5. THE LINK BETWEEN PRODUCT MARKET REFORMS AND PRODUCTIVITY: DIRECT AND INDIRECT IMPACTS

Summary

Does the lack of product market reforms have some connection with Europe's poor productivity record? *This question is relevant given the central role played by these reforms in the Lisbon strategy. In order to try to answer this question, this chapter examines to what extent and through which channels product market reforms can have an impact on productivity developments. Thereafter, it identifies the areas of product market reforms where the EU significantly lags behind the USA. This analysis allows drawing some conclusions on the most pressing product market reforms needed to improve the EU productivity performance.*

Product market reforms play a central role in the Lisbon strategy as they improve the framework conditions in which business operates*. In the year 2000, the EU decided in Lisbon on the strategic economic goal of becoming the most competitive and dynamic knowledge-based economy with sustainable economic growth and greater social cohesion by 2010. To achieve this goal, the EU set a strategy for delivering stronger growth, known as the Lisbon agenda. A major aim of the Lisbon agenda is to increase GDP per capita and to boost productivity. Well-designed product market reforms can contribute to this objective. The way product markets are regulated has an important impact on the degree of competition in the market, the scope and the size of the market and therewith on the size and the structure of economic activity in goods and services. The existing regulations are often a heritage of the past. Therefore, the framework conditions in which business operates may not always be optimal in terms of today's circumstances and challenges. As a consequence, they may act as a brake rather than as a spur on economic activity and stifle initiative rather than encourage it. That is why product market reforms, by improving these framework conditions, can help to unleash a hidden potential in the economy thereby spurring productivity growth and increasing welfare.*

Product markets reforms have direct and indirect impacts on productivity and the later operate through three main channels. *The direct impacts occur through the decrease in costs of doing business and through the removal of barriers to penetrate new markets. However, the change in the framework conditions which improves the functioning of product markets has also indirect effects on productivity. These indirect effects operate through three main channels, namely a reduction in mark-ups and a reallocation of scarce resources (allocative efficiency); an improvement in the utilisation of the production factors by firms (productive efficiency); and an incentive for firms to innovate and to move to the modern technology frontier (dynamic efficiency).*

Gains through allocative and productive efficiency represent one-off changes to the level of productivity and output and accrue relatively rapidly but product market reforms may also result in dynamic efficiency. The effects from this third channel tend to accrue over a longer period of time. But improvements in such dynamic efficiency gains potentially have a much larger impact on productivity. Successful innovations should eventually raise the level and growth rate of total factor productivity in the long term but this may take some time to accrue.

Empirical evidence shows that a large part of the impact of product market reforms on productivity is through indirect effects. *Empirical studies have shown that the net effects of the direct impacts on productivity tend to be small. However, a number of studies have estimated much higher impacts on productivity as a result of product market reforms. This suggests that a large part of the impact on productivity is through indirect effects.*

Product market reforms reduce the economic rents in the economy and promote business dynamism. *Studies confirm that product market reforms that ease entry, reduce trade barriers, remove price controls and reduce public involvement in production, negatively affect the average level of economic rents in the economy. Product market regulations also stand out as having a substantial impact on the levels of new entry by businesses. Studies found that overly complicated license and permit system or badly designed tax systems discourage the creation of new enterprises. The direct effect of free entry and exit can be decomposed in two effects: First, internal restructuring (also called "within effect") refers to productivity growth of individual firms in the industry via factors internal to the firm such as organisational change, new technologies, or reallocation of inputs. Second, external restructuring represents a reallocation of resources among firms via a process of exit of least efficient firms and/or via a shift in market shares towards most efficient firms. Most studies points to large within effects. However, in high–tech sectors where productivity gains are the most important, it is the new firms that make the most significant contribution to productivity growth.*

Product market reforms can stimulate innovation but their effects take longer to materialise. *The relationship between product market reforms and dynamic efficiency is more complex as there is increasing evidence of an inverted U-shaped relationship between innovation and competition. The direct link between competition and dynamic efficiency – measured by productivity growth - seems to be clearer with several studies showing a significant positive effect, especially thanks to the process of entry and exit of firms. However, competition seems to deliver its full effects on dynamic efficiency with long lags and the literature underlines differential effects of innovation on productivity growth depending on the distance to the technological frontier: the closer to the technological frontier, the more positive the effects.*

Medium to long-term gains in productivity due to product market reforms could be substantial *Several studies that have analysed the potential gains of adopting US-level product market reforms show substantial potential GDP and/or productivity increase in the long-term. In the short-term, the effect of increased competition is a boost in employment, which puts less productive workers into jobs. Therefore, the immediate impact on productivity level and growth is at best small because the direct effect of product market reforms (an increase in productivity thanks to a decrease in costs) is partly cancelled out by the integration of less productive workers into the job market. However, although this eventually decreases average labour productivity, it still remains that the impact on standards of living is unambiguously positive. There is also evidence that long-term gains could be large. Some studies show that reforms facilitating market entry and raising the level of competition on goods and services markets could result in productivity gains of between 2 and 4 per cent.*

The EU has already undertaken profound product market reforms with the 'Internal Market strategy'. *The next question is which product market reforms are the most pressing to improve the productivity performance of the European Union. While further work is necessary to investigate the relative importance of the three channels* and to analyse – possibly at sectoral level – the links between the gap productivity and the gap in product market reforms*, there are already interesting conclusions which emerge from a comparison between the European Union and the United States. The European Union has already initiated profound reforms, in particular with the Internal Market. The European Union is open to international competition and its network industries are liberalised to a degree that equals if not exceeds the United States. The 'Strategy for Europe's Internal Market', launched in the fall of 1999, should be seen as a deepening of the Single Market Programme, which aimed at the elimination of all barriers to the free circulation of goods, services, capital and persons by the end of 1992. This new Internal Market strategy should contribute to deepen market integration and improve the regulatory environment for business.*

Further product market reforms should mainly aim at promoting business dynamism and pursuing integration as these are the areas where Europe lags behind the USA. Europe's backwardness in product market reforms seems to be concentrated in measures that promote entry and exit of firms and in a lower degree of intra-state trade integration. Also, evidence of backwardness in product market reforms in the EU is the apparently higher costs of complying with regulation than in the USA, although European companies do not perceive regulations as more time-consuming than US companies do. State involvement in the economy is higher in Europe but the consequences of this are debatable. Furthermore, a lack of flexibility in labour markets and to some extent more regulations on credit – two issues not reviewed here – may also explain a sizeable share of the USA-EU gap in productivity.

In the context of the mid-term review of the Lisbon strategy, this analysis can contribute to the choice of priorities for reforms in the area of product markets. We conclude that reforms to ease entry and exit are important. These should go beyond measures to reduce time and cost to start up a company and should include reforms promoting Europe as an attractive and easy place to do business. Similarly, making sure that the internal market is working at full capacity should be a clear objective for the Union.

TABLE OF CONTENTS

THE LINK BETWEEN PRODUCT MARKET REFORMS AND PRODUCTIVITY: DIRECT AND INDIRECT IMPACT

1. Introduction

In the year 2000, the EU decided in Lisbon on the strategic economic goal of becoming the most competitive and dynamic knowledge-based economy with sustainable economic growth, more and better jobs and greater social cohesion by 2010. To achieve this goal, the EU set a strategy for delivering stronger growth, known as the Lisbon agenda. A major aim of the Lisbon agenda is to increase GDP per capita and to boost productivity. Product market reforms play a central role in this agenda because they are expected to improve the framework conditions for business.

Studies by the European Commission[1] and the IMF (2003) indicate that reforms facilitating market entry and raising the level of competition on goods and services markets could result in productivity gains of between 2 and 4 per cent. The way in which product markets are regulated has an important impact on the degree of competition in the market, the scope and the size of the market and therewith on the size and the structure of economic activity in goods and services. Regulations may act as a brake rather than as a spur on economic activity and stifle initiative rather than encourage it. That is why product market reforms, by improving the framework conditions, can help to unleash the potential in the economy thereby spurring productivity growth and increasing welfare.

This chapter aims to analyse to what extent and through which channels product market reforms could have an impact on productivity performance.[2] Indeed, product market reforms have direct effects on productivity developments because they decrease the costs of doing business and remove barriers to penetrate new markets. However, the change in the framework conditions that improves the functioning of product markets has also indirect effects on productivity. These indirect effects operate through three main transmission channels, namely a reduction in mark-ups and a reallocation of scarce resources (allocative efficiency); an improvement in the utilisation of the production factors by firms (productive efficiency); and an incentive for firms to innovate and to move to the modern technology frontier (dynamic efficiency).

One of the main objectives of this chapter is to discuss these indirect links between product market reforms and productivity. To that end, Section 2 starts by explaining how to define product market reforms and to measure product market reforms. Section 3 provides the theoretical framework for our analysis and describes the three transmission channels through which product market reforms can influence productivity. Section 4 reviews the empirical literature. This empirical evidence shows that these indirect effects are potentially larger than the direct effects.

[1] See chapter 2 in the EU ECONOMY 2002 REVIEW and chapter 2 in the EU ECONOMY 2003 REVIEW.

[2] At the same time, interactions between reforms in the product market and in the labour market are likely to impact on employment and need to be taken into account. In addition, investment in human capital is also potentially important for productivity. Those interactions are not considered here as this chapter focuses on productivity issues.

The next question relates to which product market reforms are the most pressing to improve the productivity performance of the European Union. While further work is necessary to investigate the relative importance of the three channels and to analyse – possibly at sectoral level[3] – the links between the gap productivity and the gap in product market reforms, interesting conclusions already emerge from a comparison of the degree of product market rigidities between the European Union and the United States. This comparison is made in Section 5. Section 6 concludes by drawing some policy implications.

2. Definition and measurement of product market reforms

Product market reforms are microeconomic reforms that aim to improve the framework conditions in which business operate. Four main types of measures may be undertaken to reform product markets:

- First, measures to open up markets (goods and services) that were previously sheltered from competition from abroad by tariff barriers (trade openness) or legal barriers (liberalisation).
- Second, measures to open up markets that were previously sheltered from competition from newcomers – whatever their origin – because of stringent regulations on entry, such as permits and licences, or non-tariff barriers, such as specific national regulations (deregulation).
- Third, measures to create a more business-friendly environment, such as the reduction of time and costs to set up a new company or appropriate levels and systems of taxation
- Fourth, measures that seek to reduce the State' involvement in the economy, since this is likely to disturb the well functioning of markets (ad hoc State aid, subsidies and State-owned firms competing with private firms).

The implementation of the Single Market Programme intended to abolish all barriers to the free movement of goods, services, persons and capital within the European Union by the end of 1992. This programme constitutes the most recent comprehensive exercise of product market reform. The 1988 Cecchini report considered that the economic gains from the completion of the internal market would stem from more intense competition and economies of scale. The 'Strategy for Europe's Internal Market', launched in the fall of 1999, should be seen as a deepening of the Single Market Programme. This Internal Market strategy should contribute to furthering market integration and improving the regulatory environment for business.

Major reforms that have affected European product markets include measures taken within this new Internal Market strategy, such as removal of remaining barriers to integration of goods and services, liberalisation and regulatory reform in network industries, reduction in state aids, reforms of competition policy, simplification of regulation to set up a company, etc. However, there is relatively little direct information available on the scale and scope of these reforms across countries. Consequently, the computation of a reliable summary indicator of product market reforms in the EU is difficult and only economy-wide indicators of specific product market reforms or indicators of reforms implemented in specific industries are available.

