (exports minus imports) of goods divided by total exports of goods (all in current prices). The aggregate EU trade balance includes trade with third countries only.<br>*Source: Eurostat.* |
| | Trade balance of services (% of total exports of services) | Net exports (exports minus imports) of services divided by total exports of services (all in current prices). The aggregate EU trade balance includes trade with third countries only.<br>*Source: Eurostat.* |
| | Real effective exchange rate | Nominal effective exchange rate deflated by nominal unit labour costs (total economy) relative to a panel of 36 countries (EU-27 + 9 other industrial countries: Australia, |

| | | |
|---|---|---|
| | | Canada, United States, Japan, Norway, New Zealand, Mexico, Switzerland, and Turkey). 1999=100 for all countries. A rise in the index suggests deterioration in competitiveness. The figure for each country is calculated against the rest of the countries belonging to the panel. The EU aggregate figure is calculated against the non-EU-27 countries belonging to the panel.<br>*Source: European Commission (DG ECFIN)* |
| | Revealed Comparative Advantage (RCA) | The RCA gives the share of a given sector in manufacturing exports for a given Member State relative to the share of the sector in manufacturing exports of 21 EU Member States; due to the lack of data Bulgaria, Cyprus, Latvia, Lithuania, Malta and Romania are not covered here. |
| ***Towards a sustainable industry*** | | |
| | Energy intensity in industry (including construction) and the energy sector | Energy consumption in kg of oil equivalent per euro of gross value-added (chain-linked volumes, reference year 2000, at 2000 exchange rates).<br>*Source: Eurostat ("environment and energy" and "national accounts")*<br>Energy consumption refers to: B_101800 - Final energy consumption in industry (including construction) + B_101600 - Final Non-energy consumption + B_101300 - Consumption in Energy Sector.<br>GVA refers to NACE sections C: Mining and Quarrying, D: Manufacturing, E: Electricity, Gas and Water Supply and F: Construction. |
| | CO2 intensity in industry (including construction) and the energy sector | CO2 emissions in kg per euro of gross value-added (chain-linked volumes, reference year 2000, at 2000 exchange rates).<br>*Sources:*<br>*European Environment Agency* for the figures on the CO2 emissions. The relevant categories are 1.A.1. (Energy Industries) + 1.A.2. (Manufacturing Industries and Construction) + 2. (Industrial Processes) + 3. (Solvent and Other Product Use).*Eurostat* for the figures regarding GVA. GVA refers to NACE sections C: Mining and Quarrying, D: Manufacturing, E: Electricity, Gas and Water Supply and F: Construction. |
| | Waste generated by enterprises | The amount of hazardous and non-hazardous waste of all enterprises (all NACE sectors) divided by the number of inhabitants.<br>*Source: Eurostat* |
| | Exports of environmental goods | Intra- and extra-EU27 exports of goods from "eco-industries" divided by total intra- and extra-EU27 exports of |

| | | |
|---|---|---|
| | | goods (in nominal values).<br>The notion of "eco-industry" refers to sectors whose products measure, prevent, limit, minimise or correct environmental damage. The trade codes considered to cover eco-industry goods are those identified in the Ecorys study on the "Competitiveness of the EU eco-industry" (pages 190/191) of 22 October 2009, carried out for DG ENTR.<br>*Source: European Commission (DG ENTR) calculations on the basis of Eurostat/COMEXT data.* |
| | ***Business Environment*** | |
| | Burden of government regulation | Average mark given by business executives in a World Economic Forum survey to the question "*How burdensome is it for businesses in your country to comply with governmental administrative requirements (e.g., permits, regulations, reporting)?*" (1 = extremely burdensome; 7 = not burdensome at all)<br>*Source: Global Competitiveness Report 2008-2009 of the World Economic Forum* |
| | Legal and regulatory framework | Average evaluation (0 = negative; 10 = positive) of the statement "*The legal and regulatory framework encourages the competitiveness of enterprises*" in an IMD survey of businesspeople.<br>*Source: World Competitiveness Yearbook 2009, IMD (International Institute for Management Development).* |
| | E-government usage by enterprises | Share of enterprises using the internet to interact with public authorities (i.e. having used the Internet for one or more of the following activities: obtaining information, downloading forms, filling-in web-forms, full electronic case handling). Data are expressed in % of enterprises with 10 or more persons employed and belonging to the NACE categories D, F, G, H, I, K, O.<br>*Source: Eurostat publishing data validated by Cap Gemini in association with the Member States.* |
| | Infrastructure expenditures per inhabitant | Sum of investment and maintenance expenditures on rail, road, inland waterways, maritime ports and airports infrastructure.<br>*Source: OECD International Transport Forum Statistics.* |
| | Satisfaction with the quality of infrastructure | Average mark given by business executives in a World Economic Forum survey to the quality of rail, roads, ports and airports (1 = underdeveloped; 7 = extensive and efficient by international standards).<br>*Source: Global Competitiveness Report 2008-2009 of the World Economic Forum.* |

| | | |
|---|---|---|
| | Availability of high-speed broadband infrastructure | Percentage of broadband lines with speed above 10 MBps<br>*Source: European Commission, DG INFSO Communications Committee Working Document* |
| | Electricity prices for medium-sized enterprises | Average national price in Euro per kWh excluding taxes, applicable for the first semester of each year for medium-sized industrial consumers (annual consumption between 500 and 2000 MWh). The indicator does not cover small enterprises for reasons of data availability, nor large enterprises, since the latter often have individual contracts with energy providers. Until 2007 the prices refer to the situation on 1 January.<br>*Source: Eurostat* |
| | State aid for industry and services | The indicator measures state aid for industry and services as % of GDP. State aid as defined under article 107 TFEU that has been granted by the Member States and has been the subject of a final Commission decision, or has been granted on the basis of a block exemption regulation. Accordingly, general measures (e.g. a general tax break for expenditure on research and development), and public subsidies that have no effect on trade and do not distort or threaten to distort competition, are not covered, neither is aid compensating for services of general economic interest.<br>*Source: European Commission, DG COMP State aid scoreboard* |
| ***Entrepreneurship and SMEs*** | | |
| | Starting a business (days) | Time needed to start a business, recorded in calendar days. It is the median duration that incorporation lawyers indicate as necessary. It is assumed that the minimum time required for each procedure is one day.<br>*Source: World Bank Doing Business.* |
| | Enterprise survival rate after 2 years | Number of enterprises started in year *t* and which still existed in year *(t+2)*, divided by the total number of enterprises that started in year *t*<br>*Source: Eurostat* |
| | Business churn | Sum of the number of enterprise starts and exits ("births" plus "deaths") in the reference period (year *t*), divided by the total number of enterprises active in year *t*.<br>*Source: Business Demography (Eurostat).* |
| | Access to loans: rejected applications | Survey response on rejected loan applications and loan offers whose terms and conditions were deemed unacceptable by the enterprise, as % of all applications for bank loans of SMEs that applied in the past six months<br>*Source: Flash Eurobarometer* |

| | | |
|---|---|---|
| | Early stage financing | The indicator measures early stage financing as % of GDP. Venture capital investment data are broken down into "early stage" (seed and start-up) and "expansion and replacement" capital. Seed capital is defined as financing provided to research, assess and develop an initial concept before a business has reached the start-up phase. Start-up is defined as financing provided for product development and initial marketing, manufacturing and sales.<br>*Source: Eurostat, using data from the European Private Equity and Venture Capital Association (EVCA).* |
| | Duration of payments by public authorities | Effective payment duration in days.<br>*Source: European payment Index by Intrum Justitia.* |
| | Share of high-growth enterprises | Enterprises with average annualised growth greater than 20 % in the number of employees, over a three-year period, and with ten or more employees at the beginning of the observation period, divided by the total number of active enterprises at the beginning of the three year period.<br>*Source : Eurostat* |
| | Sectoral specialisation of manufacturing (GVA based) | Gross Value Added (GVA) (ESA95, 8.11) is the net result of output valued at basic prices less intermediate consumption valued at purchasers' prices. GVA is also available broken down by industries according to NACE Rev. 1.1 in the breakdowns collection. GVA is calculated before consumption of fixed capital.<br>*Source: Eurostat (National Accounts)* |

### 5.2.3 Methodological note on the introductory graph in the country chapters

The graphs present, for each indicator, the distance of the respective Member State from the EU average. This distance is expressed in terms of standard deviations, which is a common measure of the spread of observations in a distribution (in this case, a measure of the variation of Member State performance around the EU average). This enhances the comparability of the presentation of indicators with different measurement units and distributions across Member States.

The data are presented in the country graphs in such a way that a bar pointing to the right always indicates a positive performance. Likewise, a bar pointing to the left always indicates a performance below average. This is straightforward for indicators, e.g. labour productivity, where high values are strived for. However, for those indicators where low values are the objective, e.g. generation of waste, the data bars in the graph have been converted so that a positive deviation from the average (bar pointing to the right) represents a *lower* generation of waste than the average. These conversions enable an easy reading of the country profiles, since all bars presenting positive values in the country profile suggest a level of performance of the respective Member State which is better than the EU average and all bars presenting negative values suggest a level of performance of the respective Member State which is below EU average.

The indicators for which such conversions have been carried out are: (1) energy intensity in industry in kg of oil equivalent per euro of gross value-added at constant prices; (2) carbon intensity per ton of oil equivalent of energy consumption; (3) waste generated by enterprises; (4) state aid for industry and services as percent of GDP; (5) electricity prices for medium-sized enterprises, (6) time required to start a business; (7) rejected loan applications, and loan offers whose conditions were deemed unacceptable, as percent of all loan applications; (8) duration of payments by public authorities.

The indicators presented in the above table (under 1.2) for which the distance from the EU average would not be meaningful (exchange rates and trade balances) are quoted in the text.

The EU averages used to show the respective standard deviations in the country profiles are the values for the EU as a whole and, hence, weighted averages of Member States performance. For the following nine indicators, however, unweighted arithmetic averages have been used due to missing EU totals: share of science and technology graduates, satisfaction with quality of infrastructure, legal and regulatory framework, time required to start a business, enterprise survival rate, business churn, early stage financing, duration of payments by public authorities, and share of high-growth enterprises as percent of all enterprises.

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## 5.3 Data sets

### 5.3.1 Data tables referenced to in section 2 on Structural Change

## TABLE F: Sector specialisation of manufacturing based on Gross Value Added (2005-2009)

| Code | Sector | EU27 2009 | BE 2009 | BG 2006 | CZ 2009 | DK 2009 | DE 2008 | EE 2009 | IE 2009 | GR 2009 | ES 2009 | FR 2009 | IT 2009 | CY 2009 | LV 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DA | Food products; beverages and tobacco | 13,0% | 14,5% | 15,9% | 12,2% | 17,6% | 7,2% | 15,5% | 17,2% | 34,1% | 16,9% | 14,1% | 11,7% | 30,0% | 23,8% |
| DB | Textiles and textile products | 3,4% | 3,8% | 14,9% | 2,7% | 1,2% | 1,4% | 6,9% | 0,6% | 8,7% | 3,2% | 2,9% | 8,5% | 2,5% | 5,2% |
| DC | Leather and leather products | 0,8% | 0,2% | 1,3% | 0,3% | 0,0% | 0,2% | 0,6% | 0,1% | 0,7% | 1,0% | 0,8% | 3,0% | 0,4% | 0,2% |
| DD | Wood and wood products | 2,1% | 1,6% | 2,0% | 3,5% | 2,1% | 1,3% | 12,4% | 0,8% | 1,4% | 1,9% | 1,7% | 2,1% | 7,5% | 19,0% |
| DE | Paper products; publishing and printing | 8,2% | 7,7% | 4,4% | 5,5% | 7,4% | 6,3% | 8,3% | 12,3% | 7,6% | 9,2% | 8,0% | 6,1% | 9,8% | 9,1% |
| DF | Refined petroleum products | 1,5% | 4,3% | 6,3% | 0,2% | 1,0% | 0,5% | 3,5% | 0,1% | 7,4% | 1,8% | 1,4% | 0,7% | 0,1% | 0,0% |
| DG | Chemicals, chemical products | 10,9% | 19,8% | 6,4% | 4,7% | 14,0% | 10,6% | 5,2% | 40,3% | 5,8% | 11,1% | 11,0% | 7,6% | 6,3% | 6,4% |
| DH | Rubber and plastic products | 4,5% | 3,9% | 2,9% | 7,1% | 4,4% | 4,6% | 3,0% | 1,6% | 3,3% | 4,4% | 4,9% | 3,7% | 3,8% | 2,9% |
| DI | Other non-metallic mineral products | 4,4% | 6,0% | 7,8% | 5,6% | 3,5% | 3,0% | 5,6% | 1,9% | 5,2% | 7,0% | 4,7% | 4,8% | 15,1% | 4,8% |
| DJ | Basic metals and fabricated metal products | 13,9% | 15,0% | 17,4% | 14,3% | 9,8% | 14,4% | 10,6% | 2,7% | 11,5% | 16,2% | 15,1% | 16,3% | 12,4% | 9,9% |
| DK | Machinery and equipment n.e.c. | 11,8% | 6,8% | 8,2% | 11,7% | 14,3% | 17,2% | 5,1% | 2,0% | 3,1% | 7,5% | 10,0% | 14,2% | 2,9% | 2,8% |
| DL | Electrical and optical equipment | 11,1% | 7,2% | 6,1% | 12,7% | 18,3% | 15,1% | 13,4% | 17,4% | 3,0% | 5,7% | 8,8% | 9,8% | 2,3% | 6,5% |
| DM | Transport equipment | 10,1% | 6,4% | 2,3% | 15,1% | 1,3% | 15,3% | 3,6% | 1,4% | 3,6% | 9,1% | 12,5% | 5,8% | 1,3% | 3,8% |
| DN | Manufacturing n.e.c. | 4,2% | 2,8% | 4,1% | 4,4% | 4,9% | 2,8% | 6,5% | 1,5% | 4,6% | 4,9% | 4,1% | 5,7% | 5,8% | 5,9% |

| Code | Sector | LT 2009 | LU 2009 | HU 2009 | MT 2009 | NL 2009 | AT 2007 | PL 2005 | PT 2007 | RO 2008 | SI 2009 | SK 2009 | FI 2009 | SE 2009 | UK 2005 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DA | Food products; beverages and tobacco | 26,3% | 10,6% | 10,3% | 14,0% | 23,2% | 9,7% | 18,2% | 13,1% | 26,6% | 8,4% | 9,1% | 9,7% | 8,8% | 15,2% |
| DB | Textiles and textile products | 7,9% | 4,7% | 1,7% | 3,9% | 1,4% | 2,2% | 4,4% | 12,2% | 6,7% | 3,5% | 3,3% | 1,3% | 0,9% | 2,5% |
| DC | Leather and leather products | 0,3% | 0,0% | 0,6% | 0,1% | 0,2% | 0,4% | 0,6% | 3,5% | 1,7% | 1,1% | 1,1% | 0,3% | : | 0,2% |
| DD | Wood and wood products | 7,9% | 1,6% | 1,3% | 0,5% | 1,7% | 4,7% | 3,8% | 5,0% | 3,9% | 3,3% | 6,4% | 3,7% | 4,0% | 2,1% |
| DE | Paper products; publishing and printing | 6,9% | 7,4% | 4,8% | 10,7% | 11,0% | 7,4% | 7,6% | 8,8% | 4,7% | 7,4% | 6,2% | 15,7% | 12,4% | 13,1% |
| DF | Refined petroleum products | | 0,0% | 8,8% | 0,0% | 2,3% | 1,3% | 3,8% | 2,8% | 4,6% | 0,0% | 1,6% | 2,2% | 1,5% | 1,9% |
| DG | Chemicals, chemical products | 11,4% | 4,0% | 9,5% | 13,2% | 14,0% | 7,5% | 7,2% | 5,9% | 4,1% | 15,3% | 3,8% | 8,5% | 14,3% | 11,4% |
| DH | Rubber and plastic products | 5,3% | 11,2% | 5,1% | 4,5% | 3,3% | 4,1% | 6,2% | 4,0% | 4,0% | 6,8% | 5,6% | 3,5% | 3,0% | 5,5% |
| DI | Other non-metallic mineral products | 3,6% | 8,0% | 3,6% | 4,3% | 3,7% | 5,7% | 6,3% | 8,3% | 5,4% | 3,9% | 5,7% | 3,3% | 2,6% | 4,0% |
| DJ | Basic metals and fabricated metal products | 5,0% | 36,1% | 8,8% | 3,6% | 11,7% | 18,4% | 12,1% | 10,9% | 9,9% | 16,7% | 19,9% | 12,8% | 13,2% | 10,7% |
| DK | Machinery and equipment n.e.c. | 3,4% | 7,9% | 7,7% | 1,3% | 9,5% | 14,4% | 7,9% | 6,2% | 4,8% | 11,6% | 6,9% | 15,2% | 12,6% | 8,6% |
| DL | Electrical and optical equipment | 5,4% | 5,8% | 22,1% | 24,3% | 5,8% | 11,7% | 7,5% | 8,4% | 6,9% | 10,7% | 13,8% | 18,2% | 15,0% | 9,6% |
| DM | Transport equipment | 5,8% | 1,4% | 13,6% | 7,9% | 4,1% | 8,0% | 9,0% | 5,8% | 12,3% | 6,6% | 12,2% | 3,3% | 8,8% | 10,7% |
| DN | Manufacturing n.e.c. | 10,9% | 1,4% | 2,0% | 11,6% | 8,1% | 4,5% | 5,4% | 5,0% | 4,4% | 4,6% | 4,5% | 2,4% | 2,8% | 4,4% |

