

VI. PRODUCT MARKET COMPETITION AND ECONOMIC PERFORMANCE

Introduction

Product market reforms can yield significant economy-wide benefits

All OECD countries rely fundamentally on competition in product markets to organise production. Indeed, the advantage of competitive markets over command-and-control systems is generally recognised. Even so, it is often difficult to provide empirical evidence of the effect of incremental changes in the intensity of competition for aggregate economic performance. This is partly because product market competition is only one among many factors influencing key aggregate performance indicators, such as productivity and employment. OECD work,¹ however, has identified an empirical connection between strong competition in markets for goods and services and better productivity and employment outcomes.

Competitive pressures are important in explaining economic performance

This chapter examines the main channels through which competition affects aggregate economic performance. Bearing in mind the methodological difficulties, it also provides some rough indications of the possible gains in performance that could arise from reforms to intensify product market competition. The empirical evidence suggests that differences in competitive pressures have played an important role in explaining the variation in economic performance across OECD countries. It also indicates that product-market reforms that enhance competition will have positive effects on employment performance.

Competitive pressure is important for productivity and innovation

Competition leads to both one-time and ongoing gains in productivity

Increased competition can lead to both one-time and ongoing gains in multi-factor productivity (MFP), *i.e.* the combined productivity of labour and capital. One-off efficiency improvements (described as “static gains”) arise both from better resource allocation and from less slack in the use of inputs in response to greater pressures to perform.² Ongoing (or “dynamic”) gains relate to enhanced efforts to innovate and faster diffusion of innovations.³ While there is general consensus that stronger competition

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1. See OECD (1997), Chapter IV in OECD (2000) and the sector-specific papers contained in OECD (2001).
 2. Less slack in the use of input is often referred to as reduced “X-inefficiency”.
 3. The distinction between static and dynamic gains is employed mainly to facilitate the presentation. Factors that logically imply a shift in the level of output are by definition static, but where transition processes are

leads to static efficiency gains, there has been some controversy about the link between competition and dynamic gains. The main issues involved are briefly examined below before some overall numerical results are provided.

Encouraging efficient allocation and use of resources – the static gains

Static gains arise through more efficient allocation and less slack

Firms operating under imperfect competition may seek to depress output in certain activities to create scarcity rents, thereby forcing resources to move to other activities where they are not employed as productively. However, even if imperfect competition is widespread, the welfare costs associated with such static resource misallocation are not by themselves likely to be very large (Harberger, 1954; Scherer and Ross, 1990).⁴ A different channel for imperfect competition to impair performance is through weaker incentives for production efficiency. Indeed, productivity has often been observed to improve markedly following regulatory reforms in previously sheltered industries,⁵ indicating that the imperfect competition found in regulated sectors tends to be accompanied by excess use of labour or other forms of slack.

Inefficiencies may be related to weak governance structures...

These inefficiencies appear to be related to weak governance structures, since there is no other apparent reason why owners of monopoly firms should be more prone to accept lower efforts from managers or staff than owners of fully competitive firms (Nickell, 1996). Indeed, it may be difficult for owners of monopolistic companies to enforce “maximum efforts” even if they intend to, since in markets with little competition there is a lack of other firms to serve as a standard of reference and the threat of corporate failure may be limited.

...and are amplified by imperfectly competitive labour markets

The distortionary effects of monopoly will be amplified when product market rents are shared with workers in the form of supra-normal wages. The empirical finding that wages differ across industries even after taking individuals’ and employers’ characteristics into account suggests that such rent sharing is widespread, especially as the wage premia are correlated with measures of competition intensity. Such spillovers of product market distortions to labour markets will lead to inefficiently low labour use in the rent-generating industries and, more generally, will adversely affect the functioning of the labour market (see below).

Driving forth dynamic efficiency gains

protracted growth rates may be affected over longer periods. Hence, the distinction is not independent of the time horizon of the analysis.

4. This result rests on the assumption that production efficiency levels and input markets are unaffected by monopoly. However, Browning (1997) finds that the welfare loss from imperfect competition that is attributable to labour supply distortions is around ten times higher than the welfare losses arising from the standard resource misallocation costs estimated by Harberger (1954).
- 5 See e.g. OECD (1997) and Gönenç *et al.* (2001).

Dynamic gains arise from increased innovative activity

While efficient use and allocation of resources at any moment in time is obviously important, in the medium and long run, it is dynamic efficiency that matters most for growth in living standards. Indeed, increased input of capital and labour (hours worked) has contributed far less to *per capita* GDP growth in industrialised countries than has the residual “technological change” through improved production practices and equipment (OECD, *forthcoming*).

Innovation and diffusion of new technologies are engines of growth...