3. The three transmission channels

Product market reforms have direct and indirect effects on productivity. This chapter does not discuss the direct impacts that occur through the decrease in costs of doing business and through the removal of barriers to penetrate new markets. Product market reforms have also indirect effects on productivity. Theoretical models suggest that reforms that liberalise or improve the functioning of markets can positively affect productivity through three different channels that this section discusses: a reallocation of scarce resources (allocative efficiency), an improvement in the utilisation of the production factors by firms (productive efficiency) and an incentive for firms to innovate to move to the modern technology frontier (dynamic efficiency). This typology however gives a simplified picture of the reality because it ignores the possible interactions between the three channels. For example, entries can have a negative effect on mark-ups and a positive effect on innovation. Likewise, innovation can increase the pressures of competition in a market.

3.1 Allocative efficiency

Product market reforms increase the number of competitors or the threat of entry of new competitors, leading to more competitive markets. By increasing the contestability of markets and by reducing incumbents' market power, this induces firms to set prices closer to marginal costs. As a consequence, mark-ups tend to decrease while the allocation of both inputs (labour and capital) and goods is more efficient, i.e. the allocation of resources is made so that consumer wants and needs are met in a better way than they were in the previous period. More product market competition can also lead to increased allocative efficiency as less productive firms exit and market share moves from less productive to more productive firms.

[3] Because of data availability constraints, this chapter only looks at economy-wide regulations. Further studies should look at whether these regulations could – maybe through interactions with other variables – have more influence on some specific sectors and therefore explain sectoral differences in productivity gap between the EU and the USA.

Theoretical models that focus on the reallocation effects of liberalisation generally consider that the latter has a positive impact on economic performance. For instance, Melitz (2003) specified a model with imperfect competition and heterogeneous firms in which opening to trade leads to a reallocation of resources towards more productive firms within industries. Low productivity firms exit, high productivity firms expand in the domestic market and some enter the export market. This leads to an increase in aggregate productivity, even when there is no productivity growth within the firms.

However, it is not always the case that a rise in competition would lead to increased allocative efficiency. For example, Vickers (1995) points out that an increase in competition through more aggressive interactions between firms could increase industry concentration in the medium term since more aggressive firm' behaviour first reallocates profits from inefficient firms to more efficient ones (reallocation effect) and subsequently drives out inefficient firms (selection effect). This thereby raises industry concentration and mark ups, but this model implies that market entry is not possible for new competitors, and so does not present the whole picture.

Blanchard and Giavazzi (2001) show the importance of market entry - or more precisely the importance of market contestability - as a stimulus for competitive pressures and economic performance. In a model in which firm and employee productivity is fixed, and in which labour is the only factor of production, they consider the impact of product market regulations. In their model, deregulation of product markets can take the form of either increased substitutability between goods or of a reduction in entry costs. In the short run, increased substitutability between goods leads to lower mark ups, reduced unemployment and higher real wages. In the long term, the same results occur only if deregulation leads to a reduction in barriers to entry. If this is not the case, then firms exit because of lower level of rents and, as a result, mark ups, unemployment and real wages return towards their original levels. In this framework, liberalisation through the ease of firm/market entry is thus a major determinant of the effectiveness of product market reforms aimed at stimulating competition.

However, the welfare gains achieved by increasing allocative efficiency are not by themselves likely to be very large.[4] Allocative efficiency gains mainly impact indirectly on economic performance by inciting firms to improve their productive efficiency and to enhance efforts to innovate and speed up diffusion of innovation, but this is still a debated issue in the literature.

3.2 Productive efficiency

Productive efficiency is the capacity for any given firm to allocate its resources in such a way that makes it possible to reduce or eliminate the under-utilisation of its production factors, i.e. capital and labour.[5] Productive efficiency and productivity are not identical concepts but they are interrelated.[6] A decrease in productive inefficiency could be associated with an increase in productivity.[7] Productive or technical efficiency gains come from the introduction of new or better production methods within the firm, and this could lead to increased productivity.

The main impact of higher product market competition on productive efficiency that the literature emphasises is the incentive effect on managers and workers to reduce slack, trim fat and structure the workplace more efficiently.[8] Principal-agent models under information asymmetry generally assume that managers and workers can partially capture monopoly rents to a monopolistic firm in the form of managerial slack, i.e. lack of efforts. By giving more incentives to increase managerial efforts and improve efficiency, competitive pressures may reduce slack and discipline firms into efficient operation.[9] Incentives to improve productive efficiency could arise through different channels.[10]

- Competition reduces information asymmetry and creates greater opportunities to compare performance. This makes it easier for the shareholders to monitor managers and hence reduces slack;
- In highly competitive markets where price elasticity of demand is high, cost-reducing productivity improvements are likely to generate large increases in market shares and profit;
- The probability of bankruptcy is likely to be higher in a more competitive environment. Consequently, managers have an incentive to step up their efforts to avoid such a failure.
- Competition may also influence the effort of workers, as they are likely to capture a part of product market rents in the form of slack or higher wages. Therefore, there is a direct link between the degree of competition and the level of worker's effort.[11]

4 See Harberger (1954), Leibenstein (1966), Scherer and Ross (1990).

5 See Pilat (1996).

6 See Sharpe (1995).

7 See Pilat (1996).

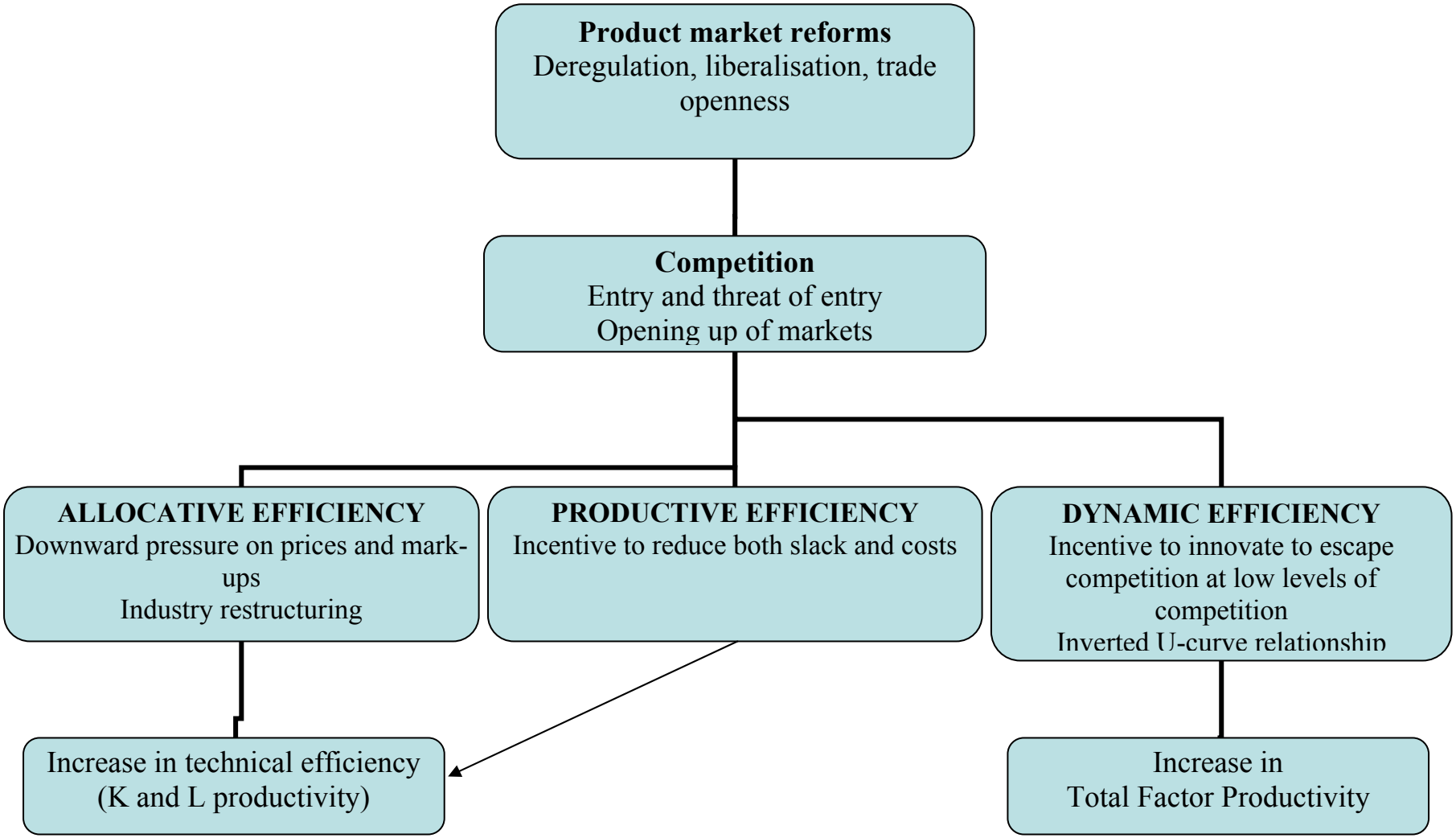
8 See Griffith and Harrison (2004).

9 See Ahn (2001).

10 See Winston (1993), Meyer and Vickers (1997), Nickel et al. (1997), Aghion and Howitt (1998).

11 See Nickell (1996).

Theoretical framework describing the indirect effects of product market reforms on productivity.



3.3 Dynamic efficiency

Gains through allocative and productive efficiency represent one-off changes to the level of productivity and output and accrue relatively rapidly, i.e. in the short run. However, an increase in competition may also act as a stimulus for firms to develop product and process innovations and hence to speed up the move to the modern technology frontier. Improvements in such dynamic efficiency gains potentially have a much larger impact on productivity but are also likely to take much longer to accrue, i.e. successful innovations will eventually raise the level and growth rate of total factor productivity in the long run.[12] However, the link between competition and innovation is a debated issue in the theoretical literature.

On the one hand, in line with the Schumpeterian view of market power and innovation, the early endogenous growth and industrial organisation literatures[13] suggest that increased product market competition leads to reduced innovative activity, as more competition reduces the monopoly rents that reward successful innovators. However, this literature was based on the assumption that innovation was made by outsiders or by new entrants competing against incumbents with conventional technology. They also assured that the payoff of innovation was equal to the post-innovation rent (while the pre-innovation rent was zero).

On the other hand, new endogenous growth models[14] extend the basic Schumpeterian models by allowing incumbents firms to innovate and by assuming that innovation incentives mainly depend on the difference between the post-innovation and the pre-innovation rents. These models predict that more product market competition could foster innovation. Aghion and Howitt (1998) offer two theoretical cases where competition is indeed conducive to innovation:

- Intensified product market competition could force managers to speed up the adoption of new technologies to avoid loss of control and/or bankruptcy. Indeed, if successful innovators that introduce new technology lead to a gain in market shares because of more efficient production processes, they would be able to replace the firms that produce with old technology. The latter are thus forced to innovate themselves in order to survive.[15]
- In 'neck-and-neck' industries, i.e. in industries in which oligopolistic firms face similar production costs, product market competition could create a large incentive to innovate. This is because intense competition increases each firm's incentive to reduce its production costs through the acquisition of a technological lead over its rivals. Competition may also increase the incentive of each firm to innovate to escape competition, for instance if innovation translates into more sophisticated and differentiated products.