*Source:* Eurostat (National Accounts)

## TABLE G: Value added share, 2007

| | Agriculture | | | Manufacturing | | | Mining&Energy | | | Construction | | | Market Services | | | Other services | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | 2007 | Change 2007-1999 | Change 2010*-2007 | 2007 | Change 2007-1999 | Change 2010*-2007 | 2007 | Change 2007-1999 | Change 2010*-2007 | 2007 | Change 2007-1999 | Change 2010*-2007 | 2007 | Change 2007-1999 | Change 2010*-2007 | 2007 | Change 2007-1999 | Change 2010*-2007 |
| Austria | 1.76 | -0.36 | -0.22 | 20.44 | 0.41 | -1.26 | 2.72 | -0.28 | 0.37 | 6.96 | -0.87 | -0.06 | 47.75 | 2.23 | -0.41 | 20.37 | -1.13 | 1.57 |
| Belgium 1) | 0.89 | -0.41 | -0.21 | 16.34 | -2.92 | -2.34 | 2.21 | -0.65 | 0.11 | 5.24 | 0.22 | 0.15 | 52.26 | 3.32 | -0.03 | 23.06 | 0.45 | 2.33 |
| Bulgaria 2) | 6.33 | -9.97 | 0.96 | 18.51 | 1.62 | -0.79 | 6.78 | -0.16 | -0.78 | 7.23 | 2.19 | 1.20 | 46.20 | 6.18 | -0.89 | 14.95 | 0.15 | 0.30 |
| Cyprus 1) | 2.20 | -1.79 | 0.10 | 7.48 | -2.84 | -0.56 | 2.46 | 0.30 | -0.09 | 9.10 | 1.84 | -0.81 | 55.86 | 1.27 | -0.54 | 22.90 | 1.22 | 1.91 |
| Czech Republic 1) | 2.46 | -1.39 | -0.20 | 26.56 | 0.00 | -3.01 | 5.47 | 0.22 | 1.32 | 6.42 | -0.55 | 0.94 | 42.38 | 1.40 | 0.08 | 16.69 | 0.32 | 0.87 |
| Denmark | 1.18 | -1.19 | 0.07 | 14.09 | -2.45 | -1.64 | 5.89 | 2.01 | -0.55 | 5.66 | 0.04 | -1.40 | 46.91 | 2.76 | 0.53 | 26.28 | -1.17 | 2.98 |
| Estonia | 3.17 | -1.26 | 0.30 | 16.73 | 0.00 | 0.02 | 3.97 | -0.65 | 1.96 | 9.46 | 3.90 | -3.77 | 50.53 | -0.13 | -1.49 | 16.13 | -1.85 | 2.97 |
| Finland | 3.01 | -0.47 | -0.12 | 24.25 | -1.35 | -5.44 | 2.62 | 0.23 | 0.92 | 6.94 | 0.83 | -0.32 | 41.88 | 0.88 | 2.01 | 21.30 | -0.13 | 2.95 |
| France 1) | 2.22 | -0.83 | -0.47 | 12.53 | -3.64 | -1.87 | 1.79 | -0.13 | 0.02 | 6.31 | 1.21 | 0.17 | 52.28 | 3.32 | 0.75 | 24.87 | 0.07 | 1.39 |
| Germany | 0.96 | -0.27 | -0.09 | 23.85 | 1.42 | -3.15 | 2.65 | 0.22 | 0.40 | 4.03 | -1.47 | 0.11 | 46.74 | 0.82 | 0.90 | 21.76 | -0.72 | 1.84 |
| Greece | 3.47 | -3.16 | -0.21 | 9.27 | -1.92 | 1.50 | 3.10 | 0.29 | -0.03 | 6.56 | -0.52 | -2.50 | 54.46 | 3.42 | -0.70 | 23.15 | 1.90 | 1.94 |
| Hungary | 3.97 | -1.80 | -0.48 | 22.20 | -0.36 | 0.78 | 2.97 | -1.15 | 0.79 | 4.61 | 0.06 | -0.66 | 43.84 | 3.03 | -0.10 | 22.41 | 0.23 | -0.34 |
| Ireland 1) | 1.43 | -2.18 | -0.45 | 21.87 | -12.51 | 2.34 | 2.13 | 0.71 | -0.04 | 9.73 | 3.08 | -4.12 | 46.16 | 8.37 | -1.74 | 18.68 | 2.54 | 4.01 |
| Italy | 2.08 | -0.97 | -0.18 | 19.19 | -2.10 | -2.41 | 2.45 | -0.24 | 0.12 | 6.16 | 1.19 | -0.19 | 50.29 | 1.86 | 0.27 | 19.84 | 0.25 | 2.39 |
| Latvia 1) | 3.58 | -0.36 | -0.29 | 11.39 | -2.64 | -1.45 | 2.85 | -1.45 | 1.23 | 9.01 | 2.59 | -2.39 | 54.09 | 4.77 | -0.03 | 19.07 | -2.91 | 2.92 |
| Lithuania 1) | 3.94 | -3.33 | -0.58 | 18.61 | 0.77 | -2.23 | 3.77 | -0.94 | 0.41 | 10.24 | 2.66 | -3.83 | 47.14 | 7.48 | 1.48 | 16.28 | -6.64 | 4.75 |
| Luxembourg | 0.40 | -0.41 | -0.10 | 9.16 | -2.33 | -2.36 | 1.49 | 0.06 | -0.22 | 5.59 | -0.51 | -0.68 | 68.39 | 4.50 | 2.10 | 14.97 | -1.31 | 1.26 |
| Malta | 2.40 | -0.29 | -0.50 | 15.87 | -4.28 | -2.46 | 1.97 | -0.30 | 0.94 | 3.99 | 0.17 | -0.40 | 48.45 | -1.45 | -0.08 | 27.31 | 6.16 | 2.51 |
| Netherlands | 2.09 | -0.59 | -0.14 | 14.16 | -1.55 | -0.97 | 5.05 | 1.69 | 0.19 | 5.57 | 0.01 | -0.27 | 50.06 | -0.65 | -1.84 | 23.07 | 1.08 | 3.02 |
| Poland | 4.35 | -0.91 | -2.82 | 19.02 | -0.09 | 0.16 | 5.61 | 0.00 | -2.52 | 7.18 | -1.03 | -0.28 | 45.78 | 1.55 | 1.57 | 18.06 | 0.47 | 3.89 |
| Portugal | 2.48 | -1.54 | 1.05 | 14.69 | -3.42 | 3.89 | 3.53 | 0.41 | 2.60 | 6.85 | -0.51 | 0.10 | 48.88 | 4.08 | -3.42 | 23.56 | 0.98 | -4.23 |
| Romania 2) | 6.51 | -7.87 | 0.93 | 23.61 | 1.95 | -1.18 | 3.85 | -2.43 | -0.44 | 10.30 | 4.91 | 1.62 | 41.10 | 1.07 | -1.10 | 14.64 | 2.37 | 0.17 |
| Slovakia | 4.06 | -0.69 | -0.21 | 23.84 | -0.53 | -3.23 | 6.37 | 1.04 | -1.21 | 8.19 | 2.59 | 0.81 | 41.66 | -1.94 | 1.70 | 15.88 | -0.47 | 2.15 |
| Slovenia | 2.51 | -0.85 | -0.10 | 23.46 | -2.27 | -2.82 | 3.26 | -0.02 | 0.33 | 7.89 | 0.73 | -1.18 | 44.30 | 3.59 | 1.11 | 18.58 | -1.18 | 2.66 |
| Spain 1) | 2.90 | -1.62 | -0.23 | 15.08 | -3.87 | -2.30 | 2.39 | -0.24 | 0.29 | 11.96 | 4.02 | -1.10 | 47.46 | 1.64 | 1.14 | 20.21 | 0.07 | 2.20 |
| Sweden 1) | 1.72 | -0.56 | 0.06 | 19.64 | -2.15 | -4.11 | 3.27 | 0.54 | 0.65 | 5.33 | 1.01 | -0.10 | 45.28 | 0.54 | 1.41 | 24.78 | 0.63 | 2.09 |
| United Kingdom | 0.69 | -0.43 | 0.05 | 12.36 | -6.03 | -0.85 | 4.21 | 0.24 | -0.04 | 6.45 | 1.30 | -0.30 | 53.26 | 2.90 | 0.98 | 23.03 | 2.02 | 0.16 |
| EU 27 1) | 1.83 | -0.66 | -0.17 | 17.24 | -2.44 | -2.31 | 3.06 | 0.19 | 0.10 | 6.42 | 0.80 | -0.08 | 49.48 | 2.05 | 0.73 | 21.97 | 0.08 | 1.72 |
| USA 1) | 1.13 | -0.09 | -0.09 | 13.74 | -3.00 | -1.04 | 3.20 | 0.77 | 0.01 | 4.99 | 0.10 | -0.94 | 52.13 | 1.29 | 0.05 | 24.82 | 0.92 | 2.00 |
| Korea 1) | 2.88 | -2.16 | -0.28 | 27.28 | 0.12 | 0.46 | 2.42 | -0.41 | -0.37 | 7.43 | -0.30 | -0.49 | 39.81 | -0.54 | -0.36 | 20.18 | 3.28 | 1.05 |
| Japan 2) | 1.38 | -0.40 | 0.05 | 20.57 | -0.63 | -1.13 | 2.00 | -0.83 | -0.18 | 5.93 | -1.41 | 0.07 | 46.61 | 1.61 | 0.38 | 23.51 | 1.66 | 0.82 |
| Switzerland 2) | 1.21 | -0.37 | 0.06 | 20.13 | 0.46 | 0.09 | 2.15 | -0.77 | -0.02 | 5.42 | -0.05 | 0.02 | 52.12 | 0.95 | -0.26 | 18.98 | -0.22 | 0.11 |
| Group 1 | 1.36 | -0.53 | -0.15 | 17.21 | -2.35 | -2.04 | 3.05 | 0.26 | 0.18 | 5.58 | 0.20 | -0.12 | 49.81 | 2.07 | 0.60 | 22.98 | 0.36 | 1.54 |
| Group 2 | 2.50 | -1.41 | -0.12 | 16.45 | -2.83 | -1.65 | 2.54 | -0.15 | 0.33 | 8.37 | 1.97 | -0.69 | 49.71 | 2.07 | 0.29 | 20.44 | 0.35 | 1.84 |
| Group 3 | 3.82 | -1.10 | -1.63 | 21.49 | -0.27 | -0.80 | 5.16 | -0.03 | -1.06 | 6.77 | -0.38 | -0.04 | 44.45 | 1.48 | 1.03 | 18.31 | 0.30 | 2.50 |
| Group 4 | 5.83 | -6.95 | 0.66 | 20.91 | 1.35 | -1.17 | 4.36 | -1.67 | -0.18 | 9.56 | 3.93 | 0.41 | 44.09 | 2.94 | -0.73 | 15.25 | 0.40 | 1.02 |

Group 1: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Netherlands, Sweden, United Kingdom. - Group 2: Cyprus, Greece, Italy, Luxembourg, Portugal, Spain.- Group 3: Czech Republic, Hungary, Malta, Poland, Slovakia, Slovenia. - Group 4: Bulgaria, Estonia, Latvia, Lithuania, Romania. - * 2010 or latest available. - 1) 2009 against 2007. 2) 2008 against 2007. *Source:* Eurostat, OECD.

## TABLE H: World export market share as percent 2009, and change 2007/2009 and 1999 (2004)/2009 in percentage points

| | EU27 | | | USA | | | Japan | | | Brasilien | | | Russland | | | Indien | | | China | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2009 | Change 2007 | Change 1999 | 2009 | Change 2007 | Change 1999 | 2009 | Change 2007 | Change 1999 | 2009 | Change 2007 | Change 1999 | 2009 | Change 2007 | Change 1999 | 2009 | Change 2007 | Change 1999 | 2009 | Change 2007 | Change 1999 |
| Total industry | 22.1 | 0.4 | 2.5 | 12.2 | -0.9 | -6.6 | 7.6 | -0.8 | -4.3 | 1.5 | 0.0 | 0.4 | 1.1 | -0.2 | 0.3 | 2.1 | 0.6 | 1.1 | 16.7 | 1.8 | 11.2 |
| Mainstream industries | 26.0 | -0.3 | 1.8 | 13.6 | -0.2 | -5.9 | 9.4 | -1.0 | -4.1 | 1.0 | -0.1 | 0.2 | 0.6 | 0.0 | 0.1 | 1.3 | 0.2 | 0.7 | 18.7 | 2.1 | 12.6 |
| Labour-intensive industries | 16.1 | -1.7 | -2.2 | 6.6 | -0.8 | -4.4 | 5.5 | 0.1 | -2.3 | 0.7 | -0.4 | -0.1 | 0.7 | -0.2 | 0.0 | 6.3 | 2.3 | 2.8 | 28.2 | 2.9 | 16.6 |
| Capital-intensive industries | 21.1 | 1.0 | 3.2 | 13.5 | 0.4 | -5.7 | 8.5 | 0.5 | -1.3 | 2.0 | 0.0 | 0.0 | 3.3 | -0.8 | 0.3 | 1.8 | 0.2 | 0.9 | 6.9 | -1.3 | 3.9 |
| Marketing-driven industries | 19.2 | -1.2 | -0.9 | 11.3 | 0.3 | -3.0 | 2.0 | -0.3 | -1.9 | 4.8 | 0.3 | 1.9 | 0.9 | 0.2 | 0.4 | 2.0 | -0.1 | 0.5 | 16.2 | 0.6 | 6.4 |
| Technology-driven industries | 23.7 | 1.9 | 5.3 | 13.1 | -2.4 | -9.2 | 8.7 | -1.6 | -6.8 | 0.8 | -0.1 | 0.2 | 0.3 | 0.0 | 0.1 | 1.0 | 0.5 | 0.8 | 17.0 | 2.9 | 13.9 |
| High RQE | 27.5 | 1.1 | 3.0 | 13.4 | -2.5 | -7.5 | 8.7 | -1.8 | -4.5 | 1.1 | -0.2 | 0.2 | 0.3 | 0.0 | 0.1 | 2.7 | 1.1 | 1.5 | 13.9 | 1.9 | 8.7 |
| Medium RQE | 20.0 | -0.4 | 4.7 | 10.6 | 0.1 | -7.5 | 6.3 | 0.1 | -5.0 | 1.8 | 0.2 | 0.9 | 0.8 | 0.0 | 0.3 | 1.4 | 0.2 | 0.7 | 22.1 | 2.7 | 16.6 |
| Low RQE | 16.5 | 0.4 | -0.3 | 12.0 | 0.4 | -4.1 | 7.3 | -0.1 | -3.0 | 1.9 | 0.0 | 0.1 | 2.4 | -0.6 | 0.3 | 1.8 | 0.2 | 0.9 | 15.7 | 0.4 | 9.4 |
| | 2009 | Change 2007 | Change 2004 | 2009 | Change 2007 | Change 2004 | 2009 | Change 2007 | Change 2004 | 2009 | Change 2007 | Change 2004 | 2009 | Change 2007 | Change 2004 | 2009 | Change 2007 | Change 2004 | 2009 | Change 2007 | Change 2004 |
| Total services | 29.3 | -1.6 | -1.8 | 22.2 | 0.6 | -0.7 | 5.7 | 0.0 | -0.9 | 1.2 | 0.2 | 0.4 | 1.9 | 0.1 | 0.4 | 4.0 | 0.2 | 1.4 | 5.8 | 0.3 | 1.5 |
| Transportation | 32.2 | -0.4 | -1.5 | 13.3 | 0.5 | -0.8 | 6.8 | -1.3 | -2.6 | 0.9 | 0.8 | 0.7 | 2.7 | 0.4 | 0.4 | 2.4 | 0.6 | 1.1 | 5.1 | -1.0 | 1.6 |
| Travel | 19.6 | -1.9 | -1.9 | 25.0 | 0.2 | -1.1 | 2.1 | 0.2 | -1.0 | 1.1 | 1.0 | 0.9 | 1.9 | 0.0 | 0.4 | 2.3 | 0.1 | 0.6 | 8.2 | 0.5 | 1.0 |
| Communications services | 30.1 | -0.4 | -1.6 | 18.8 | -0.1 | -0.1 | 1.3 | 0.1 | -0.4 | 0.7 | 0.6 | 0.9 | 2.6 | -0.2 | 0.8 | 2.8 | -2.4 | -1.4 | 2.4 | -0.2 | 0.7 |
| Construction services | 37.5 | -2.9 | -1.7 | 10.4 | -0.4 | -0.4 | 19.1 | 0.5 | -3.5 | 0.0 | 0.0 | 0.0 | 5.0 | -1.2 | -0.2 | 1.3 | -0.1 | -0.4 | 14.5 | 4.8 | 9.7 |
| Insurance services | 36.0 | -2.8 | -2.1 | 25.6 | 4.5 | 4.5 | 1.5 | -1.1 | -1.6 | 0.7 | 1.1 | 0.3 | 0.8 | 0.0 | 0.1 | 2.7 | -0.3 | 0.2 | 2.8 | 1.0 | 1.7 |
| Financial services | 34.2 | -2.9 | -4.7 | 33.4 | 2.8 | 3.9 | 2.9 | -0.2 | -1.8 | 0.9 | 0.5 | 0.4 | 0.6 | 0.0 | 0.3 | 2.1 | 0.4 | 1.7 | 0.3 | 0.1 | 0.2 |
| Computer and information services | 31.4 | -1.6 | -4.4 | 10.2 | -0.9 | -1.7 | 0.7 | -0.2 | -1.2 | 0.2 | 0.1 | 0.1 | 1.0 | 0.0 | 0.5 | 35.5 | 0.8 | 6.5 | 5.0 | 0.9 | 2.0 |
| Royalties and license fees | 22.0 | -2.0 | -1.8 | 56.5 | 2.0 | 2.7 | 13.6 | -1.3 | -1.2 | 0.3 | 0.2 | 0.1 | 0.3 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.3 | 0.0 | 0.0 |
| Other business services | 34.1 | -1.8 | -2.0 | 15.2 | 0.8 | -3.2 | 7.2 | 1.2 | 1.1 | 2.4 | 2.0 | 1.4 | 1.9 | 0.2 | 0.8 | 2.3 | -1.5 | 0.0 | 7.7 | 0.4 | 2.2 |
| Personal, cultural, recreational services | 23.8 | 1.3 | -7.3 | 50.3 | 0.9 | 15.0 | 0.6 | 0.1 | 0.3 | 0.3 | 0.3 | 0.2 | 1.3 | 0.3 | 0.5 | 1.8 | 0.1 | 1.6 | 0.4 | -0.7 | 0.2 |
| Government services. n.i.e. | 22.7 | -1.5 | -7.8 | 45.8 | 0.0 | 11.2 | 5.1 | 0.7 | -2.3 | 3.1 | 2.8 | 2.7 | 1.0 | 0.4 | 0.7 | 0.8 | 0.2 | -0.1 | 2.0 | 0.8 | 0.9 |

*Source:* UNO (Comtrade), Eurostat (Comext, EBOP). – Excluding intra-EU exports, for world definition see technical appendix.