The role of innovation and diffusion of new technology as engines of growth is empirically well established from firm and industry-level studies (*e.g.* see Ahn, 2002; Nadiri, 1993), while cross-country evidence of the aggregate magnitudes has been more limited. However, recent empirical work at the OECD has found that innovation activity, proxied by aggregate R&D intensities, has a clear positive effect on output.⁶ Thus, the estimation results by Bassanini and Scarpetta (2001) suggest that, at a minimum, a 0.1 percentage point increase in the share of business-sector R&D spending in GDP boosts the level of GDP *per capita* by 1¼ per cent in the long term. Considering that the variation in the business sector’s R&D intensity across countries is significant (the standard deviation is 0.6) this is a sizeable effect.⁷

These results, however, need to be interpreted cautiously. While R&D spending has the advantage of being quantifiable, it is an imperfect indicator of innovation if only because it measures inputs to rather than outputs from the innovative process. In addition, there are important aspects of the innovative process that are not captured by R&D spending. For example, organisational change may also be very important. There are also important complementary effects between innovation and human capital development, which escape a crude indicator like R&D spending. Thus, while R&D expenditure is often employed in empirical studies, the results should be thought of in this broader context, acknowledging interdependencies with other omitted factors.

...and increased competitive pressures enhance innovative efforts

The relationship between competition and innovation has been intensively debated with opposing claims as to whether monopoly or fierce competition in atomistic market structures is most conducive to the creation of new products and processes.⁸ Using the extent of anti-competitive product market regulation (PMR) as a proxy for the strength of product market competition, the cross-country pattern of R&D intensity and the extent of product market competition suggests an inverse relationship

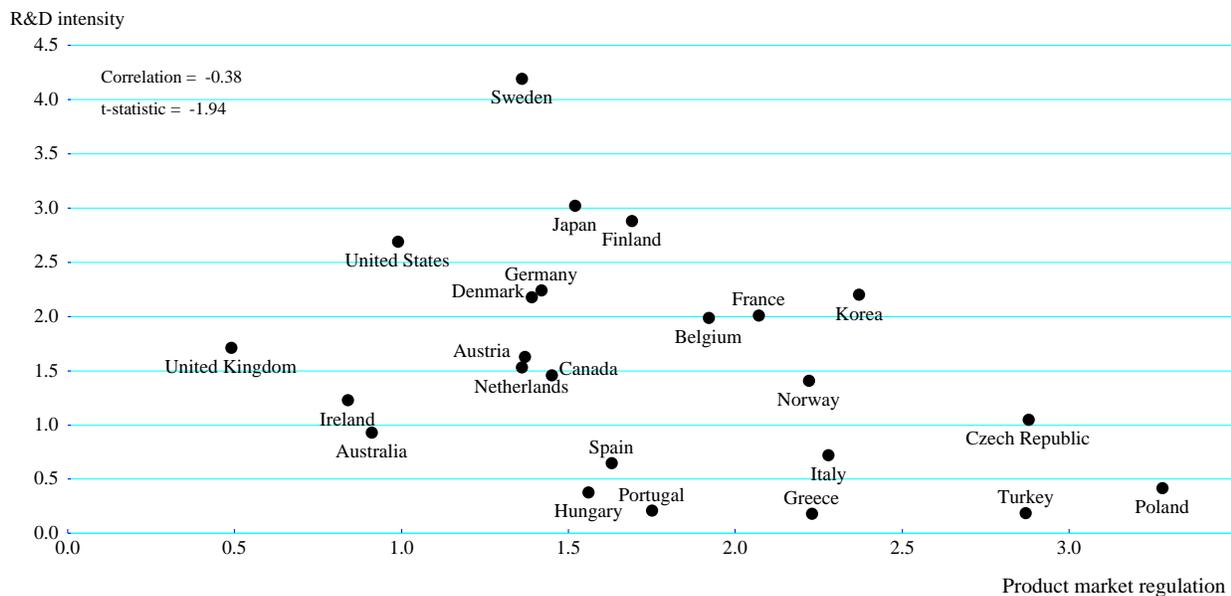
6 This does not preclude the possibility that high levels of GDP per capita induce high R&D spending.

7. The results reported in Bassanini and Scarpetta can be given a different interpretation, namely that a 0.1 percentage point increase in the share of business-sector R&D spending in GDP leads to an increase in per capita output growth of 0.3 to 0.4 percentage points. Such a sustained growth effect appears unrealistically high. The high-low difference in average MFP growth across countries over the past two decades has been around 1¼ percentage points. At face value, an effect of this size would imply that such growth differences could be fully accounted for by much smaller differences in the R&D intensity than its actual standard deviation of 0.6 per cent of GDP.