In these models, the link between competition and innovation does not remain unambiguous as this link is prone to be positive in 'neck-and-neck' industries whereas it is prone to be negative in less 'neck-and-neck' -or more 'product-differentiated'- industries. In the latter type of industries, more competition may reduce innovation as more competition reduces the monopoly rents that reward successful innovators (Schumpeterian effect). Moreover, by increasing innovation incentives in 'neck-and-neck' industries more than in 'product-differentiated' industries, this will tend to reduce the fraction of 'neck-and-neck' industries in the economy in equilibrium. This effect reinforces the Schumpeterian effect in inducing a negative correlation between product market competition and aggregate productivity growth or aggregate rate of innovations.[16]

New endogenous growth models allow incumbent firms to innovate and assume that innovation incentives depend on the difference between post-innovation and pre-innovation rents. Aghion et al. (2003a) show that, when entry is introduced into such models, the effect of an increase in competition through (the treat of) entry depends on the country, industry or firm's distance to the world technological frontier. In countries that are close to the world technological frontier, fostering entry or competition will increase incumbents' incentives to innovate in order to escape potential entrants or new competitors. However, in countries or industries lagging far behind the world technological frontier, higher entry or higher competition tends to discourage incumbents from innovating. This model thus suggests that the overall impact of trade liberalisation will depend on the current state of technology in the country or the industry. However, in the long run, trade liberalisation will increase the overall average growth rate because in equilibrium there will be more industries where the affect is positive.

Finally, work by Aghion et al. (2002) suggests that the relationship between competition and innovation may be of a non-linear nature, with both very high and very low levels of product market competition providing lower incentives to innovation. Using a Schumpeterian growth model in which firms innovate step by step (i.e. a laggard firm must first innovate to catch up with the technological leader before becoming itself a leader in the future), where both technological leaders and their followers engage in R&D activities, and where competition may increase the incremental profit from innovating while reducing innovation incentives for

[12] See Ahn (2002), Griffith and Harrison (2004).

[13] Dasgupta and Stiglitz (1980), Romer (1990) or Aghion and Howitt (1992).

[14] Such as the ones developed by Aghion, Harris and Vickers (1997), Aghion and Howitt (1998) or Aghion, Harris, Howitt and Vickers (2001).

[15] See Ahn (2002).

[16] See Aghion et al. (2002).

laggards, these authors indeed predict that the relationship between competition and innovation is an inverted U-shape, i.e. the escape competition effect dominates for low initial levels of competition, whereas the Schumpeterian effect dominates at higher levels of competition.

To sum up, the new endogenous growth models predict that the link between competition and innovation may be positive or negative depending on the initial state of competition (neck-and neck industries versus 'product-differentiated' industries and more generally low level of competition versus high degree of competition) and on the country, industry or firm's initial distance to the world technological frontier.

4. Empirical evidence on the indirect links between product market reforms and productivity

This section presents a survey of recent empirical work analysing the indirect links between product market reforms and productivity. Drawing on the theoretical framework presented in Section 2, this section makes a distinction between the three transmission channels of the effects of product market reforms, namely allocative efficiency, productive efficiency and dynamic efficiency.

4.1 Product market reforms and allocative efficiency

By increasing competition, product market reforms have two main effects on allocative efficiency. First, they weaken the market power of firms, leading to a reduction in monopoly rents or mark-ups. Second, they facilitate market entry of new firms and this may lead to some restructuring process, with market exit by the least efficient firms. As some incumbent firms tend to be less productive than their more profitable new competitors, their exit from the market raises the average productivity in the sector.

4.1.1 Product market reforms and mark-ups

The mark-up is defined as the price over marginal cost ratio. A mark-up ratio exceeding unity is an indication of the existence of market power enabling firms to set prices above marginal costs and thereby to achieve monopoly rents.[17]

Most empirical studies that aimed to test the links between the degree of market opening and/or the degree of competition, on the one hand, and the profitability level of firms, on the other hand, have found - since the pioneering works of Bain (1951 and 1956) - a negative relation between these two variables, therefore confirming the theoretical analysis.[18] Jacquemin and Sapir (1991), for instance, showed that the European national industrial sectors that were protected from intra-EU competition by important non-tariff barriers benefited in the early 80's from abnormally high profitability levels. More recently, Oliveira Martins et al. (1996) did not find any correlation between the degree of market concentration and the level of mark-ups but identified a significant negative correlation between the latter and the entry rates in a market. The European Commission (1996) also showed that the implementation of the SMP led to an increase in competitive pressures in the manufacturing industry, resulting, in particular, in reductions in the price–cost margins. Griffith and Harrison (2004) estimated the relationship between product market reforms and the level of economic rents. They found that reforms that ease entry, barriers to trade, remove price controls and reduce public involvement in production negatively affect the average level of economic rents in the economy.

However, if high profit levels can be interpreted as a consequence of low competitive pressures, in contrast they can also result from efficient behaviour of firms (Ahn, 2002).[19] As the effects of competition on the mark-up ratio may be ambiguous, its evolution over time has to be analysed simultaneously with the evolution of its two components, namely prices and unit costs.[20] Applying this methodology for analysing what impact the implementation of the Single Market Programme has had on mark ups in the European manufacturing industry, Sauner-Leroy (2003) finds evidence that profit margins of EU firms in the early 1990's declined in line with a decrease in real prices and that this phenomenon could be at least partly attributable to increased competition stemming from intra-EU imports, thus indicating the realisation of allocative efficiency gains induced by the intra-EU trade liberalisation.

[17] See Oliveira Martins et al. (1996), Konings et al. (2001).

[18] See Schmalensee (1989).

[19] For instance, Demsetz (1974) considers that high profit levels within an industry can be explained by good performances of firms, i.e. their ability - mainly for largest firms - to produce at low costs. More generally, an increase in competition may have effects on both prices and costs, and therefore the mark-up may remain stable although prices may fall. Geroski et al. (1996) show in particular that this is likely to occur because incumbent firms have excess costs – such as managerial slack or rent sharing with the workforce- that can be reduced to compensate for lower prices. This latter argument could be a good explanation for the paradox mentioned by Konings et al. (2001) concerning the levels of mark-ups in the Dutch manufacturing sectors facing high import rates. The authors found mark-ups to be higher in these sectors than in sectors where import rates were low. Indeed, if the intensity of competition results in a fall in costs larger than the fall in prices, then the profit margin increases.

[20] See Bils (1987), Machin and Van Reenen (1993).

4.1.2 Product market reforms and market entry and exit

Several factors explain entry and exit of firms. Among those, product market regulations stand out as having substantial impact on entry rate of businesses. Brandt (2004) found that overly complicated license and permit system discourages the creation of new enterprises.

Among product market reforms, differences in corporate tax systems across Europe can act as a key obstacle to cross-border activities in Europe. Studies suggest a high compliance cost related to the lack of co-ordination of tax and accounting systems in Europe.[21] Besides these direct compliance costs, tax systems are known for having a large impact on entrepreneurship and on innovation activities, either through the general tax framework or through targeted tax policies.[22] The effect of taxation on entry is tricky to apprehend because entrepreneurs have the possibility to be self-employed or to incorporate,[23] therefore involving decisions based on both the personal and corporate income tax systems. In addition, not only the level but also the progressivity of some tax systems and the relative difficulties to carry-over losses across tax periods[24] imply that decisions related to entrepreneurship also depend on the forecast level and distribution of earnings. Other types of taxation also matter such as capital gain taxation that has an effect on the level of venture capital supplied to entrepreneurs.[25] Finally, targeted tax measures – be they in terms of tax credits, specific depreciation rules, reduced taxation or preferential exemptions – have a large impact on entrepreneurial activities. [26]

Generally, studies analysing the impact of product market reforms on economic performance through the process of entry and exit focus for a large part on the link with productivity. Empirical studies generally find a positive link between the two indicators. One can decompose the direct impact of free entry and exit in several effects. First, internal restructuring ("within effect") refers to productivity growth of individual firms in the industry via factors internal to the firm such as organisational change, new technologies, or reallocation of inputs. Second, external restructuring represents a reallocation of resources among firms via a process of creative destruction with exit of least efficient firms or via a shift in market shares towards most efficient firms. Barnes, Haskell and Maliranta (2001) found substantial within effects for the OECD. Baily, Hulten and Campbell (1992) found similar results for the US manufacturing firms between 1972 and 1988, and so do Griliches and Regev (1995) for the Israeli industry over 1979-1988.

Nicoletti and Scarpetta (2003) also demonstrate significant links between product market policies and productivity performance, with entry liberalisation leading to productivity gains in all of the countries considered regardless their position in terms of technology adoption. They also found evidence of a twofold effect of entry liberalisation that release their effects over a ten years time horizon. First, entry liberalisation in the services industries is estimated to boost annual multi-factor productivity growth in the overall business sector. Second, an indirect (and positive) effect of the removal of trade and administrative barriers to entry was found. The intensity of the effect depends on the technology gap that some countries accumulated in heavily regulated manufacturing industries.

In conclusion, studies point a significant effect of market entry on allocative efficiency.

4.2 Product market reforms and productive efficiency

Studies analysing the links between product market reforms and productive efficiency are also relatively scarce, maybe because productive efficiency is difficult to measure as it depends on various factors, some of them not being observable such as, for instance, organisational changes within companies.[27]

Empirical works already been done on this issue mostly include studies focusing on the relationship between competition and productive efficiency, and not specifically on the relationship between product market reforms and productive efficiency. Nevertheless, one can argue that as product market reforms tend to increase competition, the conclusions drawn from empirical work linking competition and productive efficiency are also valid for the analysis of the links between product market reforms and productive efficiency. Caves and Barton (1990), Caves et al. (1992) or Green and Mayes (1991) used frontier production function techniques to compute efficiency indices and to relate them to competition variables. They found that,

---

21 See European Commission (2001b) and European Commission (2004b).

22 See Gentry and Hubbard, (2004).

23 In some cases, incorporation can be made so that entrepreneurs still face personal income taxes. The design of tax rules will also have an impact on productivity through its incentives. This is for example the case for the taxation of performance-related pay systems, such as stock options or bonuses.

24 Leading in some cases to "success taxes" because losses do not lead to negative taxes. Therefore, successful companies usually face a higher effective taxation than unsuccessful ones.

25 A sizeable collateral damage of a lower supply of venture capital is the decrease in managerial advice that usually accompanies capital invested in risky activities. See Keuschnigg and Nielsen (2000).

26 See Cullen and Gordon (2002). In addition, the effect of tax systems on foreign direct investment is well-established, adding foreign competitors to the level of entry (see for example Clark, 2002).

27 See Sauner-Leroy (2003).

above a certain threshold, increases in market concentration (i.e. decreases in competition) tend to be associated with reductions in technical efficiency.

These results are consistent with the ones found in studies focusing on product market reforms. Griffith (2001) for instance shows that the increase in product market competition brought about by the implementation of the SMP led to an increase in overall levels of efficiency, but that these efficiency gains occurred more particularly in firms where management and ownership were separated (principal-agents type of firms), suggesting then that product market competition can play an important role in reducing agency costs.[28] Sauner-Leroy (2003) also shows that the rise in competition induced by the implementation of the Single Market Programme led EU manufacturing firms to increase their productive efficiency to compensate for lower prices and profit margins.

To summarise, there is evidence that competition and product market reform act as a stimulus for firms to increase productive efficiency. However, the empirical work on this specific issue remains relatively scarce.

4.3 Product market reforms and dynamic efficiency

The empirical literature on the link between product market competition and innovation has so far been relatively sparse and inconclusive. The reasons lay in the poor availability of comprehensive time series of product market indicators, in a "still-in-progress" theoretical framework, and in the difficulties of measuring dynamic efficiency given that it takes time to deliver its full effects and that innovation is difficult to measure.