## TABLE I: RVA 2007 and absolute change 2007 against 1999, NACE 3-digit manufacturing

| | Mainstream industries | | Labour intensive industries | | Capital intensive industries | | Marketing driven industries | | Technology driven industries | |
|---|---|---|---|---|---|---|---|---|---|---|
| Country | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change |
| Austria | 1.23 | 0.14 | 1.13 | 0.02 | 1.12 | -0.13 | 0.83 | -0.07 | 0.68 | -0.06 |
| Belgium | 0.86 | -0.03 | 0.76 | -0.04 | 1.71 | 0.10 | 0.94 | 0.01 | 0.97 | -0.03 |
| Bulgaria | 0.95 | 0.09 | 1.27 | 0.05 | 1.49 | 0.05 | 1.16 | -0.18 | 0.32 | -0.04 |
| Cyprus[1]) | 0.75 | . | 1.35 | . | 0.81 | . | 1.83 | . | 0.27 | . |
| Czech Republic | 1.16 | 0.06 | 1.06 | -0.11 | 1.37 | 0.08 | 0.79 | -0.14 | 0.70 | 0.07 |
| Denmark | 1.37 | 0.11 | 0.90 | -0.08 | 0.28 | -0.01 | 1.22 | -0.16 | 0.90 | 0.14 |
| Estonia[1]) | 0.96 | . | 2.20 | . | 0.51 | . | 0.96 | . | 0.37 | . |
| Finland | 0.93 | 0.07 | 0.88 | 0.05 | 1.34 | -0.54 | 0.64 | -0.06 | 1.32 | 0.23 |
| France | 0.92 | 0.05 | 0.92 | 0.03 | 0.69 | -0.27 | 1.13 | 0.07 | 1.26 | 0.05 |
| Germany | 1.08 | -0.04 | 0.84 | -0.11 | 1.03 | 0.06 | 0.70 | -0.12 | 1.33 | 0.21 |
| Greece | 0.69 | -0.10 | 1.18 | 0.37 | 1.18 | -0.73 | 1.77 | 0.31 | 0.32 | -0.06 |
| Hungary | 0.95 | 0.14 | 0.78 | -0.05 | 1.44 | -0.10 | 0.84 | -0.04 | 1.13 | -0.04 |
| Ireland | 0.35 | -0.03 | 0.28 | 0.02 | 1.87 | -0.14 | 1.39 | 0.17 | 1.47 | -0.03 |
| Italy | 1.18 | -0.02 | 1.45 | 0.04 | 0.74 | -0.13 | 0.92 | 0.02 | 0.62 | 0.03 |
| Latvia[1]) | 0.70 | . | 2.22 | . | 0.27 | . | 1.47 | . | 0.32 | . |
| Lithuania[1]) | 0.77 | . | 1.67 | . | 1.00 | . | 1.42 | . | 0.24 | . |
| Luxembourg[1]) | 1.52 | . | 0.72 | . | 1.63 | . | 0.88 | . | 0.30 | . |
| Malta | . | . | . | . | . | . | . | . | . | . |
| Netherlands | 0.96 | 0.04 | 0.86 | -0.02 | 1.24 | 0.19 | 1.38 | -0.04 | 0.63 | -0.10 |
| Poland | 1.04 | 0.21 | 1.15 | 0.09 | 1.17 | -0.15 | 1.21 | -0.26 | 0.49 | 0.03 |
| Portugal | 0.85 | -0.05 | 1.40 | -0.21 | 1.29 | 0.25 | 1.17 | 0.06 | 0.45 | -0.01 |
| Romania | 0.78 | -0.03 | 1.57 | -0.02 | 1.35 | 0.02 | 1.18 | -0.04 | 0.32 | 0.04 |
| Slovakia | 1.19 | 0.15 | 0.92 | 0.03 | 1.70 | -0.16 | 0.64 | -0.28 | 0.71 | 0.11 |
| Slovenia | 1.17 | 0.05 | 1.32 | -0.08 | 0.68 | 0.07 | 0.83 | -0.19 | 0.88 | 0.15 |
| Spain | 0.92 | -0.01 | 1.19 | -0.03 | 1.21 | 0.04 | 1.22 | 0.06 | 0.56 | -0.07 |
| Sweden | 0.93 | -0.01 | 0.91 | 0.11 | 1.18 | -0.01 | 0.67 | -0.02 | 1.38 | -0.07 |
| United Kingdom | 0.87 | -0.02 | 0.88 | -0.04 | 0.74 | -0.01 | 1.33 | 0.10 | 1.12 | 0.00 |
| EU 25 | | | | | | | | | | |
| USA[2]) | 0.79 | . | 0.60 | . | 1.15 | . | 1.23 | . | 1.29 | . |
| Korea | | | | | | | | | | |
| Japan | | | | | | | | | | |
| Switzerland | | | | | | | | | | |
| Group 1 | 0.98 | 0.00 | 0.86 | -0.04 | 0.98 | -0.04 | 0.97 | -0.02 | 1.20 | 0.09 |
| Group 2 | 1.06 | -0.02 | 1.35 | 0.02 | 0.95 | -0.08 | 1.06 | 0.05 | 0.58 | -0.01 |
| Group 3 | 1.07 | 0.15 | 1.06 | 0.01 | 1.27 | -0.08 | 0.99 | -0.19 | 0.68 | 0.04 |
| Group 4 | 0.82 | 0.00 | 1.60 | 0.00 | 1.26 | 0.03 | 1.27 | -0.08 | 0.33 | 0.02 |

Group 1: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Netherlands, Sweden, United Kingdom. - Group 2: Cyprus, Greece, Italy, Luxembourg, Portugal, Spain. - Group 3: Czech Republic, Hungary, Poland, Slovakia, Slovenia. – Group 4: Bulgaria, Estonia, Latvia, Lithuania, Romania. - 1) 2006. - 2) 2008.

*Source:* Eurostat (SBS).

## TABLE J: RVA 2007 and absolute change 2007 against 1999, NACE 2-digit manufacturing and services

| | INNO | | | | | | | | | | EDU | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | High | | Med-high | | Med | | Med-low | | Low | | High | | Med-high | | Med | | Med-low | | Low | |
| Country | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change |
| Austria | 1.05 | 0.10 | 0.96 | -0.03 | 0.94 | 0.09 | 0.92 | -0.15 | 1.09 | -0.12 | 0.72 | 0.13 | 0.87 | -0.02 | 1.08 | 0.14 | 1.02 | -0.20 | 1.11 | -0.15 |
| Belgium | 0.70 | -0.02 | 1.37 | -0.07 | 1.01 | 0.15 | 1.04 | -0.16 | 1.13 | -0.16 | 1.01 | 0.18 | 1.47 | 0.12 | 0.96 | 0.03 | 0.93 | -0.15 | 0.96 | -0.09 |
| Bulgaria | 0.63 | -0.04 | 1.21 | -0.17 | 0.55 | 0.16 | 1.57 | -0.59 | 1.34 | -0.13 | 0.46 | 0.22 | 0.71 | -0.52 | 1.06 | 0.10 | 0.93 | -0.22 | 1.38 | 0.03 |
| Cyprus1) | 0.18 | 0.05 | 0.58 | -0.06 | 0.63 | -0.03 | 1.03 | -0.05 | 1.09 | -0.14 | 0.50 | 0.11 | 0.35 | -0.16 | 0.92 | 0.11 | 1.08 | 0.00 | 1.56 | -0.18 |
| Czech Republic | 1.14 | 0.12 | 1.38 | -0.16 | 0.86 | 0.08 | 1.37 | -0.08 | 1.00 | -0.07 | 0.66 | 0.15 | 0.71 | -0.15 | 1.14 | 0.10 | 1.10 | 0.13 | 1.04 | -0.23 |
| Denmark | 1.08 | 0.13 | 0.67 | -0.07 | 0.86 | 0.01 | 0.89 | -0.27 | 1.26 | -0.25 | 0.88 | 0.10 | 0.82 | -0.02 | 1.10 | 0.09 | 1.14 | -0.13 | 0.91 | -0.11 |
| Estonia1) | 0.57 | 0.18 | 0.74 | -0.14 | 0.93 | 0.16 | 1.07 | -0.47 | 1.32 | -0.67 | 0.61 | 0.17 | 0.54 | 0.21 | 1.03 | -0.09 | 1.04 | -0.28 | 1.30 | 0.14 |
| Finland | 1.89 | 0.25 | 0.84 | -0.02 | 0.95 | -0.19 | 0.96 | -0.06 | 0.91 | -0.14 | 0.73 | 0.10 | 2.06 | 0.29 | 0.93 | -0.06 | 1.01 | -0.05 | 0.99 | 0.02 |
| France | 0.86 | -0.07 | 0.97 | -0.17 | 1.13 | 0.18 | 0.92 | -0.25 | 0.96 | -0.09 | 1.18 | 0.21 | 1.11 | -0.12 | 0.90 | 0.01 | 1.09 | -0.05 | 0.94 | -0.10 |
| Germany | 1.45 | 0.32 | 1.26 | 0.31 | 0.94 | -0.11 | 0.94 | 0.11 | 0.88 | 0.21 | 0.88 | -0.17 | 1.25 | 0.42 | 1.20 | -0.03 | 0.90 | 0.14 | 0.79 | -0.01 |
| Greece | 0.35 | 0.24 | 0.87 | 0.25 | 0.81 | 0.18 | 1.25 | 0.33 | 1.49 | -0.29 | 0.77 | 0.10 | 0.65 | 0.26 | 0.94 | 0.06 | 1.39 | -0.80 | 1.12 | 0.20 |
| Hungary | 1.23 | 0.01 | 1.45 | -0.37 | 0.68 | 0.18 | 1.24 | -0.50 | 1.14 | 0.01 | 0.67 | 0.18 | 1.42 | -0.20 | 1.20 | 0.09 | 1.00 | 0.02 | 0.83 | -0.13 |
| Ireland | 1.22 | -0.33 | 1.23 | -0.48 | 0.73 | 0.12 | 1.49 | -0.22 | 0.87 | 0.25 | 0.89 | -0.03 | 3.09 | -0.61 | 0.79 | 0.11 | 0.77 | 0.08 | 0.92 | 0.06 |
| Italy | 1.07 | -0.02 | 1.02 | -0.09 | 1.04 | 0.06 | 0.87 | -0.11 | 1.07 | -0.14 | 0.85 | 0.06 | 0.82 | -0.04 | 0.91 | 0.04 | 1.04 | -0.10 | 1.25 | -0.03 |
| Latvia1) | 0.33 | 0.06 | 0.58 | -0.14 | 0.73 | 0.07 | 1.15 | -0.46 | 1.53 | -0.45 | 0.50 | 0.09 | 0.37 | 0.14 | 1.07 | -0.08 | 1.35 | 0.10 | 1.21 | -0.01 |
| Lithuania1) | 0.33 | -0.06 | 0.75 | -0.26 | 0.63 | 0.15 | 1.36 | -0.76 | 1.51 | -0.01 | 0.43 | 0.08 | 0.68 | -0.10 | 0.94 | -0.04 | 1.53 | 0.17 | 1.26 | -0.03 |
| Luxembourg1) | 0.74 | 0.09 | 1.34 | -0.07 | 1.38 | 0.37 | 0.47 | -0.18 | 0.81 | -0.35 | 1.56 | 0.58 | 0.58 | -0.19 | 0.72 | -0.08 | 1.05 | -0.09 | 1.10 | -0.19 |
| Malta 2) | 0.73 | -0.16 | 1.88 | 0.52 | 0.58 | 0.00 | 0.74 | -0.43 | 1.27 | -0.12 | 0.65 | 0.20 | 2.04 | 0.38 | 0.71 | -0.03 | 1.77 | -0.15 | 1.03 | -0.12 |
| Netherlands | 0.81 | -0.01 | 0.79 | 0.05 | 1.07 | 0.06 | 1.00 | -0.11 | 1.32 | -0.10 | 1.15 | 0.03 | 1.00 | 0.07 | 1.02 | 0.04 | 0.95 | -0.04 | 0.89 | -0.09 |
| Poland | 0.65 | -0.04 | 1.19 | -0.06 | 0.75 | 0.07 | 1.56 | -0.26 | 1.18 | -0.11 | 0.49 | -0.06 | 0.77 | -0.27 | 1.14 | 0.18 | 1.20 | 0.20 | 1.10 | -0.21 |
| Portugal | 0.51 | 0.02 | 0.88 | -0.20 | 0.90 | 0.03 | 1.15 | -0.03 | 1.25 | -0.03 | 0.71 | 0.06 | 0.72 | 0.08 | 0.96 | 0.05 | 1.05 | 0.09 | 1.29 | -0.18 |
| Romania | 0.66 | 0.01 | 1.22 | -0.19 | 0.64 | 0.20 | 1.35 | -0.55 | 1.32 | -0.35 | 0.56 | 0.33 | 0.65 | -0.23 | 1.01 | -0.01 | 1.06 | -0.18 | 1.34 | 0.00 |
| Slovakia | 1.12 | 0.26 | 1.46 | -0.11 | 0.66 | 0.18 | 1.81 | -1.09 | 1.15 | 0.11 | 0.59 | 0.24 | 0.71 | -0.21 | 1.32 | -0.06 | 1.00 | 0.28 | 0.91 | -0.09 |
| Slovenia | 1.06 | 0.02 | 1.22 | 0.13 | 0.92 | -0.10 | 0.96 | -0.09 | 1.06 | -0.20 | 0.64 | -0.03 | 1.10 | 0.05 | 0.95 | 0.17 | 1.12 | -0.10 | 1.22 | -0.18 |
| Spain | 0.51 | -0.03 | 0.86 | -0.12 | 0.83 | 0.01 | 0.91 | -0.18 | 0.99 | -0.15 | 0.74 | 0.07 | 0.65 | -0.08 | 0.90 | 0.03 | 1.02 | -0.14 | 1.39 | 0.00 |
| Sweden | 1.33 | -0.01 | 0.96 | -0.10 | 0.99 | 0.00 | 0.85 | -0.06 | 0.96 | -0.05 | 0.95 | 0.04 | 1.22 | 0.04 | 1.12 | -0.01 | 0.89 | 0.03 | 0.86 | -0.01 |
| United Kingdom | 0.94 | -0.09 | 0.77 | -0.14 | 1.20 | 0.07 | 0.95 | -0.06 | 0.92 | -0.12 | 1.46 | 0.11 | 0.88 | -0.22 | 0.89 | 0.02 | 0.96 | -0.07 | 0.90 | -0.04 |
| EU 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| USA | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Korea | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Japan | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Switzerland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Group 1 | 1.17 | 0.10 | 1.05 | 0.04 | 1.03 | 0.01 | 0.96 | -0.05 | 0.95 | 0.02 | 1.05 | 0.01 | 1.21 | 0.10 | 1.04 | 0.01 | 0.96 | 0.02 | 0.88 | -0.04 |
| Group 2 | 0.82 | -0.01 | 0.96 | -0.10 | 0.96 | 0.05 | 0.91 | -0.12 | 1.07 | -0.15 | 0.81 | 0.07 | 0.74 | -0.03 | 0.91 | 0.03 | 1.05 | -0.14 | 1.29 | -0.02 |
| Group 3 | 0.92 | 0.03 | 1.30 | -0.13 | 0.77 | 0.09 | 1.44 | -0.31 | 1.12 | -0.07 | 0.58 | 0.05 | 0.88 | -0.21 | 1.15 | 0.13 | 1.12 | 0.14 | 1.04 | -0.19 |
| Group 4 | 0.59 | 0.01 | 1.10 | -0.19 | 0.65 | 0.18 | 1.37 | -0.57 | 1.36 | -0.29 | 0.52 | 0.26 | 0.64 | -0.22 | 1.02 | 0.00 | 1.10 | -0.14 | 1.33 | 0.01 |

Group 1: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Netherlands, Sweden, United Kingdom. - Group 2: Cyprus, Greece, Italy, Luxembourg, Portugal, Spain. - Group 3: Czech Republic, Hungary, Malta, Poland, Slovakia, Slovenia. - Group 4: Bulgaria, Estonia, Latvia, Lithuania, Romania. - 1) 2006. - 2) EUKLEMS.