8. See Ahn (2002) for an overview.

(Figure VI.1).⁹ This is consistent with findings in recent OECD work that accounts for other determinants of R&D intensity, notably the degree of intellectual property rights protection (Nicoletti *et al.*, 2001; Bassanini and Ernst, 2002). This work also suggests that non-tariff trade barriers have a negative impact on R&D. Other recent research, however, has found a hump-shaped relationship, *i.e.* indicating that neither monopoly nor highly competitive atomistic market structures are the most advantageous to innovation (Aghion *et al.*, 2002). This evidence suggests that, beyond a certain point, market power tends to reduce the incentive to adopt and develop new technology and better production methods, but that some minimum scale may be needed for having the resources to engage in R&D.

Figure VI.1. R&D intensity and product market regulation¹
1998



1. The OECD summary index of product market regulation is from Nicoletti *et al.* (1999). R&D intensity is defined as business enterprise expenditure on R&D as a percentage of value added in industry.
Source: OECD.

The overall effect of increased product market competition

Pro-competitive regulatory frameworks increase productivity ...

Recent OECD analysis shows that a more pro-competitive regulatory framework has a significant positive effect on the level of MFP in the long term (Scarpetta and Tressel, 2002). It indicates that, within individual industries, product market regulation may determine the extent to which productivity growth closes the technology gap, *i.e.* the distance to

9. Stronger product market regulations imply weaker product market competition. Detailed information on the construction of the PMR indicator is provided in Nicoletti *et al.* (1999). Here it suffices to say that it pertains to regulatory frameworks in 1998 and that it is based on a weighted aggregation of a large number of sub-indicators pertaining to specific regulatory features.

the international technological frontier. According to the estimates, an alignment of the regulatory stance in OECD countries to that of the countries with the most pro-competitive stance could reduce the technological gap by as much as a half in Greece and a quarter in Norway and Portugal, all of which have relatively heavy regulation.¹⁰ The reductions in the gap would, however, be comparatively small in Canada, the Netherlands, Denmark and Sweden, partly due to their somewhat more competitive stance initially.

The corresponding increases in the levels of MFP would depend on the absolute level of the technological gap. In most countries, including Japan and the large continental European countries, the increases in the level of MFP could range from 2 to 6 per cent. In Greece and Portugal, MFP could increase by 10 per cent or more, reflecting comparatively strict regulations in product markets and relatively large distances from the technological frontier. To put these results into context, the estimated potential gains in MFP would correspond to several years of growth at the average rate of MFP growth over the 1981-2000 period (Table VI.1).

Table VI.1. Trends in multi-factor productivity growth, 1981-2000

	1981-1990	1991-2000	1981-2000
Average MFP growth	1.4	1.4	1.4
Low ^a	0.3	0.5	0.6
High ^b	1.8	1.9	1.7

Note: Due to limited data availability, it has not been possible to calculate figures for eight OECD countries:

Czech Republic, Hungary, Luxembourg, Mexico, Poland, Portugal, Slovakia and Turkey.

a) Average of the five countries with the lowest MFP growth between 1981 and 2000.

b) Average of the five countries with the highest MFP growth between 1981 and 2000. Excluding Korea and Ireland.

Source: OECD.

... and mark-ups can impact on MFP growth rates

Using estimates of price-cost mark-ups as a proxy for the intensity of competition, other studies find a positive and significant long-term effect of product market competition on MFP growth. For example, Nickell (1996) finds a negative relationship between the size of price-cost margins and productivity growth. On a panel of British manufacturing companies he found that an increase of 10 percentage points in the mark-up was associated with a loss in MFP growth by between 1.3 and 1.6 percentage points.¹¹ These results suggests that product market

10. Table 8 in Scarpetta and Tressel (2002) shows how a one standard deviation change in PMR would affect the technological gap. The magnitudes referred to in the text are obtained by multiplying this effect with the difference in PMR regulations *vis-à-vis* the least restrictive countries expressed as a multiple of the standard deviation.
11. It is uncertain whether these results are transmittable to non-manufacturing industries (and hence the economy at large). On the one hand, services are less traded internationally and less exposed to competition from abroad. This may facilitate higher average mark-ups in service industries and perhaps

competition may have significant effects on growth, especially when compared with the observed cross-country differences in overall MFP growth over the past two decades.

Product market reforms have positive spillover effects on labour market outcomes

Stronger product market competition will increase real wages...

Reforms to enhance product markets will boost real wages via lower prices arising from increased competition. However, the impact on aggregate real wages could be attenuated somewhat if wage *premia* are widespread prior to the reforms since stronger competition will lower product market rents and thereby reduce the scope for rent-sharing. The effect of increased product market competition on employment levels is not as straightforward and, depending on the characteristics of the labour market, can yield modest or larger gains in employment. In the textbook case of fully flexible labour markets, employment will only rise to the extent that the rise in real wages stimulates labour supply. In practice, labour markets in the OECD are characterised by rigidities to various extents,¹² and under these circumstances an increase in product market competition can have a significant impact on employment, especially if it induces changes in the functioning of the labour market.