As surveyed by Ahn (2002, p.15), studies on the relationship between market power and innovation lead to mixed results. For example, some studies show that companies' size has no significant effects on innovation whilst other studies point to either a positive relationship between concentration and innovation, or an inverted U-Shaped relationship, or simply no effects when controlling for industry differences. Apparently, measurement and modelling issues blur empirical results as good proxies for innovation are difficult to find and regression methods fail to take into account "bounds" effects between R&D intensity and concentration.[29] Acs and Audretsch (1987) found that different types of industries would produce innovative advantage for different sizes of industries. Small companies have innovative advantages in highly-innovative and skilled intensive sectors whereas large companies enjoy this advantage in more concentrated and capital-intensive industries. Using firm-level UK data, Blundell, Griffith and Van Reenen (1999) found that firms with higher market share innovated more but that at the industry level, more competitive industries were more innovative. Therefore, aggregate competition leads to more innovation but within the competitive industries dominant firms innovate more often. One difficulty is the possible endogeneity of market structure as it may itself be the result of innovation. In addition, although affecting R&D investment, regulations do not seem to be its main driver – some forms of protection could even be beneficial for risky R&D activities – and market size and education appear to be more pronounced determinants.[30]

There is however increasing evidence of an inverted U-shaped relationship between competition and R&D or innovation, as predicted by most recent models (Aghion et al. 2002). Griffith and Harrison (2004) looked at the link between microeconomic reforms in product markets on macroeconomic performance through their effects on mark-ups. The authors use a two-step approach to link product market reforms and macroeconomic performance. They first identify the link between indicators of product market reforms and economic rents measured by mark-ups. In a second step, they use the predicted mark-up to assess the effect on macroeconomic variables. The authors relate R&D expenditures with the predicted mark-up from the first regression (indirect effect), its squared value, and policy indicators (direct effect). Their results suggest a non-linear relationship between competition and the levels of R&D expenditure. However, they find an inverted-U-shape relationship between mark-ups and R&D that only turns downwards at high levels of regulations. Direct effects of regulation appear to be stronger – although with a negative sign.

---

[28] Agency costs may be defined as costs induced by decisions taken by managers with the view to increasing their personal gratification or to reaching their own personal objectives (use of "free cash-flow") instead of being taken in order to maximise the net present value of the firm. Agency costs may also stem from the existence of managerial or organisational slack translating into a misuse of human resources.

[29] The "bounds approach" has been developed by John Sutton (2002). Sutton looks at the determinants of market concentration and finds lower bounds for concentration. His work attempted to connect the analysis of concentration with the identification of the intensity of price competition and the level of endogenous sunk costs as the key determinants. For example, R&D can allow firms to differentiate their products and therefore more R&D can lead to less concentration.

[30] See EU ECONOMY 2003 REVIEW, chapter 2. One important determinant of innovation is skills and education as suggested by Rao et al. (2002) and Aghion and Cohen (2004). Griffith and Simpson (2003) found that foreign-owned manufacturing firms in Britain have higher levels of labour productivity and investment per employee. Their results suggest that the higher proportion of skilled workers in foreign-owned industries matches differences in labour productivity.

Table 1: Summary of the main empirical results

Channel	Main empirical results
Allocative efficiency	• Product market reforms usually reduce economic rents (mark-ups). • Product market reforms have substantial impact on entry. • Productivity gains are mainly due to reorganisation within the firm, except in high-tech industries where new firms contribute the most to productivity gains.
Productive efficiency	• Increase in competition is associated with increase in technical efficiency. • Product market competition reduces agency costs.
Dynamic efficiency	• Evidence of an inverted U-shaped relationship between innovation and competition. • More competition usually leads to TFP growth but with long lags. • Creative destruction accounts for most of the increase in TFP growth rates. • Distance to technological frontier matters.

The direct link between competition and dynamic efficiency as measured by productivity growth rates seem to be clearer. Nickell (1996) found a positive impact of competition on firm-level TFP growth and Disney et al. (2000) found that competition is an important determinant of internal restructuring, which in turn has an impact on TFP growth. In terms of relative importance, the authors distinguish between 'internal' restructuring (i.e. new technology and organizational change) and 'external' restructuring (i.e. entry of efficient firms and exit of least efficient ones) and find that 'external restructuring' accounts for 90 per cent of TFP growth. Griffith and Harrison (2004) also find a non-linear relationship between competition and the growth rate of labour productivity or total factor productivity. When looking at the evolution of competition and the indicators of macroeconomic performance within countries, the authors find a negative relationship (i.e. more competition decreases performance). However, this finding has to be balanced by possible measurement errors and lag effects. Indeed, when comparing across countries the authors find the expected positive relationship (i.e. countries with more competition have better performance).[31] Several studies also found a significant elasticity of R&D to tax credit, even more so in the long term.[32]

A positive effect of innovation on dynamic efficiency finds additional empirical support. Rao et al. (2001) find a strong correlation between innovation and TFP growth in Canadian manufacturing industries. The R&D output elasticity could however depend on sectors. Looking at manufacturing firms in Taiwan, Wang and Tsai (2003) found that whilst average output elasticity stood at .18, this effect was larger in high-tech firms. In addition, the effects of R&D on TFP performance may appear with long lags and investment in ICT could even be associated with lower TFP in the short-run as resources and energy are diverted to reorganisation and learning as suggested by Basu et al. (2003).

Recently, the literature has underlined differential effects of innovation on productivity growth depending on the distance to the technological frontier. As mentioned earlier, Nicoletti and Scarpetta (2003) use an endogenous growth model to integrate productivity growth and catch-up so that product market regulations will both directly and indirectly (through interacting them with the distance to the technological frontier) impact TFP growth. They found a positive impact of entry on TFP growth, especially in services.

These gains seem to be larger the further an economy lies away from the technological frontier. Aghion et al. (2003b) looked at the effects of reforms on trade in India and found the opposite effect. The authors found that Indian States that were close to the technological frontier and had liberalised labour markets enjoyed a positive impact of trade liberalisation on growth, whilst the opposite holds for Indian States that lay far from this frontier.

Finally, R&D expenditures have an impact on productivity through two channels: innovation and imitation of other's discoveries.[33]. The diversity of these findings suggests that, although positive, the impact of competition on innovation and productivity takes complex forms.

[31] Technically, the difference between the two techniques relates to the presence or not of 'country fixed effects' variables that are there to capture country-specific features which are not observable but may explain better performance. The authors do not just look across countries because there is always a theoretical risk that country-specific non-observable features other than the level of competition may impact on macroeconomic performance and that this impact could be wrongly attributed to the level of competition.

[32] See European Commission (2002a) for a discussion.

[33] See Griffith, Redding and Van Reenen (2000).

4.4 *Direct and indirect effects of product market reforms.*

The EU Economy 2003 review, (chapter 2) identified the regulatory environment as a key determinant of capital deepening[34], indicating an impact on productivity levels. It was estimated that the implied change of moving to US levels of regulation would suggest a long-run productivity effect of about 5 per cent (i.e. 0.15p.p. on the long run growth rate of productivity). These gains were mostly static and occurred through increased investment. This year, the chapter on "The Lisbon strategy and the EU's structural productivity problem" shows that the direct effects of deregulation on productivity are relatively weak. The results show that deregulation could lead to a meagre 0.15 percent increase in the rate of productivity growth. This should be compared with a 0.05 percentage point effect of a 1 per cent increase in investment, a 0.60 percentage point effect of a permanent 1 per cent increase in R&D spending, and a 0.45 percentage point effect of a permanent one year increase in average education levels of the labour force. However, by looking at the effect of R&D on productivity, the analysis in some way shed light on the possible indirect effects which arise from product market reforms on total factor productivity.

[34] Needless to say, it also influences technical progress.

In particular, the chapter acknowledges additional dynamic effects of product market reforms and stresses in particular the role of knowledge production in the EU's structural productivity problems. Other exercises which have attempted to take these indirect effects into account find indeed large indirect effects of product market reforms. Some of these results are presented hereafter.

In 2002, the EU ECONOMY 2002 REVIEW (chapter 2) presented a scenario with labour and product market reforms that included a reduction in the NAIRU by 1.5 per cent, a reduction in price mark-ups by 0.5 percentage points (p.p.) and an increase in total dactor productivity level of 1 per cent. This "big bang" scenario is in line with the observed effects of recent labour and product market reforms. That experiment led to an increase in GDP of about 4 per cent and an acceleration of output growth by about 0.5 percentage points annually over 7-8 years. Using the same framework but restricting it to product market reforms, Dierx, Pichelmann and Röger (2004) found a medium-term increase in GDP relative to its baseline level of about 2 per cent and an acceleration of output growth by almost a quarter of a percentage point annually over a period of seven to eight years.

In its report "World Economic Outlook 2003", the IMF (2003) simulated the impact of closing the gap with the USA in terms of labour and product market reforms, which points to a potential 10 per cent GDP increase.

Table 2: Estimates of the quantitative effect of product market reforms

	Initial channels	Size	Timing	Additional GDP
EU	TFP increase Price mark-up decrease with SMP Price mark-up decrease in Network Industries	+ 0.5% level -0.9 p.p. for economy as a whole -0.5 p.p. for economy as a whole	10 years of SMP	Combined effect of SMP is 1.8%
Dierx, Pichelmann and Röger	TFP increase Price mark-up decrease in Network Industries	+ 1% level -0.5 p.p. for economy as a whole	Seven to eight year	+2%
IMF	Price mark-up decrease	-10 p.p. for economy	Long-term (not specified)	+ 4.3% in long-run
Bayoumi et al.	Product market reforms in the form of lower mark-up	Euro mark-up goes from 1.35 to the US level of 1.23	Long-term (steady state)	+8.6% in long-run

Source: Commission services (2002b), Dierx et al. (2004), IMF (2003), Bayoumi et al. (2004).

If we focus on product market reforms only, the message of the IMF is that the long-run effects of more competition-friendly policies on product markets in the euro area would be substantial with GDP increasing by 4.3 per cent in the long run (along with a consumption increase of 3.4 per cent and an increase in investment by 12.1 per cent).

Using a similar methodology, Bayoumi, Laxton and Pesenti (2004) find an even larger value of an increase in GDP of 8.6 per cent if product market reforms lead to a mark-up similar to the US level. The gain goes up to 12.4 per cent of GDP if labour market reforms are added. As a comparison, the European Commission (2002c) finds a combined effect of the Single Market Program of 1.8 per cent of GDP after 10 years. Although comparing the results is made difficult because of differences in methodologies, the outcome suggests substantial benefits.

These results suggest that while deregulation directly affects productivity, its real potential effects may lie in indirect effects via the three channels that we have identified.

5. Is the EU lagging significantly behind the USA in terms of product market reforms?

The indirect effects of product market reforms on productivity operate through a reduction in mark-up, an increase in entry rate, an improvement in the efficiency with which firms are managed and a stimulus for firms to innovate. These indirect effects appear to be potentially much higher than the direct effects. The next question is which product market reforms are the most pressing to improve the productivity performance of the European Union, in particular in relation with the USA. To answer this question, we need to investigate the relative importance of the three transmission channel and to identify the areas where the EU is significantly lagging behind the USA. While further work, i.e. the construction of a model putting together the three channels and analysing their interactions, is necessary to address the first issue, some interesting conclusions can already be drawn regarding the second issue.