*Source:* Eurostat (SBS).

## TABLE K: Value added (VA) share, 2007, absolute change 2007 against 1999, NACE 2-digit manufacturing and services

| | Inno type | | | | | | | | | | Edu type | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | High | | Med-high | | Med | | Med-low | | Low | | High | | Med-high | | Med | | Med-low | | Low | |
| Country | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change | 2007 | Change |
| Austria | 8.22 | 0.11 | 11.89 | 0.30 | 19.31 | 0.99 | 8.12 | -1.80 | 15.00 | 0.21 | 14.87 | 1.66 | 6.61 | -0.75 | 38.43 | 2.05 | 11.19 | -2.37 | 28.90 | -0.60 |
| Belgium | 5.32 | -0.20 | 14.58 | -1.66 | 22.86 | 0.99 | 8.09 | -1.72 | 18.26 | 1.47 | 21.59 | 1.95 | 9.08 | -0.49 | 38.64 | -0.51 | 10.45 | -0.18 | 20.25 | -0.77 |
| Bulgaria | | | | | | | | | | | | | | | | | | | | |
| Cyprus | 0.50 | -0.09 | 14.06 | 0.19 | 15.12 | 1.26 | 5.47 | -2.67 | 14.11 | -1.06 | 7.71 | 1.17 | 12.46 | 1.89 | 33.13 | 1.42 | 15.64 | -1.08 | 31.07 | -3.40 |
| Czech Republic | 10.36 | 1.28 | 17.88 | 1.20 | 18.37 | 1.53 | 10.06 | -1.50 | 18.75 | -0.23 | 13.49 | 1.44 | 5.64 | -0.09 | 40.01 | 0.88 | 14.54 | 1.27 | 26.32 | -3.50 |
| Denmark | 9.65 | 1.14 | 8.82 | -1.51 | 19.84 | 1.71 | 9.30 | -1.66 | 18.14 | -0.63 | 18.39 | 3.15 | 6.89 | -0.51 | 38.99 | -2.65 | 14.07 | 0.49 | 21.66 | -0.49 |
| Estonia | 5.22 | 0.93 | 9.60 | -0.78 | 19.18 | 1.94 | 8.15 | -2.32 | 20.42 | -3.31 | 13.67 | 1.46 | 4.18 | 0.05 | 40.71 | -2.62 | 13.33 | -1.87 | 28.10 | 2.98 |
| Finland | 15.06 | 1.10 | 11.23 | -0.21 | 18.58 | -1.00 | 7.45 | -0.83 | 16.14 | -0.46 | 12.84 | 1.48 | 12.04 | 0.26 | 41.14 | -2.15 | 11.70 | -0.69 | 22.28 | 1.09 |
| France | 8.33 | -1.38 | 9.34 | -2.29 | 21.34 | 0.48 | 7.05 | -1.04 | 13.21 | 0.19 | 22.30 | 1.06 | 7.22 | -0.59 | 38.99 | 0.49 | 10.52 | -0.65 | 20.97 | -0.30 |
| Germany | 12.09 | 1.37 | 15.16 | 1.02 | 20.97 | -0.40 | 7.33 | -1.11 | 11.63 | 0.19 | 18.68 | 0.19 | 8.37 | 0.57 | 45.28 | 2.35 | 9.53 | -0.74 | 18.15 | -2.36 |
| Greece | 2.08 | 0.73 | 10.25 | -0.32 | 12.63 | -0.12 | 6.93 | -1.00 | 15.64 | 0.17 | 10.77 | 0.74 | 5.27 | 0.67 | 32.34 | -2.06 | 16.76 | -0.30 | 34.86 | 0.96 |
| Hungary | 11.04 | 2.27 | 17.88 | -0.79 | 17.82 | 2.80 | 8.90 | -2.75 | 15.00 | -0.18 | 17.69 | 4.07 | 9.37 | -0.07 | 40.42 | 0.32 | 13.10 | -0.85 | 19.41 | -3.46 |
| Ireland | 15.37 | -4.89 | 13.85 | -3.79 | 14.60 | 4.24 | 19.60 | -0.85 | 9.46 | 1.93 | 20.30 | 1.77 | 21.16 | -0.90 | 25.52 | 0.80 | 6.20 | -1.20 | 26.82 | -0.48 |
| Italy | 8.78 | 0.14 | 10.72 | -1.55 | 19.21 | 0.07 | 6.85 | 0.02 | 16.39 | -0.64 | 15.90 | 0.51 | 6.29 | 0.43 | 39.23 | 1.49 | 11.83 | -2.32 | 26.75 | -0.12 |
| Latvia | 1.35 | 0.01 | 20.48 | 1.55 | 15.13 | 1.22 | 6.97 | -6.52 | 22.69 | -2.24 | 12.64 | 1.96 | 9.15 | 1.76 | 33.83 | -0.88 | 18.07 | -3.09 | 26.31 | 0.26 |
| Lithuania | 2.09 | -0.83 | 16.23 | 3.26 | 11.31 | 2.63 | 11.24 | -6.82 | 22.44 | 1.85 | 6.70 | 2.43 | 7.70 | 1.05 | 30.33 | -4.88 | 25.41 | 2.92 | 29.87 | -1.52 |
| Luxembourg | 1.44 | 0.00 | 20.33 | 0.63 | 37.78 | 3.24 | 2.69 | -1.16 | 11.62 | -0.37 | 13.04 | 3.53 | 33.68 | 3.31 | 24.58 | -2.42 | 10.93 | -1.80 | 17.76 | -2.62 |
| Malta | 6.60 | -0.99 | 23.58 | 5.76 | 12.20 | 0.44 | 6.07 | -4.16 | 17.06 | -2.39 | 12.50 | 4.56 | 16.24 | 3.05 | 27.77 | -1.80 | 19.92 | -2.54 | 23.57 | -3.26 |
| Netherlands | 6.80 | 0.12 | 10.58 | 0.32 | 23.07 | 0.30 | 10.63 | 0.21 | 18.49 | 0.22 | 22.58 | 1.75 | 9.68 | -0.17 | 37.75 | 1.47 | 10.24 | -2.11 | 19.75 | -0.94 |
| Poland 1) | 5.51 | -0.26 | 13.35 | 1.82 | 16.85 | 1.01 | 11.65 | 0.85 | 17.19 | -1.67 | 13.02 | 0.66 | 5.72 | 0.31 | 36.03 | 1.18 | 18.31 | 0.54 | 26.92 | -2.69 |
| Portugal | 4.22 | -0.36 | 11.80 | -1.37 | 20.24 | 1.00 | 10.42 | 0.90 | 15.20 | -1.08 | 17.48 | 2.06 | 5.27 | 0.63 | 34.39 | -0.70 | 10.71 | 0.78 | 32.15 | -2.76 |
| Romania | | | | | | | | | | | | | | | | | | | | |
| Slovakia | 8.02 | 2.14 | 15.37 | -1.96 | 16.54 | 4.20 | 13.11 | 0.10 | 16.69 | -6.10 | 11.12 | 2.23 | 7.17 | 1.01 | 37.75 | -3.60 | 15.66 | -2.15 | 28.30 | 2.51 |
| Slovenia 1) | 9.33 | 0.29 | 15.55 | 1.08 | 22.41 | 1.65 | 8.80 | -1.64 | 14.93 | -0.14 | 17.63 | 3.23 | 8.06 | 0.00 | 34.91 | 0.55 | 13.65 | -0.02 | 25.75 | -3.75 |
| Spain | 4.80 | -0.27 | 11.05 | -3.34 | 17.59 | 1.09 | 7.24 | -1.27 | 12.60 | -1.18 | 14.73 | 1.87 | 4.99 | -0.79 | 31.97 | -1.45 | 11.15 | -2.09 | 37.15 | 2.45 |
| Sweden | 13.36 | 1.10 | 12.32 | -1.38 | 19.80 | -1.10 | 8.48 | -0.51 | 15.64 | 0.51 | 19.04 | 1.28 | 8.54 | -1.30 | 41.58 | -1.78 | 10.90 | 0.03 | 19.95 | 1.78 |
| United Kingdom | 7.64 | -1.58 | 9.85 | -2.95 | 26.38 | 5.39 | 8.15 | -1.66 | 12.27 | -1.61 | 27.24 | 6.91 | 7.88 | -1.33 | 31.17 | -3.98 | 11.71 | -1.47 | 22.01 | -0.13 |
| EU 25 | 9.08 | 0.54 | 12.52 | -0.58 | 20.88 | 0.85 | 8.22 | -0.54 | 13.44 | -0.52 | 19.10 | 1.62 | 7.98 | 0.02 | 38.84 | -0.65 | 11.25 | -0.44 | 22.83 | -0.55 |
| USA | 4.06 | -1.33 | 26.86 | 0.60 | 17.19 | -0.24 | 5.12 | -0.71 | 10.27 | -0.02 | 15.94 | 1.35 | 18.19 | 0.81 | 35.33 | -0.44 | 12.28 | -0.33 | 18.26 | -1.38 |
| Korea | 15.20 | 2.23 | 20.49 | 0.20 | 15.73 | 1.48 | 8.41 | -0.52 | 11.06 | -0.96 | 15.16 | 1.55 | 19.35 | 1.40 | 28.33 | -0.40 | 11.76 | -0.32 | 25.40 | -2.23 |
| Japan 1) | 11.08 | 0.58 | 13.74 | 0.40 | 16.01 | 1.95 | 8.95 | -1.00 | 16.54 | -0.21 | 15.92 | 2.55 | 9.36 | -0.10 | 41.83 | 0.92 | 11.92 | -1.29 | 20.98 | -2.07 |
| Switzerland | 12.13 | 0.60 | 11.50 | 1.88 | 24.92 | -0.78 | 8.99 | -0.94 | 15.09 | 0.81 | 23.40 | -0.01 | 15.36 | 2.82 | 31.63 | -0.83 | 10.55 | -0.77 | 19.06 | -1.21 |
| | | | | | | | | | | | | | | | | | | | | |
| Group 1 | 9.81 | -0.36 | 11.99 | -1.10 | 21.94 | 1.40 | 8.40 | -1.14 | 13.17 | -0.07 | 21.49 | 2.22 | 8.75 | -0.38 | 38.65 | 0.02 | 10.35 | -0.97 | 20.76 | -0.89 |
| Group 2 | 6.48 | 0.00 | 10.99 | -2.09 | 18.39 | 0.53 | 7.14 | -0.50 | 14.81 | -0.81 | 15.13 | 1.15 | 6.01 | 0.05 | 35.62 | -0.01 | 11.87 | -1.91 | 31.38 | 0.73 |
| Group 3 | 7.99 | 1.79 | 15.38 | -1.25 | 16.79 | 3.58 | 12.55 | -0.04 | 16.78 | -4.94 | 11.80 | 2.08 | 7.01 | 0.81 | 37.74 | -2.57 | 15.79 | -1.56 | 27.65 | 1.24 |
| Group 4 | 2.56 | -0.20 | 16.05 | 1.87 | 14.17 | 2.06 | 9.29 | -5.75 | 22.07 | -0.50 | 10.00 | 2.07 | 7.36 | 1.04 | 33.64 | -3.19 | 20.58 | 0.08 | 28.42 | 0.00 |

Group 1: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Netherlands, Sweden, United Kingdom. - Group 2: Cyprus, Greece, Italy, Luxembourg, Portugal, Spain.- Group 3: Czech Republic, Hungary, Malta, Poland, Slovakia, Slovenia. - Group 4: Estonia, Latvia, Lithuania. - 1) 2006.

*Source:* OECD (STAN), EU KLEMS.

## TABLE L: RCA 2010 and absolute change 2010 against 1999 and 2007, NACE 3-digit manufacturing

| | Mainstream industries | | | Labour intensive industries | | | Capital intensive industries | | | Marketing driven industries | | | Technology driven industries | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2010 | Change 99/10 | Change 07/10 | 2010 | Change 99/10 | Change 07/10 | 2010 | Change 99/10 | Change 07/10 | 2010 | Change 99/10 | Change 07/10 | 2010 | Change 99/10 | Change 07/10 |
| Austria | 0.260 | -0.005 | -0.004 | 0.397 | 0.075 | 0.060 | -0.172 | -0.144 | 0.037 | 0.043 | 0.112 | -0.004 | -0.265 | 0.059 | -0.015 |
| Belgium | -0.367 | -0.184 | -0.002 | -0.186 | -0.259 | -0.051 | 0.385 | -0.002 | 0.009 | -0.021 | -0.073 | 0.033 | -0.070 | 0.126 | -0.022 |
| Bulgaria | -0.200 | 0.204 | 0.100 | 0.538 | -0.271 | -0.110 | 0.581 | -0.075 | -0.130 | 0.091 | -0.259 | 0.266 | -1.045 | 0.665 | 0.416 |
| Cyprus | -0.917 | -0.868 | -0.461 | -0.718 | -1.065 | 0.013 | -0.432 | -0.460 | 0.358 | 0.444 | -0.261 | 0.166 | 0.441 | 1.126 | -0.081 |
| Czech Republic | 0.174 | -0.144 | -0.061 | 0.145 | -0.358 | -0.062 | -0.236 | -0.312 | -0.005 | -0.265 | -0.004 | 0.022 | 0.064 | 0.582 | 0.087 |
| Denmark | 0.283 | 0.093 | 0.034 | 0.400 | 0.132 | 0.123 | -0.679 | 0.128 | -0.034 | 0.671 | -0.045 | 0.000 | -0.460 | -0.054 | -0.090 |
| Estonia | -0.105 | 0.398 | 0.047 | 1.005 | -0.256 | 0.008 | 0.107 | 0.606 | 0.038 | 0.004 | 0.057 | -0.006 | -0.655 | -0.221 | -0.002 |
| Finland | 0.180 | 0.251 | 0.170 | 0.114 | -0.006 | -0.032 | 0.620 | -0.025 | 0.168 | -1.150 | 0.039 | 0.110 | -0.670 | -0.443 | -0.450 |
| France | -0.171 | -0.001 | -0.050 | -0.287 | 0.090 | 0.028 | -0.173 | -0.051 | -0.058 | 0.279 | 0.145 | 0.017 | 0.144 | -0.043 | 0.021 |
| Germany | 0.161 | 0.002 | 0.037 | -0.103 | 0.056 | 0.016 | -0.198 | -0.065 | 0.002 | -0.273 | 0.055 | -0.002 | 0.118 | 0.019 | -0.025 |
| Greece | -0.212 | 0.284 | 0.040 | 0.200 | -0.541 | -0.094 | 0.359 | -0.086 | -0.076 | 0.617 | -0.035 | 0.096 | -0.806 | 0.513 | 0.059 |
| Hungary | -0.104 | 0.077 | 0.009 | -0.235 | -0.355 | 0.007 | -0.431 | 0.113 | 0.101 | -0.489 | -0.265 | 0.042 | 0.409 | 0.109 | -0.049 |
| Ireland | -1.633 | -0.353 | -0.046 | -1.879 | -0.451 | -0.135 | -0.121 | -0.198 | -0.188 | -0.123 | -0.094 | -0.168 | 0.626 | 0.112 | 0.067 |
| Italy | 0.441 | 0.015 | 0.006 | 0.482 | -0.063 | 0.002 | -0.139 | 0.118 | 0.042 | 0.171 | 0.019 | 0.026 | -0.708 | 0.015 | 0.012 |
| Latvia | -0.261 | 0.417 | 0.051 | 1.090 | -0.452 | -0.101 | -0.152 | -0.147 | 0.038 | 0.350 | 0.511 | 0.026 | -0.590 | 1.140 | 0.169 |
| Lithuania | -0.331 | 0.229 | -0.006 | 0.629 | -0.556 | -0.157 | 0.515 | 0.156 | 0.245 | 0.212 | 0.163 | -0.084 | -0.922 | 0.292 | -0.200 |
| Luxembourg | 0.057 | -0.218 | 0.204 | -0.780 | -0.066 | -0.127 | 0.096 | -0.426 | -0.148 | -0.524 | -0.160 | 0.112 | 0.177 | 0.491 | -0.022 |
| Malta | -0.615 | 0.239 | 0.119 | -1.089 | -1.020 | 0.152 | -0.732 | 0.750 | 1.294 | 0.095 | 0.286 | -0.132 | 0.583 | -0.027 | -0.160 |
| Netherlands | -0.435 | -0.017 | -0.014 | -0.665 | -0.011 | 0.028 | 0.256 | 0.124 | 0.015 | 0.212 | -0.164 | -0.049 | 0.068 | -0.055 | -0.024 |
| Poland | 0.054 | 0.051 | -0.054 | 0.560 | -0.445 | -0.096 | -0.116 | -0.135 | -0.033 | 0.203 | 0.136 | 0.055 | -0.286 | 0.627 | 0.172 |
| Portugal | -0.010 | 0.180 | 0.058 | 0.692 | -0.206 | -0.034 | 0.168 | 0.417 | 0.194 | 0.293 | 0.083 | 0.021 | -0.726 | -0.315 | -0.253 |
| Romania | -0.049 | 0.354 | 0.025 | 0.921 | -0.413 | -0.170 | 0.068 | -0.249 | -0.230 | -0.284 | -0.258 | -0.020 | -0.403 | 1.700 | 0.861 |
| Slovenia | 0.243 | -0.060 | -0.004 | 0.405 | -0.265 | -0.036 | -0.151 | -0.086 | 0.049 | -0.281 | 0.008 | -0.017 | -0.133 | 0.392 | 0.037 |
| Slovakia | -0.073 | -0.100 | 0.044 | 0.196 | -0.251 | -0.072 | -0.075 | -0.590 | -0.042 | -0.421 | 0.081 | 0.012 | 0.154 | 0.658 | 0.029 |
| Spain | -0.140 | 0.050 | 0.039 | 0.046 | 0.144 | 0.078 | 0.162 | -0.025 | 0.008 | 0.247 | 0.016 | 0.031 | -0.168 | -0.105 | -0.085 |
| Sweden | 0.033 | 0.069 | 0.021 | 0.000 | 0.072 | -0.008 | 0.293 | -0.007 | 0.042 | -0.609 | 0.275 | 0.082 | -0.084 | -0.165 | -0.055 |
| United Kingdom | -0.226 | -0.094 | -0.098 | -0.329 | 0.020 | 0.010 | 0.005 | 0.120 | -0.029 | -0.113 | -0.033 | -0.069 | 0.218 | -0.011 | 0.065 |
| | | | | | | | | | | | | | | | |
| Group 1 | -0.068 | -0.004 | 0.001 | -0.194 | 0.021 | 0.009 | 0.016 | 0.002 | -0.004 | -0.032 | 0.005 | -0.010 | 0.087 | -0.015 | -0.006 |
| Group 2 | 0.248 | 0.007 | 0.013 | 0.358 | -0.074 | 0.008 | 0.002 | 0.078 | 0.033 | 0.203 | 0.019 | 0.032 | -0.485 | 0.000 | -0.037 |
| Group 3 | 0.058 | -0.037 | -0.032 | 0.272 | -0.339 | -0.064 | -0.199 | -0.188 | 0.001 | -0.135 | 0.038 | 0.042 | 0.047 | 0.365 | 0.050 |
| Group 4 | -0.159 | 0.324 | 0.041 | 0.810 | -0.349 | -0.119 | 0.240 | 0.026 | -0.057 | -0.010 | -0.057 | 0.016 | -0.550 | 0.384 | 0.313 |

Group 1: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Netherlands, Sweden, United Kingdom. - Group 2: Greece, Italy, Luxembourg, Portugal, Spain. - Group 3: Czech Republic, Hungary, Poland, Slovakia, Slovenia. - Group 4: Bulgaria, Cyprus, Estonia, Latvia, Lithuania, Malta, Romania.

*Source:* Eurostat (Comext). – Including intra-EU exports.

## TABLE M: Share of exports to BRIC in total exports as percent 2010 and index 2010 (1999=100, 2007=100), NACE 3-digit manufacturing

| | Mainstream industries | | | Labour intensive industries | | | Capital intensive industries | | | Marketing driven industries | | | Technology driven industries | | | To |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2010 | 1999=100 | 2007=100 | 2010 | 1999=100 | 2007=100 | 2010 | 1999=100 | 2007=100 | 2010 | 1999=100 | 2007=100 | 2010 | 1999=100 | 2007=100 | 2010 |
| Austria | 2.26 | 249.1 | 116.4 | 0.85 | 385.9 | 153.5 | 0.69 | 435.1 | 133.3 | 0.45 | 263.6 | 102.2 | 1.91 | 310.3 | 145.1 | 6.16 |
| Belgium | 0.83 | 308.4 | 131.7 | 0.42 | 358.1 | 118.9 | 1.60 | 347.4 | 155.4 | 0.24 | 157.8 | 134.4 | 1.16 | 366.4 | 164.1 | 4.25 |
| Bulgaria | 1.02 | 88.0 | 108.6 | 0.33 | 94.0 | 112.8 | 1.64 | 366.4 | 138.6 | 0.41 | 21.4 | 60.9 | 1.72 | 96.6 | 261.8 | 5.12 |
| Cyprus | 0.73 | 59.5 | 263.2 | 0.23 | 140.8 | 106.9 | 1.74 | 1,411.3 | 174.8 | 0.21 | 77.4 | 79.8 | 2.33 | 546.0 | 180.7 | 5.23 |
| Czech Republic | 1.53 | 221.7 | 111.2 | 0.57 | 230.5 | 118.1 | 0.85 | 261.1 | 205.9 | 0.33 | 98.8 | 136.1 | 1.37 | 324.7 | 121.4 | 4.65 |
| Denmark | 2.09 | 321.7 | 129.5 | 0.28 | 261.0 | 90.9 | 0.42 | 362.9 | 91.3 | 1.23 | 230.4 | 117.4 | 1.23 | 364.0 | 167.7 | 5.27 |
| Estonia | 4.08 | 1,118.9 | 127.3 | 1.54 | 407.6 | 124.8 | 2.52 | 156.0 | 108.5 | 2.85 | 358.6 | 101.1 | 1.67 | 390.0 | 123.2 | 12.66 |
| Finland | 6.68 | 280.3 | 136.7 | 0.90 | 173.9 | 98.2 | 4.16 | 306.9 | 140.9 | 1.05 | 136.9 | 123.3 | 4.00 | 150.7 | 70.0 | 16.80 |
| France | 1.21 | 219.9 | 111.8 | 0.43 | 229.1 | 110.2 | 0.94 | 330.3 | 133.5 | 0.75 | 276.0 | 134.8 | 3.01 | 244.7 | 111.6 | 6.33 |
| Germany | 3.63 | 299.1 | 130.2 | 0.88 | 233.0 | 124.1 | 1.77 | 390.8 | 160.4 | 0.55 | 188.5 | 129.2 | 3.94 | 384.2 | 154.5 | 10.77 |
| Greece | 0.44 | 258.1 | 72.1 | 1.06 | 90.7 | 99.6 | 0.87 | 131.9 | 127.8 | 0.57 | 159.1 | 115.4 | 0.26 | 42.7 | 206.2 | 3.20 |
| Hungary | 1.06 | 354.7 | 151.5 | 0.48 | 722.8 | 296.9 | 0.52 | 341.7 | 143.7 | 0.24 | 46.0 | 78.6 | 3.93 | 585.0 | 114.3 | 6.24 |
| Ireland | 0.12 | 192.9 | 126.3 | 0.03 | 147.5 | 80.5 | 0.30 | 235.4 | 123.2 | 0.24 | 84.4 | 127.0 | 1.98 | 417.1 | 117.2 | 2.67 |
| Italy | 3.27 | 250.6 | 121.4 | 1.32 | 220.2 | 104.8 | 1.00 | 245.4 | 132.7 | 0.74 | 245.9 | 112.6 | 0.88 | 183.5 | 128.1 | 7.20 |
| Latvia | 5.10 | 278.4 | 114.5 | 2.84 | 223.8 | 95.9 | 2.10 | 218.5 | 115.8 | 5.87 | 284.3 | 175.5 | 2.92 | 273.7 | 137.1 | 18.82 |
| Lithuania | 5.11 | 397.6 | 123.2 | 2.59 | 351.6 | 125.5 | 1.77 | 160.0 | 160.7 | 3.62 | 195.4 | 122.0 | 2.17 | 197.2 | 53.9 | 15.26 |
| Luxembourg | 1.15 | 127.0 | 108.6 | 0.04 | 231.3 | 38.4 | 0.80 | 233.1 | 88.6 | 0.06 | 198.4 | 285.4 | 0.68 | 1,741.8 | 175.9 | 2.73 |
| Malta | 0.45 | 1,235.7 | 236.7 | 0.06 | 143.9 | 96.5 | 0.23 | 11,399.6 | 423.1 | 0.02 | 313.9 | 12.9 | 3.25 | 8,227.9 | 261.1 | 4.02 |
| Netherlands | 0.93 | 325.7 | 111.9 | 0.11 | 124.6 | 78.8 | 1.15 | 420.7 | 128.4 | 0.50 | 139.8 | 130.2 | 1.41 | 286.1 | 97.2 | 4.10 |
| Poland | 1.68 | 191.1 | 75.5 | 0.60 | 165.3 | 81.6 | 1.32 | 206.7 | 133.0 | 1.21 | 98.6 | 109.7 | 0.93 | 246.9 | 133.1 | 5.74 |
| Portugal | 0.44 | 225.8 | 158.4 | 0.30 | 183.9 | 143.1 | 0.37 | 358.6 | 169.7 | 0.74 | 265.5 | 135.5 | 0.31 | 508.5 | 104.1 | 2.15 |
| Romania | 0.85 | 518.3 | 103.6 | 0.30 | 69.0 | 105.4 | 1.22 | 281.9 | 65.1 | 0.07 | 50.5 | 88.0 | 1.29 | 663.9 | 403.9 | 3.73 |
| Slovenia | 1.57 | 271.7 | 72.8 | 0.63 | 459.5 | 108.7 | 0.45 | 293.6 | 170.1 | 0.34 | 233.3 | 91.2 | 1.67 | 195.0 | 96.1 | 4.66 |
| Slovakia | 0.95 | 245.0 | 122.8 | 0.98 | 357.9 | 384.6 | 0.52 | 190.2 | 157.5 | 0.17 | 88.4 | 94.1 | 3.88 | 2,050.5 | 224.2 | 6.51 |
| Spain | 0.99 | 183.4 | 114.7 | 0.58 | 144.2 | 178.1 | 1.33 | 379.4 | 138.3 | 0.67 | 187.0 | 144.4 | 0.74 | 137.1 | 93.7 | 4.31 |
| Sweden | 2.32 | 269.7 | 114.8 | 0.37 | 233.4 | 142.8 | 1.96 | 421.7 | 141.8 | 0.19 | 191.9 | 140.9 | 2.51 | 115.5 | 123.8 | 7.35 |
| United Kingdom | 1.32 | 222.4 | 111.6 | 0.28 | 188.9 | 113.1 | 1.66 | 416.7 | 137.9 | 0.40 | 201.5 | 116.6 | 2.85 | 377.3 | 154.2 | 6.50 |
| Group 1 | 2.16 | 285.4 | 123.9 | 0.53 | 241.2 | 118.9 | 1.47 | 378.8 | 145.4 | 0.52 | 189.5 | 126.3 | 2.77 | 294.6 | 133.3 | 7.45 |
| Group 2 | 2.28 | 229.4 | 118.9 | 0.99 | 190.8 | 111.9 | 1.05 | 279.0 | 134.4 | 0.70 | 224.9 | 121.7 | 0.78 | 169.5 | 116.7 | 5.80 |
| Group 3 | 1.41 | 233.7 | 94.8 | 0.63 | 273.7 | 130.8 | 0.87 | 250.1 | 153.7 | 0.58 | 97.8 | 109.5 | 2.08 | 427.6 | 132.6 | 5.57 |
| Group 4 | 2.29 | 362.0 | 118.9 | 1.03 | 217.8 | 115.6 | 1.57 | 243.0 | 98.6 | 1.49 | 172.2 | 120.8 | 1.74 | 264.0 | 133.5 | 8.13 |
| EU 27 | 2.11 | 266.9 | 120.2 | 0.63 | 227.7 | 117.7 | 1.34 | 348.2 | 142.5 | 0.57 | 192.1 | 124.0 | 2.37 | 282.9 | 132.4 | 7.02 |

Group 1: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Netherlands, Sweden, United Kingdom. - Group 2: Greece, Italy, Luxembourg, Portugal, Spain. - Group 3: Czech Republic, Hungary, Poland, Slovakia, Slovenia. - Group 4: Bulgaria, Cyprus, Estonia, Latvia, Lithuania, Malta, Romania.

*Source:* Eurostat (Comext). – Including intra-EU exports.