To that end, we have compared indicators of product market reforms in the EU and the USA so as to assess whether differences in performance originate from differences in the economic framework. It is an established fact that the EU is lagging the USA in terms of GDP per capita. A common perception is one of the United States enjoying large economic freedom whilst the EU is stuck in its red tape and heavy regulations. This argument fails to take into account the fact that the European Union has initiated profound reforms (see Section 1) and that the United States still have several segments of its economy that are regulated and sheltered from competition. The first step is to have summary indicators of product market reforms and the second is to analyse to what extent they differ in the EU-15[35] and the USA. Then, one should look at the potential gains of reforms in Europe.

5.1 Measurement of product market reforms in the EU and the USA

Summary indicators of product market reforms are provided by three main sources:[36]

- First, the OECD database on regulatory reforms contains indicators of economy-wide regulation (eg. State control), of industry-level regulation (eg. Barriers to trade in manufacturing) and of regulatory reforms (eg. Trade liberalisation). These indicators date from around 1998 and the OECD launched a project aimed at updating them by October 2004.

- Second, composite indicators are also available from the Fraser Institute. They refer to business regulations and identify the extent to which regulatory restraints and bureaucratic procedures limit competition and the operation of markets. In addition, Fraser provides indicators on the freedom to trade with foreigners and on the State's involvement in the Economy. The latest available report contains data for 2002.

- Finally, the World Bank's database "Doing Business" provides indicators on the cost of doing business by identifying specific regulations that enhance or constraint business investment, productivity, and growth.

On the basis of information gathered by these three sources, four main categories of indicators can be used to measure and compare the intensity of product market reforms across countries: ease of starting a new business, trade openness, state involvement in the economy and administrative burden on business.

---

[35] There are various reasons to focus on the EU-15 and not on new Member States. For example, most empirical results in the literature focus on the EU-15. The same goes for the estimates, which may depict the relationship between product market reforms and productivity in an institutional and policy framework that is different from those of the new Member States.

[36] The structural indicators produced by the European Commission do not provide per se regulatory indicators but rather performance indicators such as prices or market share of incumbents.

Table 3: Components of the economic freedom indicator

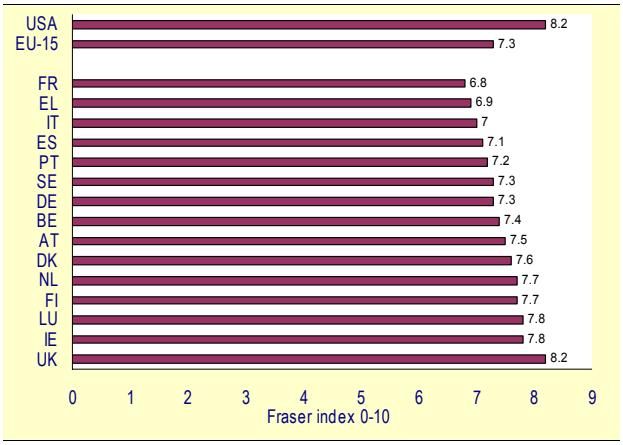
2002	General economic freedom	*Of which* I. Size of gov.	*Of which* II. Legal structure and security of property rights	*Of which* III. Access to sound money	*Of which* IV. Freedom of exchange with foreigners
USA	8.2	7.4	8.2	9.8	7.8
Av. EU-15	7.3	4.6	8.1	9.6	8.2

Source: Fraser Institute. The indicators range from 0 to 10, a higher value indicating a better score. EU-15 is the GDP-weighted value.

5.2 Taking stock of product market reforms in the USA and the EU

To compare the United States and the European Union, it is convenient to start with the Fraser indicator on general economic freedom.[37] This indicator indeed gathers information about five major areas, combining regulations in product, labour and capital markets, legal structures and security of property rights, the involvement of the government in the economy, the access to sound money and the freedom of trade.

Graph 1: **General economic freedom (2002)**



Source: Fraser Institute.

In 2002 – the most recent available data – the USA[38] was above all European Member States with a value of 8.2 – at par with the United Kingdom. Our computed GDP-weighted average for the EU-15 stood at 7.3 (see Graph 1).[39]

Although a comparison in time is difficult because of changes in definitions and in the number of sub-indicators used to create the composite index, globally, the main result is that economic freedom constantly appears to be higher in the United States than in the EU-15 whatever the period considered.

Interestingly, when looking into more details at the indicators, the difference between the EU and the USA is strongest in terms of the degree of involvement of the State in the economy, with the EU also trailing the USA in terms of regulations of credit, labour and business. By contrast, the EU is close to the USA in the field of access to sound money (which mainly include indicators of financial stability) and legal issues, and slightly leads the USA when it comes to freedom of international exchanges. Since 1990, the main evolution has been a decrease of the indicator of the size of the government for the EU-15 compensated by increased freedom of exchange with foreigners. The general index of regulation has slightly improved on both side of the Atlantic, although by less in Europe (see Table 3).

Among regulations, differences in labour markets flexibility are the most glaring, with all EU economies lagging behind the USA. In particular, the low German score burdens the EU weighted average. Product market regulations on businesses also appear to be higher on the old continent, as regulations on businesses are lower in the United States than in any European Member States, bar Finland and Sweden.

Looking in more depth at countries, we have plotted the labour market regulation index and the business regulations index for 2002 (see Graph 2). The presumption is that one would see two types of countries: low regulated ones and heavily regulated ones in both labour and business regulations. The plot reveals a more complicated story because the levels of labour and business regulations come out as not correlated.[40].

[37] The OECD indicator probably encompasses much more aspects of regulation but it dates from 1998 and is often a 'one-shot' measure.

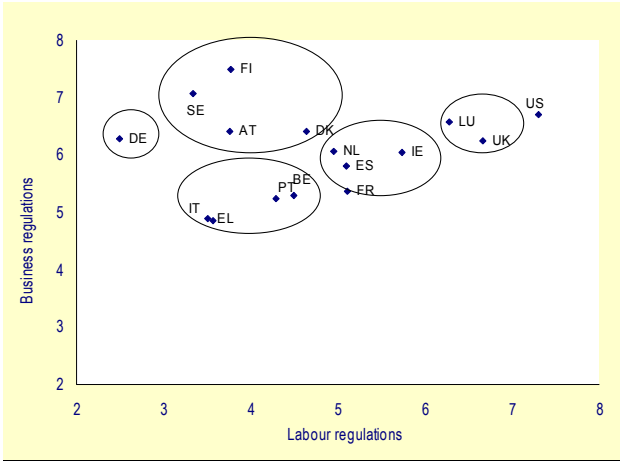
[38] Worldwide, the US came third behind Hong Kong and Singapore. It is at par with New Zealand, Switzerland and the UK.

[39] Although new Member States generally displayed lower scores, the EU-25 GDP-weighted average came close old Member States' value because of the low share of new Member States in total EU GDP. The same goes for most indicators.

[40] Both the Spearman and Pearson tests fail to reject the null hypothesis of no correlation. However, when one takes Austria, Germany, Finland and Sweden out of the sample, the correlation appears highly positive and strongly significant. The same result is valid when taking the OECD

The first interesting, albeit unsurprising, finding is that the USA, unlike most EU countries achieve high performance in both indicators. To regroup countries, we carried out a hierarchical cluster analysis.[41] Being the closest to the USA, Luxembourg, and the UK succeed to achieve relatively high performance on both indicators. At the other extremity, the cluster composed of Greece, Italy and, to some extent, Belgium[42] and Portugal shows poor performance in both labour and business regulations. In the middle range, two groups emerge.

Graph 2: **Labour and business regulations 2002**



Source: Fraser Institute.

The first one is composed of France, Ireland, The Netherlands, and Spain. It achieves good results in labour regulations and average performance in business regulations.[43]

The second group achieves good if not superior performance in business regulations but generally shows average to poor performance in labour regulations. It is composed of Austria, Denmark, Finland, and Sweden. Finally, Germany stands out as outliners with relatively good performance in business regulations but has too inflexible labour markets. Given its weight in EU GDP, its unsatisfactory performance bears on the overall EU index.

To investigate further those differences, we have regrouped indicators within the four categories of product market reforms identified in Section 1.

Table 4: Regulation indices

2002	Regulation of credit	Regulation of labour	Regulation of business
USA	9.2	7.3	6.7
Av. EU-15	8.3	4.4	5.8

Source: Fraser Institute. The indicators range from 0 to 10, a higher value indicating lower regulations. EU-15 is the GDP-weighted value.

5.2.1 Trade openness and legal barriers

Based on this indicator, the EU appears to be a slightly more opened economy than the USA. Most of the difference seems however to come from differences in taxes on trade and hidden import barriers, whilst the cost of importing is slightly lower in the United States. Indicators of freedom of exchange have remained fairly stable since 1990, with most pronounced increase for the new Member States. In addition, most EU Member States show very close values when it comes to the sub-indicators. However, the Fraser values reflect international trade and tell nothing about trade integration within the EU and the USA. Trade integration among Member States was one of the first aims of the European Union with the creation of a Custom Union and, subsequently, the creation of a Single Market and a Common Currency Area. Between 1999 and 2002, intra-EU export trade in products for the 15 Member States varied between 15.7 per cent and 17.3 per cent of GDP. Similar data for the intra-state trade in the United States are not directly available. However, using recent 2001 data for exports of manufactured goods from manufacturing establishments per State.[44] (US Department of Commerce and US Census Bureau, 2004), we subtract the value of direct manufactured exports from the value of all manufacturer's shipments to get intra-state US exports of manufacturing product instead. We then divide this value by US-GDP.

The aggregate value for the USA stands at 34.0 per cent. For comparison purpose, we computed the 2001 EU-15

indicator (for 1998). Further investigations should be done with regards to differences in the labour market index. The OECD index seems to focus more on hiring and firing issues, whilst the Fraser index looks in addition at minimum wages, collective bargaining, and unemployment benefits issues.

41 Based on Ward's minimum variance method. We arbitrarily stopped the clustering procedure at five clusters, whose regrouping still explains 80.6 per cent of the original variance. Technically, the distance between two clusters is the ANOVA sum of squares between the two clusters added up over all the variables. At each generation, the within-cluster sum of squares is minimised over all partitions obtainable by merging two clusters from the previous generation.

42 The relatively poor performance of Belgium in the index of business regulation mainly stems from a poor performance in the ease of starting a new business.

43 France seems to obtain a good score in labour market regulations thanks to a relatively decentralised wage bargaining system.

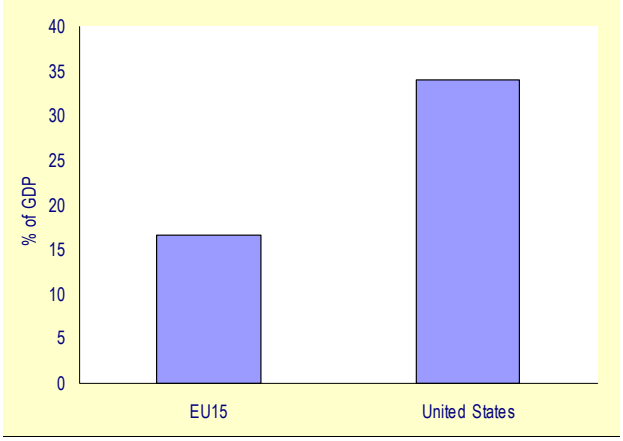
44 Note that in this case, the definition of "manufacturing shipments" includes what the Census bureau calls inter-plant transfers. This is the value of goods shipped to another establishment owned by the same company even if no explicit sale occurs due to the common ownership. The Census bureau asks respondents specifically to include an estimate of the market value of such shipments in their value of total shipments. Note also that the value at the plant does not include transportation or trade margins (purchasers' prices less producer prices).

intra-EU exports of manufactured products as percentage of GDP. Its value stood at 16.6 per cent in 2001. Globally and with all the necessary caution[45], this result suggests that, even when correcting for measurement errors, the USA appears to be a more integrated trade area than the EU.