**TABLE N: RCA 2009 and absolute change 2009 against 2004 and 2007, NACE 2-digit manufacturing and services**

| | INNO | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | High | | | Med-high | | | Med | | | Med -low | | | Low | | | High | | | Med-high | | | |
| | 2009 | Change 04/09 | Change 07/09 | 2009 | Change 04/09 | Change 07/09 | 2009 | Change 04/09 | Change 07/09 | 2009 | Change 04/09 | Change 07/09 | 2009 | Change 04/09 | Change 07/09 | 2009 | Change 04/09 | Change 07/09 | 2009 | Change 04/09 | Change 07/09 | 2009 |
| Austria | 0.007 | 0.017 | 0.002 | -0.131 | -0.048 | -0.029 | 0.203 | -0.036 | 0.003 | -0.066 | 0.098 | -0.021 | 0.199 | 0.150 | 0.112 | -0.391 | 0.050 | 0.052 | -0.461 | -0.078 | 0.020 | 0.129 |
| Belgium | -0.584 | 0.003 | 0.043 | 0.324 | 0.007 | -0.020 | -0.324 | -0.087 | 0.101 | 0.041 | -0.012 | -0.003 | 0.105 | 0.166 | 0.030 | -0.398 | 0.013 | 0.370 | 0.319 | 0.077 | -0.019 | -0.267 |
| Bulgaria | -0.457 | 0.423 | 0.153 | 0.120 | 0.077 | -0.080 | -0.310 | 0.003 | 0.064 | 0.158 | 0.307 | 0.325 | 0.778 | -0.606 | -0.088 | -1.126 | -0.032 | 0.162 | -0.254 | 0.290 | -0.111 | -0.742 |
| Cyprus | -1.251 | -0.482 | -0.362 | -1.681 | -0.295 | -0.267 | 1.133 | 0.176 | 0.074 | -0.761 | -0.351 | -0.302 | 1.401 | -0.090 | 0.054 | 1.014 | 0.367 | 0.260 | -0.754 | -0.265 | -0.430 | -2.160 |
| Czech Republic | 0.254 | 0.054 | -0.044 | -0.054 | -0.036 | 0.012 | -0.034 | -0.037 | 0.049 | -0.544 | 0.057 | 0.027 | -0.307 | 0.107 | 0.115 | -0.116 | 0.305 | 0.076 | -0.488 | -0.022 | 0.034 | 0.388 |
| Denmark 1) | -0.127 | -0.015 | 0.019 | -0.601 | 0.015 | 0.065 | -0.223 | 0.040 | 0.025 | 0.545 | -0.168 | -0.068 | 1.355 | -0.009 | -0.122 | -0.332 | 0.225 | 0.193 | -0.315 | -0.101 | -0.040 | -0.407 |
| Estonia | -0.323 | -0.206 | -0.035 | -0.224 | 0.314 | 0.029 | 0.300 | -0.070 | -0.034 | -0.003 | 0.061 | -0.094 | 0.891 | -0.235 | 0.036 | -0.565 | 0.532 | 0.077 | -0.289 | -0.091 | -0.023 | -0.245 |
| Finland | 0.454 | . | 0.093 | -0.404 | . | -0.101 | 0.356 | . | -0.038 | -1.182 | . | -0.016 | -0.826 | . | 0.080 | . | . | . | . | . | . | . |
| France | -0.205 | . | -0.033 | 0.188 | . | 0.023 | -0.309 | . | 0.040 | 0.187 | . | -0.050 | -0.078 | . | -0.035 | -0.665 | . | 0.006 | 0.214 | . | 0.022 | -0.113 |
| Germany | 0.146 | -0.032 | -0.021 | 0.075 | -0.002 | 0.003 | -0.188 | 0.071 | 0.050 | -0.292 | 0.070 | 0.019 | -0.458 | 0.109 | 0.062 | -0.300 | 0.053 | 0.086 | -0.040 | -0.003 | 0.009 | 0.352 |
| Greece | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Hungary 1) | 0.564 | 0.093 | 0.028 | -0.222 | -0.059 | -0.054 | -0.476 | -0.001 | 0.078 | -0.495 | -0.080 | 0.001 | -0.526 | -0.171 | -0.035 | -0.299 | -0.145 | -0.162 | 0.187 | 0.106 | 0.081 | 0.214 |
| Ireland | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Italy | 0.062 | 0.043 | 0.012 | -0.073 | 0.030 | 0.001 | -0.064 | -0.097 | -0.060 | -0.082 | 0.070 | 0.097 | 0.351 | -0.128 | -0.007 | -0.928 | -0.088 | -0.109 | -0.374 | 0.025 | -0.039 | 0.206 |
| Latvia | -0.611 | 0.615 | 0.201 | -0.390 | 0.073 | -0.026 | 0.458 | -0.299 | -0.107 | 0.285 | 0.252 | -0.062 | 1.075 | -0.179 | 0.023 | -0.336 | 0.239 | 0.045 | -0.555 | 0.222 | 0.116 | -0.561 |
| Lithuania | -0.872 | -0.087 | -0.211 | 0.146 | 0.053 | 0.117 | -0.216 | -0.030 | -0.027 | 0.472 | 0.283 | -0.060 | 0.774 | -0.273 | -0.138 | -1.808 | -0.098 | -0.132 | 0.201 | -0.014 | 0.160 | -0.590 |
| Luxembourg | -0.458 | -0.136 | 0.196 | -0.987 | -0.172 | 0.014 | 1.241 | 0.036 | -0.093 | -0.292 | -0.026 | 0.111 | -1.140 | 0.426 | 0.226 | 1.502 | -0.075 | -0.157 | -0.675 | 0.197 | 0.295 | -1.094 |
| Malta | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Netherlands | 0.253 | 0.022 | 0.016 | -0.165 | 0.026 | -0.054 | -0.273 | -0.131 | 0.048 | 0.390 | -0.049 | -0.009 | -0.201 | 0.084 | 0.031 | 0.451 | -0.144 | 0.012 | 0.205 | -0.024 | -0.102 | -0.604 |
| Poland | -0.181 | 0.260 | 0.063 | 0.001 | -0.078 | -0.011 | 0.119 | -0.132 | -0.045 | 0.183 | 0.120 | -0.020 | 0.094 | -0.080 | -0.013 | -0.614 | 0.831 | 0.473 | -0.445 | 0.011 | 0.021 | 0.187 |
| Portugal 1) | -0.561 | -0.075 | -0.181 | -0.095 | -0.083 | -0.005 | 0.365 | 0.140 | 0.076 | 0.175 | 0.134 | 0.053 | 0.655 | -0.058 | 0.041 | -0.740 | 0.016 | 0.037 | -0.401 | -0.033 | -0.167 | -0.249 |
| Romania | -0.025 | 0.465 | 0.247 | -0.028 | 0.071 | -0.036 | -0.068 | 0.017 | -0.091 | -0.932 | 0.621 | 0.365 | 0.761 | -0.692 | -0.190 | -0.387 | 0.870 | 0.002 | -0.296 | 0.115 | 0.125 | 0.156 |
| Slovakia 1) | 0.253 | 0.340 | 0.166 | 0.033 | -0.104 | -0.097 | -0.282 | -0.076 | 0.004 | -0.762 | -0.250 | -0.037 | -0.118 | -0.369 | -0.006 | -1.300 | -0.395 | -0.034 | -0.010 | 0.416 | 0.110 | 0.333 |
| Slovenia | -0.141 | -0.054 | 0.006 | 0.135 | 0.120 | 0.020 | 0.058 | -0.162 | -0.011 | -0.446 | 0.346 | 0.143 | -0.079 | -0.297 | -0.124 | -1.143 | 0.255 | 0.273 | -0.365 | 0.117 | 0.125 | 0.376 |
| Spain | -0.576 | . | 0.015 | 0.130 | . | -0.027 | 0.215 | . | 0.026 | 0.226 | . | -0.003 | 0.009 | . | 0.092 | -0.104 | . | 0.056 | -0.307 | . | -0.071 | -0.041 |
| Sweden | 0.234 | 0.088 | 0.054 | -0.203 | -0.083 | -0.092 | 0.278 | -0.022 | 0.055 | -0.722 | 0.076 | 0.032 | -0.172 | 0.061 | 0.068 | 0.180 | 0.203 | 0.079 | -0.083 | -0.040 | 0.039 | 0.173 |
| United Kingdom | -0.168 | -0.179 | -0.048 | -0.132 | 0.057 | 0.044 | 0.504 | 0.077 | -0.052 | -0.007 | 0.010 | 0.088 | -0.343 | -0.065 | 0.017 | 0.719 | -0.075 | -0.145 | 0.101 | 0.029 | 0.085 | -0.363 |
| | | | | | | | | | | | | | | | | | | | | | | |
| Group 1 2) | 0.014 | . | -0.006 | 0.025 | . | -0.001 | -0.044 | . | 0.008 | -0.003 | . | 0.007 | -0.100 | . | 0.016 | 0.011 | . | -0.006 | 0.076 | . | 0.002 | -0.001 |
| Group 2 3) | -0.183 | . | -0.001 | -0.055 | . | -0.009 | 0.253 | . | -0.016 | 0.030 | . | 0.061 | 0.202 | . | 0.015 | -0.091 | . | -0.035 | -0.373 | . | -0.044 | 0.032 |
| Group 3 1) | 0.179 | 0.124 | 0.024 | -0.039 | -0.035 | -0.021 | -0.068 | -0.074 | 0.010 | -0.240 | -0.050 | 0.010 | -0.146 | -0.095 | 0.011 | -0.469 | 0.161 | 0.106 | -0.235 | 0.137 | 0.057 | 0.282 |
| Group 4 4) | -0.324 | 0.273 | 0.128 | -0.071 | 0.077 | -0.025 | 0.116 | -0.008 | -0.013 | -0.151 | 0.260 | 0.047 | 0.865 | -0.471 | -0.090 | -0.364 | 0.423 | 0.121 | -0.239 | 0.066 | 0.035 | -0.253 |

Group 1: Austria, Belgium, Denmark, Finland, France, German, Ireland, Netherlands, Sweden, United Kingdom. - Group 2: Greece, Italy, Luxembourg, Portugal, Spain. - Group 3: Czech Republic, Hungary, Poland, Slovakia, Slovenia. - Group 4: Bulgaria, Cyprus, Estonia, Latvia, Lithuania, Malta, Romania. - 1) Changes against 2005. - 2) Innovation without Ireland; Education without Finland and Ireland. - 3) Without Greece. - 4)Without Malta.

*Source:* Eurostat (Comext). – Including intra-EU exports.

## TABLE O: Shares of exports in low price segment as percent and change in percentage points, NACE 3-digit manufacturing

| | Mainstream industries | | | Labour intensive industries | | | Capital intensive industries | | | Marketing driven industries | | | Technology driven industries | | | Total industry | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2009 | Change 99/09 | Change 07/09 | 2009 | Change 99/09 | Change 07/09 | 2009 | Change 99/09 | Change 07/09 | 2009 | Change 99/09 | Change 07/09 | 2009 | Change 99/09 | Change 07/09 | 2009 | Change 99/09 | Change 07/09 |
| Austria | 23.0 | 3.9 | 0.1 | 20.3 | 4.5 | -4.3 | 30.2 | -4.4 | -1.8 | 27.4 | -3.7 | -2.4 | 11.1 | 3.2 | 2.4 | 21.6 | 1.8 | -0.6 |
| Belgium | 28.0 | 0.1 | -1.3 | 28.5 | -6.9 | -0.2 | 42.3 | 7.9 | 0.9 | 36.1 | 3.0 | -4.2 | 10.3 | -6.5 | 1.1 | 28.4 | 0.7 | -1.2 |
| Bulgaria | 73.7 | -1.2 | -7.3 | 58.5 | -29.7 | -11.6 | 47.1 | -20.9 | -3.0 | 56.3 | -11.5 | -1.0 | 36.6 | -36.0 | -11.1 | 54.4 | -20.1 | -5.4 |
| Cyprus | 62.4 | -2.0 | 31.1 | 62.1 | 16.9 | 34.2 | 56.4 | -15.1 | -8.8 | 32.6 | 2.4 | 11.6 | 31.6 | 9.8 | 10.4 | 38.9 | -5.9 | 9.6 |
| Czech Republic | 51.0 | -16.4 | -5.5 | 43.5 | -14.5 | -4.5 | 41.0 | -39.7 | -19.3 | 58.7 | -12.9 | 0.1 | 41.9 | -13.0 | 1.5 | 46.2 | -19.8 | -7.5 |
| Denmark | 15.5 | -4.2 | -5.6 | 20.1 | 7.0 | -1.0 | 31.5 | -8.9 | -5.1 | 28.1 | 11.4 | 3.8 | 10.6 | 2.0 | -1.1 | 20.1 | 2.9 | -2.1 |
| Estonia | 47.6 | -5.9 | -3.3 | 46.6 | -26.1 | -1.1 | 36.7 | -22.7 | -22.1 | 51.0 | -8.9 | 7.0 | 25.0 | 11.5 | -2.9 | 41.8 | -12.1 | -5.7 |
| Finland | 14.8 | -7.3 | -1.5 | 42.4 | 15.9 | 18.7 | 47.9 | -4.9 | -2.7 | 33.5 | -2.5 | -2.7 | 5.6 | 0.5 | -1.8 | 28.2 | -0.1 | 0.7 |
| France | 18.2 | -1.8 | -2.7 | 18.2 | 3.8 | 1.9 | 42.8 | 15.1 | -1.3 | 19.4 | -1.0 | -1.3 | 9.8 | -6.0 | -0.9 | 20.9 | 1.8 | -2.5 |
| Germany | 12.2 | 2.6 | -1.1 | 14.1 | 5.7 | 0.5 | 28.0 | 0.4 | -2.3 | 30.6 | 4.6 | 1.9 | 4.6 | -2.9 | 0.0 | 14.4 | 1.4 | -0.4 |
| Greece | 60.0 | 9.3 | -4.5 | 36.9 | 10.5 | -0.7 | 60.8 | -5.5 | -6.8 | 40.7 | 3.8 | 0.9 | 18.4 | -4.5 | 5.6 | 46.1 | 2.7 | -3.8 |
| Hungary | 38.6 | -11.8 | -1.5 | 32.5 | -6.3 | -2.9 | 44.6 | -15.8 | -0.8 | 47.5 | 4.0 | 2.6 | 25.1 | -0.5 | -8.8 | 32.4 | -5.0 | -5.2 |
| Ireland | 18.7 | 5.1 | 0.5 | 13.9 | -6.0 | 7.3 | 5.2 | -0.2 | -0.2 | 27.1 | 12.2 | 11.2 | 6.6 | -11.6 | -0.4 | 9.3 | -5.7 | 1.0 |
| Italy | 35.5 | 2.8 | -0.6 | 16.3 | 4.8 | -0.4 | 51.8 | 8.2 | 0.8 | 27.3 | 0.5 | -0.1 | 24.5 | 3.4 | 0.1 | 33.0 | 5.9 | -0.8 |
| Latvia | 45.5 | -12.1 | -8.2 | 70.6 | -15.8 | 0.8 | 66.4 | 8.7 | -4.1 | 57.3 | -8.2 | -2.6 | 16.1 | -10.8 | -23.5 | 52.7 | -20.0 | -8.9 |
| Lithuania | 49.8 | -20.6 | -9.5 | 59.7 | -15.5 | -1.3 | 72.6 | -6.9 | -7.4 | 54.1 | -21.1 | 9.0 | 46.1 | -29.6 | -12.5 | 60.1 | -15.7 | -3.5 |
| Luxembourg | 28.8 | -11.3 | -11.0 | 34.2 | -25.6 | -7.3 | 30.0 | -0.5 | -37.8 | 17.3 | -11.6 | -10.2 | 2.0 | -19.5 | -4.8 | 15.3 | -17.2 | -19.1 |
| Malta | 32.0 | 9.1 | 7.8 | 29.5 | 27.4 | -19.9 | 33.4 | -3.2 | 17.9 | 22.1 | -5.8 | 5.7 | 4.5 | -0.7 | -0.3 | 11.6 | -13.2 | 1.7 |
| Netherlands | 25.3 | 3.0 | 0.8 | 25.6 | -1.7 | 5.6 | 55.7 | 6.8 | 9.6 | 32.2 | 1.1 | -1.6 | 15.9 | -8.6 | 2.3 | 31.2 | 0.2 | 0.3 |
| Poland | 62.9 | -10.9 | 1.6 | 63.1 | 1.7 | 6.1 | 46.8 | -28.0 | -9.9 | 58.8 | -1.3 | 5.6 | 39.8 | -21.1 | 3.8 | 53.5 | -12.9 | 0.3 |
| Portugal | 50.4 | 2.2 | -2.5 | 34.2 | 8.6 | -2.2 | 54.6 | 3.8 | -3.9 | 29.2 | -8.1 | -9.6 | 40.3 | 6.3 | 10.4 | 42.1 | 4.7 | -2.1 |
| Romania | 56.9 | -20.2 | -6.6 | 46.5 | -31.3 | -6.7 | 57.2 | -21.2 | -8.9 | 46.6 | -12.6 | -7.5 | 62.4 | 17.2 | 5.3 | 54.3 | -19.9 | -5.5 |
| Slovenia | 59.5 | -9.1 | 0.8 | 37.2 | 6.3 | 0.1 | 50.8 | -6.7 | 8.4 | 37.9 | -7.7 | -1.4 | 55.5 | 28.1 | 4.2 | 51.4 | 3.9 | 2.9 |
| Slovakia | 49.3 | -28.4 | -7.0 | 38.5 | -18.1 | -6.5 | 45.9 | -18.3 | -1.1 | 38.4 | -27.2 | -8.4 | 42.3 | 29.5 | 21.9 | 43.5 | -11.6 | 4.7 |
| Spain | 51.9 | 10.1 | 0.8 | 35.6 | 5.8 | 3.4 | 56.5 | -2.4 | 2.7 | 41.0 | 10.7 | 5.5 | 42.9 | 1.4 | 25.4 | 46.7 | 4.6 | 7.5 |
| Sweden | 19.4 | 4.0 | 2.5 | 35.9 | 16.7 | 20.9 | 32.4 | 11.6 | 4.6 | 21.9 | 4.3 | 1.8 | 8.9 | 2.1 | 0.5 | 21.9 | 7.9 | 4.4 |
| United Kingdom | 18.9 | 5.6 | 0.5 | 21.8 | 4.3 | 4.1 | 42.8 | 9.1 | 0.9 | 25.2 | 7.2 | 3.3 | 15.7 | 0.3 | 6.9 | 23.8 | 5.4 | 3.3 |
| | | | | | | | | | | | | | | | | | | |
| Group 1 | 17.1 | 1.4 | -0.8 | 20.1 | 3.7 | 3.0 | 38.0 | 6.1 | 0.8 | 28.5 | 4.2 | 0.8 | 9.1 | -4.2 | 1.6 | 20.7 | 1.8 | 0.3 |
| Group 2 | 40.4 | 5.2 | 0.0 | 24.2 | 7.8 | 1.6 | 53.3 | 3.8 | -0.4 | 32.9 | 4.3 | 1.6 | 32.2 | 2.0 | 11.6 | 38.0 | 5.9 | 1.5 |
| Group 3 | 53.5 | -13.5 | -2.1 | 50.1 | -3.7 | 0.7 | 45.0 | -26.1 | -8.5 | 54.1 | -4.3 | 2.4 | 37.5 | 1.0 | 3.5 | 46.1 | -10.1 | -1.5 |
| Group 4 | 56.5 | -14.8 | -6.3 | 52.1 | -26.9 | -5.0 | 57.1 | -16.1 | -6.3 | 50.7 | -11.4 | 0.8 | 45.1 | 5.1 | 3.9 | 52.8 | -18.3 | -4.6 |
| | | | | | | | | | | | | | | | | | | |
| EU 27 | 25.9 | 3.1 | -0.6 | 26.8 | 5.3 | 2.5 | 41.4 | 4.4 | -0.3 | 31.9 | 5.1 | 1.2 | 15.0 | -1.0 | 3.6 | 26.6 | 3.3 | 0.5 |

Group 1: Austria, Belgium, Denmark, Finland, France, German, Ireland, Netherlands, Sweden, United Kingdom. - Group 2: Greece, Italy, Luxembourg, Portugal, Spain. - Group 3: Czech Republic, Hungary, Poland, Slovakia, Slovenia. - Group 4: Bulgaria, Cyprus, Estonia, Latvia, Lithuania, Malta, Romania. *Source:* Eurostat (Comext). - Including intra-EU exports.

## TABLE P: Shares of exports in high price segment as percent and change in percentage points, NACE 3-digit manufacturing

| | Mainstream industries | | | Labour intensive industries | | | Capital intensive industries | | | Marketing driven industries | | | Technology driven industries | | | Total industry | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2009 | Change 99/09 | Change 07/09 | 2009 | Change 99/09 | Change 07/09 | 2009 | Change 99/09 | Change 07/09 | 2009 | Change 99/09 | Change 07/09 | 2009 | Change 99/09 | Change 07/09 | 2009 | Change 99/09 | Change 07/09 |
| Austria | 36.5 | -2.1 | -0.7 | 39.4 | -3.3 | 7.0 | 18.4 | -0.9 | 1.6 | 37.9 | -3.6 | 0.2 | 54.9 | 1.4 | 3.0 | 38.4 | -1.7 | 2.1 |
| Belgium | 30.4 | -0.5 | 1.1 | 38.4 | 14.6 | -2.3 | 16.7 | 3.9 | 1.7 | 18.5 | -10.6 | -3.3 | 63.7 | 20.7 | -2.6 | 35.0 | 6.2 | 1.1 |
| Bulgaria | 10.4 | 4.1 | 4.0 | 7.8 | 5.9 | 0.8 | 6.7 | -1.1 | 1.4 | 20.2 | 4.4 | -6.9 | 29.3 | 18.3 | -2.5 | 45.6 | 20.1 | 5.4 |
| Cyprus | 26.1 | 11.5 | -29.5 | 20.5 | -5.4 | -25.0 | 28.9 | 21.6 | 10.5 | 55.9 | 22.5 | 3.3 | 40.9 | 23.9 | 3.8 | 40.1 | 20.7 | -0.9 |
| Czech Republic | 18.9 | 5.7 | 3.3 | 16.8 | 9.0 | -1.7 | 9.4 | 4.2 | 3.7 | 11.6 | 4.1 | 1.9 | 11.2 | -0.1 | -9.5 | 13.7 | 4.1 | -0.1 |
| Denmark | 37.6 | -0.2 | 2.0 | 30.9 | -1.9 | 2.2 | 19.0 | -3.5 | 1.9 | 29.1 | -10.4 | -4.1 | 59.5 | -0.1 | -0.7 | 36.6 | -4.1 | 0.4 |
| Estonia | 18.3 | -2.6 | -0.4 | 12.0 | 8.6 | -1.3 | 9.1 | -2.3 | 4.0 | 25.4 | 11.1 | -6.4 | 25.9 | -6.2 | -10.9 | 16.4 | 2.0 | -1.9 |
| Finland | 40.9 | 2.5 | 5.5 | 18.5 | -1.2 | -0.8 | 10.0 | -1.0 | -0.2 | 33.3 | 2.7 | 4.1 | 74.5 | 3.1 | -2.4 | 34.7 | -1.6 | -0.6 |
| France | 35.7 | 3.2 | 4.6 | 52.5 | 13.8 | -0.3 | 16.4 | -2.1 | 2.7 | 42.1 | 0.4 | 2.1 | 44.7 | -1.0 | -3.5 | 37.0 | -0.8 | 2.1 |
| Germany | 41.2 | -1.9 | 5.7 | 43.0 | -5.6 | 2.5 | 20.1 | 2.4 | 6.2 | 23.7 | -6.6 | -2.1 | 51.5 | -3.0 | -9.2 | 39.5 | -3.6 | -0.7 |
| Greece | 13.9 | -2.7 | 3.7 | 30.8 | 13.7 | -0.7 | 5.3 | 2.3 | -2.1 | 25.5 | 9.2 | 1.4 | 37.2 | -11.8 | 0.9 | 20.1 | 4.5 | 1.6 |
| Hungary | 24.8 | -1.8 | -6.9 | 18.9 | -2.3 | 7.8 | 14.4 | 5.5 | 2.0 | 26.5 | -3.2 | -1.9 | 21.8 | -20.3 | -6.1 | 21.6 | -10.2 | -3.6 |
| Ireland | 58.4 | -8.5 | -3.1 | 77.4 | 28.2 | -1.5 | 91.7 | 0.6 | -0.2 | 42.3 | -13.6 | -5.1 | 80.2 | 14.0 | 8.8 | 77.4 | 8.0 | 4.1 |
| Italy | 16.5 | 1.7 | 4.1 | 49.4 | -0.6 | 1.2 | 15.8 | 0.3 | 3.4 | 33.9 | 4.4 | -1.4 | 42.9 | 8.0 | -2.2 | 27.5 | 0.0 | 2.6 |
| Latvia | 24.4 | 15.0 | 4.0 | 9.4 | 7.0 | 0.9 | 14.4 | -18.6 | 3.6 | 20.3 | 1.0 | 0.1 | 31.7 | 26.1 | 8.4 | 19.1 | 8.6 | 3.8 |
| Lithuania | 17.2 | 8.7 | 3.4 | 14.0 | 11.3 | 3.7 | 1.6 | -0.7 | -2.0 | 14.7 | 2.5 | -0.6 | 24.6 | 21.6 | 7.6 | 11.5 | 6.9 | 0.8 |
| Luxembourg | 35.4 | 0.5 | 1.0 | 34.0 | 14.4 | -4.5 | 26.1 | 9.4 | 19.2 | 58.0 | 19.9 | 16.2 | 75.2 | 14.5 | 21.7 | 54.5 | 19.2 | 20.1 |
| Malta | 54.7 | -16.3 | -7.6 | 50.4 | -27.5 | 35.8 | 56.6 | 46.9 | 12.1 | 46.8 | -17.5 | -6.7 | 73.6 | 10.7 | -6.8 | 66.2 | 8.4 | -5.8 |
| Netherlands | 38.1 | 4.6 | -7.2 | 40.3 | 14.6 | -7.0 | 10.9 | 0.0 | 0.3 | 24.4 | -6.2 | 1.2 | 39.8 | 1.2 | -12.2 | 29.4 | -0.2 | -1.6 |
| Poland | 7.9 | 1.6 | -1.1 | 10.3 | -0.6 | 0.5 | 7.0 | 1.4 | 1.4 | 15.0 | -1.6 | -2.3 | 16.8 | -6.6 | -8.3 | 11.5 | 0.2 | -1.3 |
| Portugal | 11.9 | -10.1 | -0.2 | 20.5 | 3.8 | -1.6 | 6.1 | 1.1 | 0.1 | 16.6 | -12.9 | -8.5 | 15.6 | 3.3 | -18.2 | 14.1 | -1.9 | -4.9 |
| Romania | 18.0 | 8.2 | 7.0 | 11.9 | 9.9 | 1.8 | 13.2 | 6.9 | 0.0 | 32.2 | 2.9 | 8.8 | 17.3 | -22.3 | -1.2 | 16.5 | 7.3 | 3.3 |
| Slovenia | 13.3 | 7.2 | 3.2 | 30.6 | 1.4 | 1.5 | 11.5 | 0.0 | 0.0 | 15.6 | -2.3 | -2.3 | 10.5 | 0.9 | -3.1 | 14.8 | 0.8 | -0.1 |
| Slovakia | 18.2 | 8.4 | 0.7 | 21.6 | 16.5 | 5.1 | 8.4 | 4.2 | -1.0 | 31.5 | 20.2 | 1.3 | 23.8 | 6.5 | 16.4 | 20.1 | 11.2 | 7.4 |
| Spain | 13.5 | -3.2 | -2.0 | 22.6 | -7.1 | -4.7 | 12.2 | 0.8 | 2.8 | 18.2 | -13.4 | -2.0 | 17.0 | -3.2 | -43.5 | 16.0 | -4.6 | -11.0 |
| Sweden | 38.9 | -2.3 | -0.7 | 29.5 | -3.1 | -4.2 | 21.1 | 3.3 | -2.8 | 34.6 | -12.8 | -4.6 | 56.6 | -6.8 | 2.1 | 37.7 | -5.7 | -1.2 |
| United Kingdom | 41.8 | -3.0 | -0.7 | 49.0 | 2.4 | 0.0 | 30.6 | 1.1 | 4.1 | 34.4 | -8.7 | -2.8 | 51.0 | 3.9 | -3.9 | 42.6 | -0.8 | -0.8 |
| | | | | | | | | | | | | | | | | | | |
| Group 1 | 39.2 | -0.4 | 2.5 | 42.3 | 2.5 | 0.5 | 21.0 | 0.2 | 2.8 | 29.2 | -7.6 | -1.6 | 52.8 | 2.2 | -5.9 | 38.8 | -1.4 | -0.2 |
| Group 2 | 15.9 | 0.0 | 2.5 | 38.4 | -4.1 | -2.6 | 13.8 | 0.7 | 3.2 | 26.8 | -2.9 | -2.6 | 31.6 | 3.3 | -19.2 | 23.4 | -1.5 | -1.8 |
| Group 3 | 15.6 | 2.9 | 0.0 | 15.6 | 2.7 | 1.5 | 9.2 | 3.0 | 1.6 | 17.3 | 0.2 | -1.2 | 17.4 | -10.3 | -4.1 | 15.4 | -0.5 | -0.4 |
| Group 4 | 17.7 | 7.1 | 4.3 | 11.6 | 9.2 | 1.5 | 8.8 | 0.7 | 0.0 | 24.9 | 2.0 | 0.5 | 27.1 | 2.5 | -6.8 | 16.6 | 7.0 | 1.6 |
| | | | | | | | | | | | | | | | | | | |
| EU 27 | 32.0 | -0.9 | 2.1 | 36.2 | -1.0 | -0.3 | 18.7 | -0.1 | 2.7 | 27.7 | -6.8 | -1.8 | 46.5 | -1.0 | -8.0 | 33.6 | -2.5 | -0.7 |

Group 1: Austria, Belgium, Denmark, Finland, France, German, Ireland, Netherlands, Sweden, United Kingdom. - Group 2: Greece, Italy, Luxembourg, Portugal, Spain. - Group 3: Czech Republic, Hungary, Poland, Slovakia, Slovenia. - Group 4: Bulgaria, Cyprus, Estonia, Latvia, Lithuania, Malta, Romania.

*Source:* Eurostat (Comext). - Including intra-EU exports.

## TABLE Q: R&D decomposition

| Country | Year | RD intensity 2007 | RD intensity Change 2004 | Sector effect 2007 | Sector effect Change 2004 | Country effect 2007 | Country effect Change 2004 | Structural change effect | Change in sectoral R&D intensity | Dynamic interaction effect |
|---|---|---|---|---|---|---|---|---|---|---|
| Austria | 2007 | 1.97 | 0.27 | 1.55 | 0.03 | 0.42 | 0.25 | -0.05 | 0.25 | 0.07 |
| Belgium | 2007 | 1.48 | 0.04 | 1.39 | -0.08 | 0.09 | 0.13 | -0.05 | 0.10 | -0.01 |
| Bulgaria | 2006 | 0.14 | 0.02 | 1.14 | 0.01 | -1.00 | 0.01 | 0.00 | 0.02 | 0.00 |
| Cyprus | 2007 | 0.11 | 0.03 | 0.47 | -0.03 | -0.36 | 0.06 | 0.00 | 0.03 | 0.00 |
| Czech Republic | 2007 | 1.06 | 0.19 | 1.96 | 0.07 | -0.90 | 0.12 | 0.07 | 0.12 | 0.00 |
| Germany | 2007 | 1.97 | 0.05 | 2.19 | 0.14 | -0.21 | -0.09 | 0.16 | -0.09 | -0.02 |
| Denmark | 2007 | 2.26 | 0.29 | 1.26 | 0.01 | 1.00 | 0.28 | 0.00 | 0.37 | -0.08 |
| Estonia | 2007 | 0.63 | 0.23 | 1.09 | -0.03 | -0.46 | 0.26 | 0.04 | 0.18 | 0.02 |
| Spain | 2006 | 0.74 | 0.11 | 1.06 | -0.04 | -0.32 | 0.15 | -0.02 | 0.13 | -0.01 |
| Finland | 2007 | 3.08 | 0.09 | 2.78 | 0.17 | 0.30 | -0.08 | 0.16 | -0.05 | -0.03 |
| France | 2007 | 1.50 | -0.07 | 1.24 | -0.10 | 0.26 | 0.03 | -0.12 | 0.02 | 0.02 |
| Greece | 2005 | 0.20 | 0.00 | 0.63 | -0.01 | -0.42 | 0.01 | 0.00 | 0.01 | -0.01 |
| Hungary | 2007 | 0.57 | 0.15 | 2.13 | -0.08 | -1.56 | 0.23 | 0.02 | 0.13 | 0.00 |
| Ireland | 2007 | 0.92 | 0.00 | 2.72 | -0.39 | -1.80 | 0.39 | 0.14 | 0.11 | -0.24 |
| Italy | 2007 | 0.68 | 0.10 | 1.40 | 0.01 | -0.72 | 0.09 | 0.01 | 0.09 | 0.00 |
| Latvia | 2007 | 0.27 | 0.08 | 1.12 | -0.06 | -0.86 | 0.14 | 0.03 | 0.06 | 0.00 |
| Lithuania | 2007 | 0.21 | 0.00 | 0.68 | -0.07 | -0.46 | 0.07 | -0.02 | 0.02 | 0.00 |
| Luxembourg | 2007 | - | - | - | - | - | - | - | - | - |
| Malta | 2007 | 0.53 | 0.26 | 2.02 | 0.23 | -1.49 | 0.03 | 0.15 | 0.12 | -0.01 |
| Netherlands | 2007 | 1.07 | -0.09 | 1.19 | -0.04 | -0.11 | -0.05 | -0.02 | 0.08 | -0.15 |
| Poland | 2007 | 0.20 | 0.01 | 1.24 | 0.02 | -1.05 | -0.01 | 0.02 | -0.01 | 0.00 |
| Portugal | 2006 | 0.54 | 0.22 | 0.87 | -0.04 | -0.33 | 0.26 | -0.01 | 0.23 | 0.00 |
| Romania | 2007 | 0.23 | 0.00 | 1.38 | 0.10 | -1.15 | -0.11 | 0.00 | 0.01 | -0.02 |
| Sweden | 2007 | 2.97 | -0.01 | 1.95 | -0.10 | 1.03 | 0.09 | -0.16 | 0.20 | -0.05 |
| Slovakia | 2007 | 0.21 | -0.08 | 1.63 | 0.14 | -1.42 | -0.22 | -0.03 | -0.05 | 0.00 |
| Slovenia | 2007 | 0.99 | -0.08 | 1.83 | -0.12 | -0.85 | 0.04 | -0.06 | 0.02 | -0.04 |
| United Kingdom | 2006 | 1.22 | 0.03 | 1.27 | -0.01 | -0.05 | 0.05 | 0.00 | 0.04 | -0.01 |
| | | | | | | | | | | |
| Australia | 2006 | 0.97 | 0.04 | 0.97 | 0.00 | 0.00 | 0.04 | 0.00 | 0.05 | -0.01 |
| Canada | 2006 | 1.15 | -0.10 | 1.11 | -0.10 | 0.04 | 0.00 | -0.06 | -0.03 | -0.01 |
| Israel | 2006 | 4.33 | 0.40 | 2.33 | 0.21 | 2.00 | 0.19 | 0.73 | -0.15 | -0.17 |
| Island | 2007 | 1.75 | 0.13 | 0.68 | -0.17 | 1.07 | 0.30 | -0.33 | 1.04 | -0.58 |
| Japan | 2006 | 2.66 | 0.21 | 2.13 | 0.04 | 0.53 | 0.17 | 0.04 | 0.20 | -0.03 |
| Kroatia | 2007 | 2.73 | 0.43 | 3.33 | -0.13 | -0.60 | 0.56 | -0.07 | 0.55 | -0.04 |
| Norway | 2007 | 1.09 | 0.07 | 1.09 | 0.07 | 0.00 | 0.00 | 0.05 | 0.03 | -0.01 |
| New Zealand | 2005 | 0.47 | 0.01 | 0.97 | 0.00 | -0.50 | 0.01 | 0.00 | 0.01 | 0.00 |
| Turkey | 2007 | 0.33 | 0.19 | 1.45 | -0.05 | -1.13 | 0.24 | -0.01 | 0.19 | 0.00 |
| USA | 2007 | 1.86 | 0.08 | 1.34 | 0.00 | 0.52 | 0.09 | 0.02 | 0.08 | -0.01 |
| | | | | | | | | | | |
| Group 1 | 2006 | 1.77 | 0.08 | 1.63 | 0.00 | 0.14 | 0.08 | 0.01 | 0.09 | -0.01 |
| Group 2 | 2005 | 0.59 | 0.04 | 1.17 | -0.03 | -0.57 | 0.07 | -0.01 | 0.05 | 0.00 |
| Group 3 | 2007 | 0.43 | 0.05 | 1.59 | 0.01 | -1.16 | 0.04 | 0.02 | 0.03 | 0.00 |
| Group 4 | 2006 | 0.27 | 0.05 | 1.23 | 0.04 | -0.96 | 0.01 | 0.01 | 0.04 | 0.00 |

*Source:* OECD (STAN), Eurostat.