5.2.2 Regulations on entry

Free entry and exit of firms is a key element for the process of enabling the reallocation of resources towards the most productive sectors and firms, forcing companies to reach more efficient ways of doing business and giving incentives to firms to innovate. Tight regulations to create a business, numerous and lengthy procedures to set up a company, or high costs to start an economic activity are deterrents to entrepreneurship and end up to be *de facto* regulatory protections for incumbent companies. Obstacles to the set up of new businesses appear to be relatively high in the EU, despite the fact that Denmark, Finland, Ireland, Luxembourg Sweden and the UK have indices that come close to or are higher than the US value. This result is extremely important because the economic literature suggests that potential competition is a necessary condition for the channels between product market reforms and productivity to work.

Graph 3: **Intra trade in manufactured products (intra exports a % of GDP 2001)**



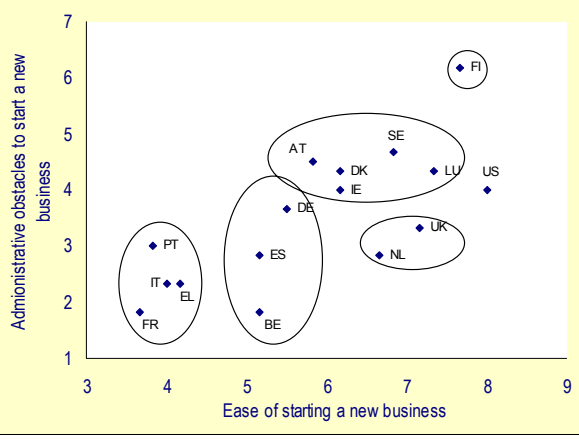
Source: Commission services.

The Fraser indicator assesses the situation in 2002. In the course of the Lisbon strategy, many if not all Member States have initiated important reforms to promote entrepreneurship. The World Bank provides more recent and complementary data in this respect. The indicator lists all procedures legally required to legally operate a limited liability company (see Table 7). It indicates that, although the number of procedures may have declined, their duration and cost remain substantially larger than in the United States for most EU Member States.

In addition, the World Bank provides indications on the time and cost necessary to close a business (see Table 8). Swift and inexpensive death of inefficient businesses is also important to increase overall productivity. Despite shorter procedures, the cost of closing a business in Europe remains higher than in the USA. In addition, with the exception of Finland, the Netherlands, Belgium and Ireland, the European insolvency systems lack efficiency in terms of cost, time, priority of claims, and outcome achieved. The Fraser indicators on obstacles to new businesses are difficult to compare over time because their definition has changed, leading to jumps in the data. Looking at data for 2002, we link the indicators of "ease of starting a new business" and "administrative obstacles to start a new business".[46]

Unsurprisingly, both indicators are highly correlated and contain similar information (see Graph 4). When proceeding with the clustering procedure,[47] one can identify Finland as a front-runner that displays obstacles to entrepreneurship that are as low if not lower than the USA.

Graph 4: **Obstacles to entrepreneurship 2002**



Source: Fraser Institute.

[45] Notably, the level of desegregation can bias the results, the data sources and methodologies differ and this analysis is only made for 2001.

[46] Both indicators are taken from the Global Competitiveness Report. They represent the business' assessment on whether starting a new business is generally easy and whether administrative procedures are an important obstacle to starting a new business, respectively.

[47] We arbitrarily identify five clusters, whose regrouping still explains 84.2 per cent of the original variance.

Table 5: Components of the freedom of exchange with foreigners indicator

2002	Freedom of exchange with foreigners	*Of which* **I.** Restrictions on capital markets	*Of which* **II.** Taxes on int'l trade	*Of which* **III.** Regulatory trade barriers	*Regulatory barriers of which:* **III.a.** Hidden import barriers	*Regulatory barriers of which:* **III.b.** Cost of importing
US	7.8	8.4	8.1	8.2	6.8	9.6
Av. EU-15	8.2	8.7	9.0	8.6	7.8	9.3
Best EU-15	9.0 (IE)	9.6 (LU)	9.1 (EL, LU)	9.5 (FI)	9.3 (FI)	9.9 (LU)
Worst EU-15	7.4 (EL)	7.2 (PT)	9.0 (all others)	7.8 (IT)	6.7 (IT)	9.0 (IT)

Source: Fraser institute. Range: 0 to 10 from most restrictive to less restrictive. Hidden import barriers originate from the Global Competitiveness Report published by the World Economic Forum. The cost of importing is defined as the combined effect of import tariffs, licence fees, bank fees, and the time required for administrative red-tape raises costs of importing equipment and share the same source. EU-15 is the GDP-weighted value.

Table 6: Obstacles to entrepreneurship

2002	Regulation on business	Administrative obstacles for new businesses	Ease of starting a new business
USA	6.7	4.0	8.0
Av. EU-15	6.0	3.0	5.3
Best EU-15	7.5 (FI)	6.2 (FI)	7.7 (FI)
Worst EU-15	4.9 (EL, IT)	1.8 (BE, FR)	3.7 (FR)

Note: * EU-24 (minus CY). EU-15 and EU-25 are GDP-weighted values.

Source: Fraser institute. Range: 0 to 10 from most heavy regulation to lowest regulation.

Table 7: Starting a business

Starting a business (January 2004)	Num. of procedures	Duration (days)	Cost *	Min. Capital *
USA	5	5	0.6	0
Av. EU-14	7	31	10	39
Best EU-14	3 (FI)	4 (DK)	0 (DK)	0 (IE,UK)
Worst EU-14	13 (EL)	108 (ES)	23.3 (IT)	135.2 (EL)

Note: * % GNI per capita.

Source: World Bank (methodology adapted from Djankov et al. 2002). EU-14 (minus LU). EU values are non-weighted averages.

Table 8: Closing a business

Closing a business (January 2003)	Actual time (years)	Actual cost (%of estate)	Goals-of-insolvency index*
USA	3	4	88
Av. EU-14	1.8	8.9	73
Best EU-14	0.4 (IE)	1 (FI, NL)	99 (FI)
Worst EU-14	4.2 (DK)	18 (AT, FR, IT)	42 (EL)

Note: * "The goals of insolvency ratio documents the success in reaching the three goals of insolvency, as stated in Hart (1999). It is calculated as the simple average of the cost of insolvency (rescaled from 0 to 100, where higher scores indicate less cost), time of insolvency (rescaled from 0 to 100, where higher scores indicate less time), the observance of absolute priority of claims, and the efficient outcome achieved. The total Goals-of-Insolvency Index ranges from 0 to 100: a score 100 on the index means perfect efficiency (Finland, Norway, and Singapore have 99), a 0 means that the insolvency system does not function at all". (Source: World Bank).

Source: World Bank (methodology adapted from Djankov et al. 2003b). EU-14 (minus LU); EU values are non-weighted averages.

The second group encompasses Austria, Denmark, Ireland, Luxembourg, and Sweden and shows a relative ease of starting a new business with few perceived administrative obstacles. The third group, made out of The Netherlands and the United Kingdom, exhibits an equal perceived ease of starting a business but more perceived administrative obstacles.[48] As "average" performers, Belgium, Germany, and Spain show indicators that are close to the EU-15 average with Germany slightly better and the other two doing more poorly. Finally, the fifth group exposes a strong unease to start up a new company and very high administrative burden related to this issue. It consists of France, Greece, Italy, and Portugal.

5.2.3 Business-friendly environment.

Besides indicators on the ease to set up a new business, the index of regulations on business includes an indicator on the time spent with bureaucracy, one on price control and another one on irregular payments to officials. On average, and contrary to common believe, the time spent with bureaucracy in the European Union appears to just slightly higher than in the United States. Although the Fraser indicators come out to be very close for all Member States, the analysis reveals that Spanish, Belgian, Italian, Luxemburg, and Swedish companies are those for which senior management spend the least time dealing with government bureaucracy.

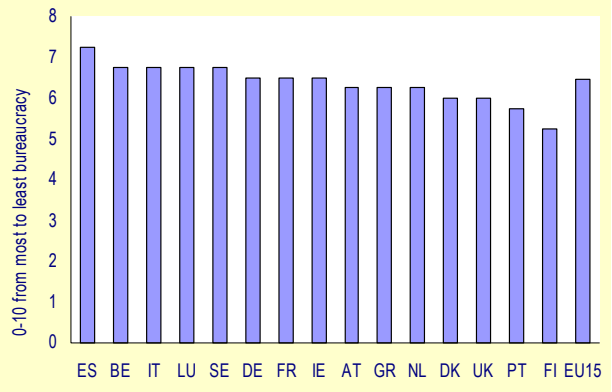
As in the case for several other indicators, the results should be taken with caution as they are based on businesses' perception[49] - which can vary with business culture - but it gives an interesting indication that bureaucracy might not be the key explanatory variable of the gap between the United States and Europe.[50] The results seem to be somewhat confirmed by the World Bank indicator on enforcing contracts which looks at the procedures necessary to recover a debt and shows a similar number of procedures in Europe and the USA combined with a longer duration in the USA. The cost and, to some extent, the complexity of the procedure seem however lower in the United States.

Price control is usually used to protect citizens from large price increases on basic product that are deemed necessary. However, price control can sometime by interpreted by producers as "lines in the sand" and they could tacitly agree to sell at the maximum price although they would be able to supply at a lower price.[51] As one believes that price controls have a distortionary impact on economies, the higher degree in Europe comes as bad news.

Irregular payments to official (as well as the size of the underground economy) are equally bad for productivity because they bias competition. Productive firms may be driven out by less productive ones simply because they do not compete on the same level of the playing field. The Fraser indicator does not indicate a significant difference between the EU average and the US level for irregular payments to officials.

A business-friendly environment also encompasses a level playing field for competitors and sound and certain rules of law. Competition policy plays an important role in this respect. Although the EU and US competition laws have many common features, some commentators have remarked on apparent differences in the underlying philosophies, which allegedly have a significant influence on the outcomes of competition cases. For example, the US authorities are said to be more concerned with the efficiency effects of business practices or mergers, whereas the EU's approach places greater emphasis on market structures and the impact on competitors.

Graph 5: **Time spent with bureaucracy 2002**



Source: Fraser Institute.

However, recent reforms in the EU, particularly with regard to agreements between companies, are likely to reduce some of the differences. For example, it is probably true that, in the past, the European Commission devoted too much effort to policing relatively innocuous agreements and not enough to detecting and breaking up hardcore cartels. A series of radical legislative changes enacted since 1999 are

[48] Graphically, groups 2 and 3 seem to be good candidates for a regrouping under a label "medium-high" performers. However, formally, the cluster analysis would favour first a regrouping of groups 4 and 5 with a slightly lower share of the explained original variance.

[49] In addition, time spent with bureaucracy could conceptually be beneficial if this allows public authorities to make better decisions and actions, for example because of better information.

[50] To be fair, the indicators on regulation of entry and administrative burden are purely describing the domestic situation. They do not measure the difficulties of creating a business in another EU Member State, nor to deal with an EU foreign administration.

[51] See European Commission (2001a).

Table 9: Regulation on business and sub-indicators

2002	Regulation on business	Price control	Time spent with bureaucracy	Irregular payments to government officials
US	6.7	7.0	6.8	8.0
Av. EU-15	6.0	6.3	6.5	8.0
Best EU-15	7.5 (FI)	9.0 (FI)	7.3 (ES)	9.5 (DK)
Worst EU-15	4.9 (EL; IT)	5.0 (BE; IT)	5.3 (FI)	5.9 (EL)

Source: Fraser institute. Range: 0 to 10 from most heavy regulation to lowest regulation.
EU-15 is the GDP-weighted value.

Table 10: Enforcing contracts

Enforcing contracts January 2003	Number of procedures	Duration (days)	Cost (% GNI per capita)	Procedural complexity index
US	17	365	0.4	46
Av. EU-14	19	225	5.9	55
Best EU-14	12 (UK)	39 (NL)	0.5 (NL; UK)	36 (UK)
Worst EU-14	27 (BE)	645 (IT)	15.8 (FI)	83 (ES)

Note: The Procedural Complexity Index varies from 0 to 100, with higher values indicating more procedural complexity in enforcing a contract. This index measures substantive and procedural statutory intervention in civil cases in the courts.

Source: World Bank (methodology adapted from Djankov et al. 2003a). EU-14 (excluding LU).

Table 11: Size of government

2002	Size of Government	Government consumption	Transfer and subsidies	Government enterprises and investment	Top marginal income tax rate
US	7.4	5.5	6.7	10.0	7.5
Av. EU-15	4.6	4.1	4.2	6.8	3.5
Best EU-15	6.8 (UK)	6.2 (EL)	6.3 (UK)	10.0 (AT; BE; DK; IE; NL; UK)	6.0 (UK)
Worst EU-15	2.8 (FR)	1.0 (SE)	2.3 (DE)	4.0 (ES; FR)	0.5 (DK)

Source: Fraser institute. Range: 0 to 10 from highest to lowest involvement.

EU-15 is the GDP-weighted value

designed to enable the Commission to redirect resources to the most serious problems and to introduce a more economics-based approach to competition policy. It remains to be seen what impact these changes will have.

As far as state aid is concerned, the EU exercises a control over the Member States that has no equivalent in the USA. One result of this is that there is much more transparency about aid expenditure in the EU. Another outcome is that competition between Member States and regions to attract investment is strictly disciplined in the EU, whereas states and local authorities are engaged in an escalating subsidy war in the USA, the overall effect of which is probably welfare-reducing. On the other hand, national authorities in the EU seem to be much more willing than authorities in the USA to give financial support to ailing firms or sectors, while US authorities are more likely to take a forward-looking approach, targeting firms with good growth prospects.

Finally, corporate tax levels in the USA do not seem to be lower than in the EU. One main difference between the EU and the United States may be the additional cost for European companies having cross-border activities of dealing with 25 different accounting and tax systems. Recent surveys show that companies face important problem and compliance costs related to transfer pricing issues and refund of VAT across Member States.

5.2.4 State' involvement in the economy

The last category of product market reforms concerns those reforms aiming at reducing the State' involvement in the economy. All indicators, be they the government consumption, the level of transfer and subsidies, the level of taxes, or the size of State participations in enterprises point to a smaller government intervention in the USA than in Europe (see Table 11). It is nevertheless difficult to univocally depict all governmental intervention with economic distortions. The indicators do not pick up efficiency issues, social preferences, differences in the organisation of the welfare state, or the extent to which government intervention tries to fix market failures.

5.2.5 Liberalisation of network industries

Finally, comparing the liberalisation process of network industries in the EU and the USA brings interesting insights. This analysis is not based on a summary indicator but on an analysis of the changes in the regulatory framework observed in the EU and the USA. Network industries make up for an important share of the economy with around 5 per cent of total employment in both the EU and the USA. In addition, they provide services that are economically and socially important to households and business users. In Europe, large productivity gains have accompanied the liberalisation of network industries (European Commission 2004a). By comparing the degree of liberalisation of network industries in the EU and the USA (see annex), it appears that network industries in the EU are liberalised to a degree similar- if not superior - to that in the USA, in particular in the energy and postal services.

6. Policy implications

The previous section showed that the backwardness of Europe in product market reforms seems to be concentrated in measures that promote entry and exit of firms and in a lower degree of trade integration. The European Union is opened to international competition and its network industries are liberalised to a degree that equals if not exceeds the United States. If European companies do not perceive regulations as more time-consuming than US companies do, their cost seems to be higher. Finally, State's involvement in the economy is higher in Europe but the consequences of this are debatable. Obviously, a lack of flexibility in labour markets and to some extent more regulations on credit – two issues not reviewed here – may also explain a sizeable share of the US-EU gap in productivity.[52]

Europe's poor performance in promoting business dynamism may actually well explain its lower productivity as the theoretical and empirical findings have shown entry and exit of firms as an important if not necessary condition for product market reforms to deliver their full effects via the three channels. The relatively poor performance of the EU in terms of trade integration could seem at first more surprising given the efforts made to create an Internal Market.

However, despite its many successes, the Internal Market is not functioning as it should and some key indicators of Internal Market integration (such as growth in trade amongst the euro area Member States and price convergence) show that progress has stalled. Similarly, recent Internal Market scoreboards have highlighted an increase in the transposition deficit of Internal Market directives and substantial delays in the transposition of these directives into national legislation.

In the context of the mid-term review of the Lisbon strategy, our analysis can contribute to the choice of priorities for reforms in the area of product markets. We conclude that reforms to ease entry and exit are important. These should go beyond measures to reduce time and cost to start up a company and should include reforms making Europe an attractive place to do business. Similarly, making sure that the internal market is working at full capacity should be a clear objective for the Union.

[52] We do not review here other explanations such as management practices, IT spending, innovation, education, etc. See Lewis (2004), Lewis et al. (2002), Dorgan and Dowdy (2002) and McKinsey (2001) for some of these issues. For example, there are indications that relative "management scores" match relative total factor productivity levels.

References

ACS, Z.J. AND B.D. AUDRETSCH (1987), "Innovation, market structure and firm size", *Review of Economics and statistics*, 69, pp. 567-575.

AGHION, P. AND P. HOWITT (1992), "A model of growth through creative destruction", *Econometrica*, 60, pp. 323-351.

AGHION, P., HARRIS, C. AND J. VICKERS (1997), "Competition and growth with step-by-step innovation: an example", *European Economic Review, Papers and Proceedings*, pp. 771-782.

AGHION, P. AND P. HOWITT (1998), "*Endogenous Growth Theory"*, MIT Press, Cambridge and London.

AGHION, P., HARRIS, C., HOWITT, P.AND J. VICKERS (2001), "Competition, imitation and growth with step-by-step innovation", *Review of Economic Studies*, Vol. 68, pp. 467-492.

AGHION, P., BLOOM, N., BLUNDELL, R., GRIFFITH R., AND P. HOWITT (2002), "Competition and innovation: an inverted U relationship", *NBER Working paper*, No 9269, October 2002.

AGHION, P, BLUNDELL, R., GRIFFITH, R, HOWITT, P, AND S. PRANTL (2003A), "Firm entry and growth: theory and micro evidence", *Mimeo*.

AGHION, P., BURGESS, R., REDDING, S, AND F. BILIZOTTI (2003B), "The Unequal Effects of Liberalization: Theory and Evidence from India", mimeo, http://econ.lse.ac.uk/staff/rburgess/wp/abrz031002.pdf.

AGHION, P. AND E. COHEN (2004), "Education et croissance", Rapport pour le Conseil d'Analyse Economique, Paris.

AHN, S. (2001), "Firm dynamics and productivity growth: a review of micro evidence from OECD countries", *OECD Economics Department Working Papers*, No 297.

AHN, S. (2002), "Competition, innovation and productivity growth: a review of theory and evidence", *OECD Economics Department Working Papers* , No 317.

BAILY, M.N., HULTEN, C. AND D. CAMPBELL (1992), "Productivity dynamics in manufacturing plants", *Brookings Papers on Economic Activity: Microeconomics*, pp. 187-267.

BAIN, J.S. (1951), "Relation of profit rate to industry concentration: American manufacturing 1936-1940", *Quarterly Journal of Economics*, 65, pp. 293-324.

BAIN, J.S. (1956), *"Barriers to new competition",* Harvard University press, Cambridge MA.

BARNES, M., J. HASKELL, AND M. MALIRANTA (2001), "The sources of productivity growth: micro-level evidence for the OECD", Paper presented at the *OECD workshop on firm-level statistics*, OECD, November 2001, Paris.

BASU, S., FERNALD, J. G., OULTON, N., AND S. SRINIVASAN (2003), "The case of missing productivity growth: or, does information technology explain why productivity accelerated in the United States but not in the United Kingdom?", *NBER Working paper*, No 10010, Cambridge, MA.

BAYOUMI, T., D. LAXTON AND P. PESENTI (2004), "Benefits and spillovers of greater competition in Europe: a macroeconomic assessment", *European Central Bank Working Paper Series*, No 341.

BILS, M. (1987), "The cyclical behaviour of marginal cost and price", *American Economic Review*, Vol. 77, pp. 838-885.

BLANCHARD, OLIVIER AND GIAVAZZI (2001), "Macroeconomic Effects of Regulation and Deregulation in Goods and Labor Markets", *MIT Department of Economics Research Paper Series*, No 01-02, January 2002.

BLUNDELL, R.W., R. GRIFFITH AND J. VAN REENEN (1999), "Market share, market value and innovation in a panel of British manufacturing firms", *Review of Economic Studies*, No 66, pp. 529-554.

BRANDT, N. (2004), "Business dynamics, regulation and performance", OECD *STI Working papers*, No 2004/3.

CAVES, R.E. AND D.R. BARTON (1990), "Efficiency in US manufacturing industries", MIT Press, Cambridge, MA.

CAVES, R.E. ET AL. (1992), *Industrial efficiency in six nations*, Cambridge, MIT Press.

CLARK, S. (2002), "Corporate tax incentives for foreign direct investment", *paper presented at the OECD global forum on international investment*, Shanghai, 5-6 December 2002.

CULLEN, J.B AND R.H. GORDON (2002), "Taxes and entrepreneurial activity: theory and evidence for the US", *NBER Working paper*, No 9015.

DASGUPTA, P.. AND J. STIGLITZ (1980), "Industrial structure and the nature of innovative activity", *Economic Journal*, 90, pp. 266-293.

DEMSETZ, H. (1974), "Two systems of belief about monopoly", in H.J. Goldschmid, H.M. Mann and J.F. Weston (Eds), *Industrial concentration: the new learning*, Little, Brown, MA.

DIERX, A., ILZKOVITZ, F. AND S. KHALID (2004), "European integration and the functioning of product markets: selected issues" in *European integration and the functioning of product markets*, Edward Elgar (forthcoming).

DIERX, A., K. PICHELMANN AND W. RÖGER (2004), "Product market reforms and macroeconomic performance in the European Union", in *European integration and the functioning of product markets*, Dierx, Ilzkovitz and Sekkat eds., Edward Elgar (forthcoming)

DISNEY, R.F., J.HASKEL, AND Y. HEDEN (2000), "Restructuring and Productivity Growth In UK Manufacturing", *CEPR Discussion Papers* No 2463.

DJANKOV, S., LA PORTA, R., LOPEZ-DE-SILANES, F. AND A. SHLEIFER (2002),"The Regulation of Entry", *Quarterly Journal of Economic*s, Vol. 117, pp. 1-37.

DJANKOV, S. LA PORTA, R.; LOPEZ-DE-SILANES, F. AND A. SHLEIFER (2003a), "Courts", *Quarterly Journal of Economics*, May 2003.