### 5.3.2 Data tables underlying graphs in section 3 and introduction of country chapters

The country codes used in the tables are:

| Country | Code |
|---|---|
| Belgium | BE |
| Bulgaria | BG |
| Czech Republic | CZ |
| Denmark | DK |
| Germany | DE |
| Estonia | EE |
| Ireland | IE |
| Greece | EL |
| Spain | ES |
| France | FR |
| Italy | IT |
| Cyprus | CY |
| Latvia | LV |
| Lithuania | LT |
| Luxembourg | LU |
| Hungary | HU |
| Malta | MT |
| Netherlands | NL |
| Austria | AT |
| Poland | PL |
| Portugal | PT |
| Romania | RO |
| Slovenia | SI |
| Slovakia | SK |
| Finland | FI |
| Sweden | SE |
| United Kingdom | UK |

| Policy objective / indicators | Table R: Towards a modern and competitive industry | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Labour productivity per hour worked (EU27=100; 2010)** Source: Eurostat | **Labour productivity per person employed (EU27=100; 2010)** Source: Eurostat | **Labour productivity per person employed in manufacturing (1000 PPS; 2010)** Source: Eurostat | **Unit labour costs, level in manufacturing (2005 = 100; Q1, Q2, Q3 average 2010)** Source: OECD | **Share of science and technology graduates (% of 20-29 years old population; 2009)** Source: Eurostat | **R&D performed by businesses (% of GDP; 2009)** Source: Eurostat | **Share of innovating enterprises as % of all enterprises (2008)** Source: Community Innovation Survey | **Share of high-tech exports in total exports (2009)** Source: Eurostat | **Real effective exchanges rates deflated by nominal unit labour costs (total economy) against a panel of 36 countries (1999=100; Q4 2010)** Source: DG ECFIN | **Trade balance of goods as % of total exports of goods (2010)** Source: Eurostat | **Trade balance of services as % of total exports of services (2010)** Source: Eurostat |
| **BE** | 135 * | 128 | 65 * | 103 | 12.0 | 1.3 | 58.1 | 8.8 | 107 * | 5 | 9 |
| **BG** | 42 | 42 | 18 | 137 * | 10.1 | 0.2 | 30.8 | 4.6 | 150 | -23 | 56 |
| **CZ** | 63 | 72 | 34 | 86 | 15.3 | 0.9 | 56.0 | 15.2 | 172 | 5 | 19 |
| **DK** | 119 | 109 | 54 | 98 | 15.2 | 2.0 | 51.9 | 12.3 | 118 | 13 | 18 |
| **DE** | 125 | 106 | 60 | 108 | 13.5 | 1.9 | 79.9 | 14.0 | 89 | 16 | -10 |
| **EE** | 62 | 70 | 29 | 118 | 10.8 | 0.6 | 56.4 | 6.9 | 141 | -6 | 63 |
| **IE** | 124 | 135 | 125 * | 73 | 17.2 | 1.2 | 56.5 | 22.1 | 117 | 49 | -10 |
| **EL** | 76 | 96 | 49 | 118 | 11.2 * | 0.2 * | 54.7 * | 6.7 | 111 | -195 | 87 |
| **ES** | 111 * | 110 | 51 * | 112 | 12.5 | 0.7 | 43.5 | 4.7 | 114 | -28 | 43 |
| **FR** | 128 * | 120 | 57 * | 111 | 20.2 | 1.4 | 50.2 | 19.7 | 106 | -16 | 11 |
| **IT** | 102 | 108 | 48 | 109 | 11.3 * | 0.7 | 53.2 | 6.8 | 115 | -8 | -11 |
| **CY** | 81 | 89 | 30 | 121 * | 4.6 | 0.1 | 56.1 | 20.1 | 117 | -502 | 177 |
| **LV** | 47 | 55 | 23 | 182 * | 9.8 | 0.2 | 24.3 | 5.3 | 132 | -22 | 67 |
| **LT** | 56 | 63 | 27 * | 127 * | 18.5 | 0.2 | 30.3 | 5.8 | 120 | -12 | 46 |
| **LU** | 190 * | 178 | 63 | 107 | 1.8 * | 1.2 | 64.7 | 42.1 | : * | -22 | 81 |
| **HU** | 60 | 71 | 36 | 101 | 7.5 | 0.7 | 28.9 | 22.3 | 135 | 8 | 20 |
| **MT** | 83 * | 92 | 45 | 103 * | 7.0 | 0.3 | 37.4 | 43.8 | 111 | -66 | 55 |
| **NL** | 139 | 115 | 73 | 106 | 8.9 | 0.9 | 44.9 | 18.4 | 110 | 10 | 12 |
| **AT** | 115 | 113 | 71 | 101 | 14.0 | 1.9 | 56.2 | 11.7 | 96 | -4 | 48 |
| **PL** | 54 | 67 | 32 | 91 | 14.3 | 0.2 | 27.9 | 5.7 | 103 | -11 | 12 |
| **PT** | 66 | 77 | 31 * | 101 * | 14.6 | 0.8 | 57.8 | 3.6 | 110 | -55 | 62 |
| **RO** | 42 | 47 | 26 * | 134 * | 20.0 | 0.2 | 33.3 | 8.2 | 203 | -25 | -9 |
| **SI** | 83 | 82 | 39 | 106 | 11.3 | 1.2 | 50.3 | 5.5 | 108 | -2 | 32 |
| **SK** | 79 | 83 | 39 | 83 | 17.5 | 0.2 | 36.1 | 5.9 | 172 | -2 | -14 |
| **FI** | 111 | 112 | 66 | 99 | 19.0 | 2.8 | 52.2 | 13.9 | 107 | 2 | 13 |
| **SE** | 116 | 113 | 62 | 107 | 13.0 | 2.6 | 53.7 | 14.8 | 99 | 6 | 33 |
| **UK** | 108 * | 108 | 58 * | 117 | 17.5 | 1.2 | 45.6 | 18.2 | 90 | -38 | 41 |
| **weighted EU27** | 100 | 100 | 50 | | 14.3 | 1.3 | 51.6 | 13.7 | 110 | | 11 |
| **EU unweighted** | 93 | 95 | 49 | | 13.0 | 1.0 | 47.8 | 13.6 | | | |
| **max** | 190 | 178 | 125 | 182 | 20.2 | 2.8 | 79.9 | 43.8 | 203 | 49 | 177 |
| **min** | 42 | 42 | 18 | 73 | 1.8 | 0.1 | 24.3 | 3.6 | 89 | -502 | -14 |
| **Standard deviation** | 36 | 30 | 22 | | 4.5 | 0.8 | 13.0 | 10.3 | | | |

Note: Labour productivity per hour worked - BE, ES ,FR, LU, MT & UK (2009)
Labour productivity per person employed in manufacturing - BE, IE, ES, LT & UK (2009); FR & RO (2008); PT (2007)
Unit labour costs, level in manufacturing - BG, CY, LV & LT (2009); MT & RO (2008); PT (2007)
Share of science and technology graduates - EL, IT & LU (2008)
R&D performed by businesses - EL (2007)
Share of innovating enterprises as % of all enterprises - EL (2006)
Real effective exchanges rates - BE & LU values together

| Policy objective / indicators | Table S: Towards a sustainable industry | | | |
|---|---|---|---|---|
| | **Energy intensity in industry and the energy sector (kg oil eq. / euro GVA; reference year 2000; 2009)** Source: Eurostat | **CO2 intensity in industry and the energy sector (kg CO2 / euro GVA; reference year 2000; 2009)** Sources: EEA, Eurostat | **Waste generated by enterprises (all NACE sectors; tonnes per capita; 2008)** Source: Eurostat | **Exports of environmental goods as % of all exports of goods (2010)** Source: Eurostat (COMEXT) |
| **BE** | 0.32 | 0.9 | 4.1 | 0.49 |
| **BG** | 0.88 | 7.4 | 37.1 | 0.09 |
| **CZ** | 0.42 | 2.8 | 2.1 | 1.09 |
| **DK** | 0.11 | 0.8 | 2.3 | 0.36 |
| **DE** | 0.18 | 1.0 | 4.1 | 1.25 |
| **EE** | 0.37 | 5.7 | 14.3 | 0.15 |
| **IE** | 0.05 | 0.4 | 5.0 | 0.27 |
| **EL** | 0.22 | 2.4 | 5.8 | 0.25 |
| **ES** | 0.22 | 0.9 | 2.8 | 0.83 |
| **FR** | 0.18 | 0.5 | 4.9 | 0.46 |
| **IT** | 0.18 | 0.8 | 2.5 | 0.38 |
| **CY** | 0.17 | 2.6 | 1.8 | 8.17 |
| **LV** | 0.34 | 1.3 | 0.4 | 0.15 |
| **LT** | 0.47 | 1.5 | 1.6 | 0.13 |
| **LU** | 0.18 | 0.8 | 19.3 | 1.60 |
| **HU** | 0.37 | 1.6 | 1.7 | 0.79 |
| **MT** | : | : | 3.2 | 0.08 |
| **NL** | 0.34 | 1.0 | 5.5 | 0.96 |
| **AT** | 0.18 | 0.5 | 6.3 | 0.76 |
| **PL** | 0.32 | 2.8 | 3.5 | 0.26 |
| **PT** | 0.28 | 1.1 | 3.0 | 0.50 |
| **RO** | 0.55 | 3.0 | 8.4 | 0.16 |
| **SI** | 0.19 | 1.0 | 2.2 | 0.90 |
| **SK** | 0.50 | 1.9 | 1.8 | 0.35 |
| **FI** | 0.27 | 0.8 | 15.1 | 0.53 |
| **SE** | 0.19 | 0.3 | 8.9 | 0.73 |
| **UK** | 0.14 | 0.8 | 4.9 | 0.61 |
| **weighted EU27** | 0.20 | 0.9 | 4.8 | 0.76 |
| **EU unweighted** | 0.29 | 1.7 | 6.4 | 0.83 |
| **max** | 0.88 | 7.4 | 37.1 | 8.17 |
| **min** | 0.05 | 0.3 | 0.4 | 0.08 |
| **Standard deviation** | 0.17 | 1.7 | 7.6 | 1.52 |

| Policy objective / indicators | Table T: Business Environment | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **State aid for industry and services as % of GDP (2009)** Source: State Aid Scoreboard 2010 | **Electricity prices for medium size enterprises (euro per kWh; 2010)** Source: Eurostat | **Infrastructure expenditures (euro per inhabitant; 2009)** Source: OECD, Eurostat calculation | **Satisfaction with quality of infrastructure (rail, road, port and airport) (1=underdeveloped / 7=extensive and efficicient by int'l standards; 2010)** Source: The Global Competitiveness Report 2010-2011 | **% of broadband lines with speed above 10 MBps (2011)** Source: DG INFSO | **Legal and regulatory framework (0= neg. / 10=pos.; 2011)** Source: IMD World Competitiveness Center | **Burden of government regulation (1 = burdensome 7 = not burdensome; 2009/10)** Source: The Global Competitiveness Report 2010-2011 | **% of e-government usage by enterprises (2010)** Source: Eurostat |
| **BE** | 0.5 | 0.0943 | 296 | 5.9 | 57 | 3.9 | 2.6 | 77 |
| **BG** | 0.1 | 0.0639 | 21 | 3.3 | 74 | 3.7 | 3.2 | 64 |
| **CZ** | 0.5 | 0.1022 | 279 | 4.7 | 28 | 3.8 | 2.7 | 89 |
| **DK** | 0.9 | 0.0848 | 192 | 6.0 | 48 | 6.5 | 3.8 | 92 |
| **DE** | 0.6 | 0.0921 | 243 | 6.4 | 31 | 5.7 | 3.0 | 67 |
| **EE** | 0.1 | 0.0573 | 168 | 4.6 | 10 | 5.9 | 4.4 | 80 |
| **IE** | 0.5 | 0.1118 | 378 | 4.5 | 13 | 5.8 | 3.1 | 87 |
| **EL** | 0.7 | 0.0855 | : | 4.1 | 54 | 2.9 | 2.4 | 77 |
| **ES** | 0.5 | 0.1110 | 311 | 5.6 | 34 | 4.1 | 2.8 | 67 |
| **FR** | 0.6 | 0.0687 | 295 | 6.3 | 55 | 3.8 | 2.6 | 78 |
| **IT** | 0.3 | 0.1027 * | : | 4.0 | 9 | 2.9 | 2.2 | 84 |
| **CY** | 0.4 | 0.1483 | : | 5.4 | 5 | : | 4.0 | 74 |
| **LV** | 0.1 | 0.0890 | 90 | 4.3 | 41 | : | 3.1 | 72 |
| **LT** | 0.3 | 0.0991 | 110 | 4.5 | 42 | 4.0 | 2.7 | 95 |
| **LU** | 0.2 | 0.0956 | : | 5.6 | 27 | 6.2 | 4.0 | 90 |
| **HU** | 1.0 | 0.1221 * | 189 | 4.1 | 41 | 3.9 | 2.2 | 71 |
| **MT** | 1.7 | 0.1506 * | : | 4.8 | 12 | : | 3.0 | 77 |
| **NL** | 0.3 | 0.0853 | : | 6.0 | 57 | 6.0 | 3.1 | 95 |
| **AT** | 0.4 | 0.0897 * | : | 5.6 | 13 * | 5.4 | 3.6 | 75 |
| **PL** | 0.7 | 0.0929 | 159 | 3.0 | 12 | 4.1 | 2.7 | 89 |
| **PT** | 0.9 | 0.0896 | 63 | 5.2 | 73 | 3.5 | 2.5 | 75 |
| **RO** | 0.1 | 0.0850 | 178 | 2.9 | 60 | 4.3 | 2.9 | 50 |
| **SI** | 0.7 | 0.0917 | 280 | 4.5 | 26 | 3.1 | 3.5 | 88 |
| **SK** | 0.4 | 0.1161 | 165 | 4.0 | 25 | 3.3 | 2.8 | 88 |
| **FI** | 0.5 | 0.0667 | 270 | 6.1 | 33 | 6.7 | 4.3 | 96 |
| **SE** | 0.8 | 0.0800 | 317 | 5.9 | 48 | 6.6 | 4.0 | 90 |
| **UK** | 0.2 | 0.0947 | 201 | 5.3 | 45 | 5.0 | 3.1 | 67 |
| **weighted EU27** | 0.5 | 0.0918 | 187 | | 39 | | | 76 |
| **EU unweighted** | 0.5 | 0.0952 | 210 | 4.9 | 36 | 4.6 | 3.1 | 80 |
| **max** | 1.7 | 0.1506 | 378 | 6.4 | 74 | 6.7 | 4.4 | 96 |
| **min** | 0.1 | 0.0573 | 21 | 2.9 | 5 | 2.9 | 2.2 | 50 |
| **Standard deviation** | 0.4 | 0.0218 | 94 | 1.0 | 20 | 1.3 | 0.6 | 11 |

Note: Electricity prices for medium size enterprises - HU & MT (2009); AT (2008); IT (2007)
% of broadband lines with speed above 10 MBps - AT (2010)

| Policy objective / indicators | Table U: Entrepreneurship and SMEs | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Time required to start a business (days; 2010)** Source: World Bank Doing Business 2011 | **Enterprise survival rate after two years (2008)** Source: Eurostat | **Business churn (enterprise entries and exits as % of existing stock; 2008)** Source: Eurostat | **Share of high-growth enterprises as % of all enterprises (2007)** Source: Eurostat | **Early stage financing (% of GDP; 2009)** Source: Eurostat | **Rejected loan applications, and loan offers whose conditions were deemed unacceptable, as % of all loan applications by SMEs (2009)** Source: Flash Eurobarometer survey on SMEs' access to finance | **Duration of payments by public authorities (days; 2011)** Source: European Payment Index by Intrum Justitia |
| **BE** | 4 | : | : | : | 0.039 | 5 | 72 |
| **BG** | 18 | 63 | 31 | 8.8 * | 0.012 | 14 | : |
| **CZ** | 20 | 66 | 15 | 5.0 | 0.000 | 22 | 43 |
| **DK** | 6 | : | : | 4.6 | 0.036 | 29 | 37 |
| **DE** | 15 | : | 19 | : | 0.018 | 26 | 35 |
| **EE** | 7 | : | : | 6.0 | : | 45 | 24 |
| **IE** | 13 | : | : | : | 0.018 | 28 | 49 |
| **EL** | 19 | : | : | : | 0.002 | 36 | 168 |
| **ES** | 47 | 67 | 17 | 4.3 | 0.004 | 31 | 153 |
| **FR** | 7 | : | : | : | 0.019 | 19 | 64 |
| **IT** | 6 | 74 | : | 3.0 | 0.003 | 17 | 180 |
| **CY** | 8 | : | 5 | : | : | 20 | 83 |
| **LV** | 16 | 61 | 43 | 13.7 | : | 38 | 32 |
| **LT** | 22 | : | : | 8.2 * | : | 14 | 56 |
| **LU** | 19 | 79 | : | 4.6 | 0.102 | 12 | : |
| **HU** | 4 | 64 | 21 | 5.0 | 0.001 | 12 | 56 |
| **MT** | : | : | : | : | : | 37 | : |
| **NL** | 8 | 62 | : | 3.6 | 0.019 | 54 | 47 |
| **AT** | 28 | 78 | 13 | : | 0.007 | 16 | 49 |
| **PL** | 32 | : | : | : | 0.000 | 25 | 38 |
| **PT** | 6 | 54 | 33 | 3.4 | 0.018 | 19 | 139 |
| **RO** | 10 | 77 | 27 | 1.3 | 0.000 | 48 | : |
| **SI** | 6 | : | : | 5.0 | : | 19 | : |
| **SK** | 16 | 62 | 28 | 10.5 | : | 19 | 55 |
| **FI** | 14 | 70 | 17 | 2.9 * | 0.033 | 0 | 24 |
| **SE** | 15 | 87 | 13 | 4.8 | 0.038 | 14 | 35 |
| **UK** | 13 | : | : | : | 0.026 | 20 | 47 |
| **weighted EU27** | | | | | | 23 | |
| **EU unweighted** | 15 | 69 | 22 | 5.6 | 0.020 | 24 | 68 |
| **max** | 47 | 87 | 43 | 13.7 | 0.102 | 54 | 180 |
| **min** | 4 | 54 | 5 | 1.3 | 0.000 | 0 | 24 |
| **Standard deviation** | 10 | 9 | 10 | 3.1 | 0.024 | 13 | 47 |

Note: Share of high-growth enterprises as % of all enterprises - BG (2006), LT & FI (2005)