DJANKOV, S., HART, O., NENOVA, T., AND A. SHLEIFER (2003B),"Efficiency in Bankruptcy", *Harvard University, Department of Economics, Working paper*.

DORGAN, S. AND J. DOWDY (2002),"How good management raises productivity", *The Mc Kinsey Quarterly*, 2002, No 4.

EUROPEAN COMMISSION (1996),"Economic evaluation of the Internal Market", *European Economy, reports and studies*, No 4.

EUROPEAN COMMISSION (2001a), "Price levels and price dispersion in the EU", *European Economy*, Supplement A, No 7, July 2001.

EUROPEAN COMMISSION (2001b), "Company taxation in the internal market", COM(2001)582final.

EUROPEAN COMMISSION (2002a), "Corporation tax and innovation", *Innovation papers*, No 19.

EUROPEAN COMMISSION (2002b), The Internal Market – ten years without frontiers.

EUROPEAN COMMISSION (2004a), Horizontal evaluation of the performance of network industries providing services of general economic interest: 2004 report*, Commission Staff Working Paper, SEC(2004)866,* June 2004.

EUROPEAN COMMISSION (2004b), European Tax Survey, SEC(2004)1128, September 2004.

FRASER INSTITUTE (2004), "Economic Freedom of the World", 2004 Annual Report.

GENTRY, W.M. AND R.G. HUBBARD (2004), "Success taxes, entrepreneurial entry, and innovation", *NBER Working paper*, No 10551, June 2004.

GEROSKI, P., P. GREGG AND J. VAN REENEN (1996), "Market imperfections and employment", *OECD Economic Studies*, No 26, I, pp. 117-156.

GRIFFITH, R., S. REDDING AND J. VAN REENEN (2000), "Mapping the two faces of R&D: productivity growth in a panel of OECD studies", *IFS working paper*, No 02/00.

GRIFFITH, R. (2001), "Product market competition, efficiency and agency costs: an empirical analysis", *Institute for Fiscal Studies*, *Working Paper* 01/12, June.

GRIFFITH, R. AND R. HARRISON (2004), "The link between product market reform and macro-economic performance", *Economic Paper*, No 209, European Commission.

GRIFFITH, R. AND H. SIMPSON (2003), "Characteristics of Foreign-Owned Firms in British Manufacturing", *NBER Working paper*, No 9573, Cambridge, MA.

GRILICHES, Z. AND H. REGEV (1995), *Journal of Econometrics*, vol 65, No 1, pp.175-203.

GREEN, A. AND D.G. MAYES (1991), "Technical efficiency in manufacturing industries", *Economic Journal*, 101, pp. 523-538.

HARBERGER, A.C. (1954), "Monopoly and resource allocation", *American Economic Review*, Vol. 44, No 2, pp. 77-87.

HART, O. (1983), "The market as an incentive mechanism", *Bell Journal of Economics*, 14, pp. 336-382.

HART, O. (1999), "Different approaches to bankruptcy", *Paper presented at the Annual World Bank conference on development economics, Paris.*

INTERNATIONAL MONETARY FUND (2003), "Unemployment and labour market institutions: why reforms pay off", *IMF World Economic Outlook*, Chapter 4.

JACQUEMIN, A. AND A. SAPIR (1991), "Competition and imports in the European market", in L.A. Winters and A.J. Venables (Eds), European integration: trade and industry, Cambridge University Press, Cambridge.

KEUSCHNIGG, C. AND S.B. NIELSEN (2000), "Tax policy, venture capital and entrepreneurship", *CEPR Discussion Papers* No 2626.

KONINGS, J., P. VAN CAYSEELE AND F. WARZYNSKI (2001), "The dynamics of industrial markups in two small open economies: does national competition policy matter?", *International Journal of Industrial Organization*, 19, pp. 841-859.

LEIBENSTEIN, H. (1966), "Allocative efficiency versus X-efficiency", *American Economic Review, 56*, pp. 392-415.

LEWIS, W. ET AL. (2002), "What is right with the US economy", *The Mc Kinsey Quarterly*, 2002, No 1.

LEWIS, W. (2004), "The power of productivity", *The Mc Kinsey Quarterly*, 2004, No 2.

MACHIN, S. AND J. VAN REENEN (1993), "Profit Margins and the Business Cycle: Evidence from UK Manufacturing Firms", *Journal of Industrial Economics*, Vol. 41, No 1, March 1993.

MC KINSEY GLOBAL INSTITUTE (2001), *US productivity growth: understanding the contribution of information technology relative to other factors*, Washington DC, October 2001.

MELITZ, M. (2003), "The impact of trade on intra-industry reallocations and aggregate industry productivity", Harvard, *Mimeo*, forthcoming in *Econometrica*.

MEYER, M.A. AND J. VICKERS (1997), "Performance comparisons and dynamic incentives", *Journal of Political Economy*, 105(3), pp. 547-581.

NICOLETTI, G. AND S. SCARPETTA (2003), "Regulation, productivity and growth: OECD evidence", *Economic Policy*, Vol. 18, No 1, April 2003, pp. 9-72(64).

NICKELL, S.J., S. WADHWANI AND M. WALL (1992), "Productivity growth in UK companies, 1975-86", *European Economic Review*, 36, pp. 1055-1091.

NICKELL, S.J. (1996), "Competition and corporate performance", *Journal of Political Economy*, Vol. 104, No 4, pp.724-746.

NICKELL, S.J., D. NICOLITSAS AND N. DRYDEN (1997), "What makes firms perform well", *European Economic Review*, 41, pp. 783-796.

OLIVEIRA M.J., S. SCARPETTA AND D. PILAT (1996) "Mark-up ratios in manufacturing industries - Estimates for 14 OECD countries", *OECD Economics Department Working Papers,* No 162, Paris.

ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (2001), Measuring productivity, OECD Manual, Paris.

ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (2002), "Productivity and innovation: the impact of product and labour market policies", *OECD Economic Outlook* No 71, Chapter 7.

ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (2004a), *Understanding economic growth*.

ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (2004b), *OECD Economic Surveys: United States*, Paris.

PILAT, D. (1996), "Competition, Productivity and Efficiency", *OECD Economic Studies*, No 27, Paris.

RAO, S.; AHMAD, A.; HORSMAN, W. AND P. KAPSTEIN-RUSSELL (2001), "The importance of innovation for productivity", *International Productivity Monitor*, No 2, Spring 2001.

RAO, S.; T. JIANMIN, AND W. WANG (2002), "The importance of skills for innovation and productivity", *International Productivity Monitor*, No 4, Spring 2002.

ROMER, P.M. (1990). "Endogenous technological change", *Journal of Political Economy*, Vol. 98, pp. 71-102.

SAUNER-LEROY, J.-B. (2003), "The impact of the implementation of the Single Market Programme on productive efficiency and on mark-ups in the European Union manufacturing industry", European Commission Directorate-General for Economic and Financial Affairs, *Economic Papers*, No 192.

SCHERER, F. AND ROSS, D. (1990), Industrial Market Structure and Economic Performance, 3rd ed., Houghton Mifflin, Boston.

SHARPE, A. (1995), "Productivity concepts, trends and prospects: an overview", *Review of economic performance and social progress*, Vol.2.

SCHMALENSEE, R. (1989), "Studies of structure and performance", in R. Schmalensee and R. Willig (Eds), *Handbooks of industrial organization*, Vol. 2, Elsevier Science Publishers, Amsterdam, North-Holland.

SUTTON, J. (2002), "Market structure: the bounds approach", *mimeo,* http://personal.lse.ac.uk/sutton/market_structure_bounds_sutton.pdf.

US BUREAU OF TRANSPORTATION STATISTICS (2004), *Commodity Flow Survey,* http://www.bts.gov/ntda/cfs/prod.html.

US DEPARTMENT OF COMMERCE AND US CENSUS BUREAU (2004), Exports from manufacturing establishments: 2001, July 2004.

US ENERGY INFORMATION ADMINISTRATION (2004), http://www.eia.doe.org.

VICKERS, J. (1995), "Concepts of Competition", *Oxford Economic Papers*, pp. 47.

WANG, J.-C. AND K.-H. TSAI (2003), "Productivity growth and R&D expenditure in Taiwan's manufacturing firms", *NBER Working paper*, No 9724, Cambridge, MA.

WINSTON, C. (1993), "Economic deregulation: days of reckoning for microeconomists", *Journal of Economic Literature*, Vol. 31, September, pp. 1263-1289.

WORLD BANK (2004), Doing Business Indicators, http://rru.worldbank.org/doingbusiness/ .

ANNEX: A COMPARISON OF THE DEGREE OF LIBERALISATION OF NETWORK INDUSTRIES IN THE EU AND THE USA

The liberalisation of telecommunications industry in the US really started with the break-up of AT&T in 1984. The 1996 telecommunications act removed all barriers to competition across the various telecommunications segments and set up the Federal Communications Commission (FCC) as regulator with the powers to deregulate further if regulation is deemed unnecessary for competition and consumer protection. At the end of 2003, 75 per cent of the United States' zip codes, covering 96 per cent of the US population, had the choice of supplier. In contrast, Europe liberalised its telecommunications industry in 1998 and, in 2000, an EU regulation ordered the unbundling of the local loop. Alternative providers are available in all old Member States, although in the great majority of EU countries there are no more than three to four large competing players for public voice telephony. In addition, the development of local loop unbundling is still rather unbalanced across countries

Since July 1st 2004, freedom of choice of energy supplier is available to all professional users in the European Union with all consumers to follow in 2007. Currently, seven Member States have already fully liberalised their electricity and six have done so in gas. In the USA,[53] the 1978 Public Utility Regulatory Policies Act opened the way to deregulation of electricity and opened wholesale trade to competition. As of February 2003, twenty-three US States and the District of Columbia have passed legislation to open up their retail electricity market to competition.

In gas, as of January 2004, five States and the district of Columbia allow all residential costumers to choose their supplier. Eight other States have begun state-wide unbundling programmes and another eight have partial or pilot programmes.Therefore, less than half of the US states have opened up household consumption to competition in energy sectors, even if the most populated States are usually liberalised.

In Air transport, the 1978 Airline Deregulation Act liberalised the sector in the US. The air transport sector in the European Union was liberalised in three successive stages. In 1987, a first package of measures started to relax the established rules. For example, it limited the right of governments to object to the introduction of new fares. In June 1990 a second "package" of measures allowed greater flexibility over the setting of fares and capacity-sharing, extended the right of an airline of one country to carry traffic to and from third countries en route and opened up the the right to carry traffic to and from the home state to all Community carriers. These measures, which were initially limited to passengers, were extended to freight in 1990. The third package adopted in 1992 gradually introduced freedom to provide services within the European Union and led in April 1997 to the freedom to provide cabotage.[54] Since April 1997, unconditional access to all domestic markets has been granted to all airlines in the European Union.

The 1970 Postal Reorganization Act created the United States Postal Service. The current law is unclear but in practice USPS has a monopoly on all mail that is not priority mail, expedited mail, mailgrams, international mail or parcel post. In contrast, the European Union has opened in 2003 the postal markets for mail weighing more than 100 grams or costing more than three times the price of a standard letter and all cross-border mail. Beginning in 2006, the market will be further liberalized to allow for competition for all mail weighing more than 50 grams or costing more than two and a half times the cost of a standard letter. After that, the European Parliament will initiate a review of the feasibility of opening the entire postal market to competition by 2009.

[53] US Energy Information Agency.

[54] I.e. the right for an airline of one Member State to operate a route within another Member State.