... and improve the functioning of the labour market...

Indeed, there are reasons to believe that labour market institutions can interact with increased product market competition so as to diminish structural unemployment. Such interactions could take several forms. Greater competition in product markets may harden the bargaining position of employers and increase the perceived employment costs of pressing for higher real wages, thereby leading to lower unemployment. A reduced incidence and extent of rent sharing will tend to make it less attractive for workers to search intensively for employment opportunities in “high-wage” sectors and instead more readily accept available jobs, thereby lowering “wait” unemployment. As unemployment benefits are often related to past wages, including any rent components, more product market competition might also reduce unemployment benefits for workers displaced from previously less competitive sectors, thereby also enhancing job search incentives.

... though employees in some industries may initially be adversely affected

While these effects will tend to reduce unemployment and boost employment in the long term, there could be significant short-term adjustment problems. Lack of product market competition not only frequently spills over into wages but also to productivity levels and increased competition may sometimes be associated with a labour shake-out from the sector in question. Since such effects are often an important political barrier to product market reforms, it is essential to create a widespread recognition that such reforms can also be the source of the

result in greater cross-country differences. On the other hand, the link between mark-ups and MFP growth may be weaker in service industries as the potential for technology-induced MFP gains are smaller.

12. See OECD (1999).

potential welfare gains. To facilitate the acceptance of the related adjustment, it is important that labour set free as a result of increased competition be re-employed as quickly as possible. It is therefore a concern that countries with restrictive regulation of product markets, and a corresponding need for reforms to boost competition, also tend to have relatively highly regulated labour markets (Nicoletti *et al.*, 1999).¹³

While past market reforms have increased employment...

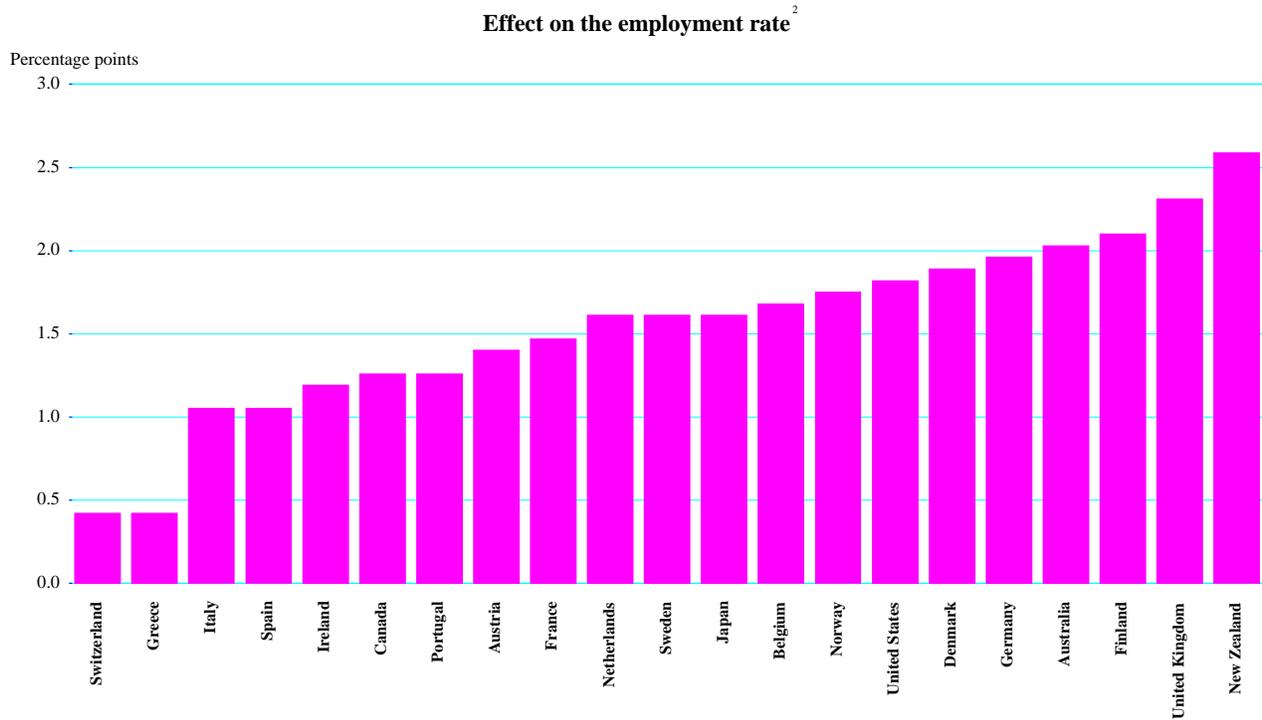
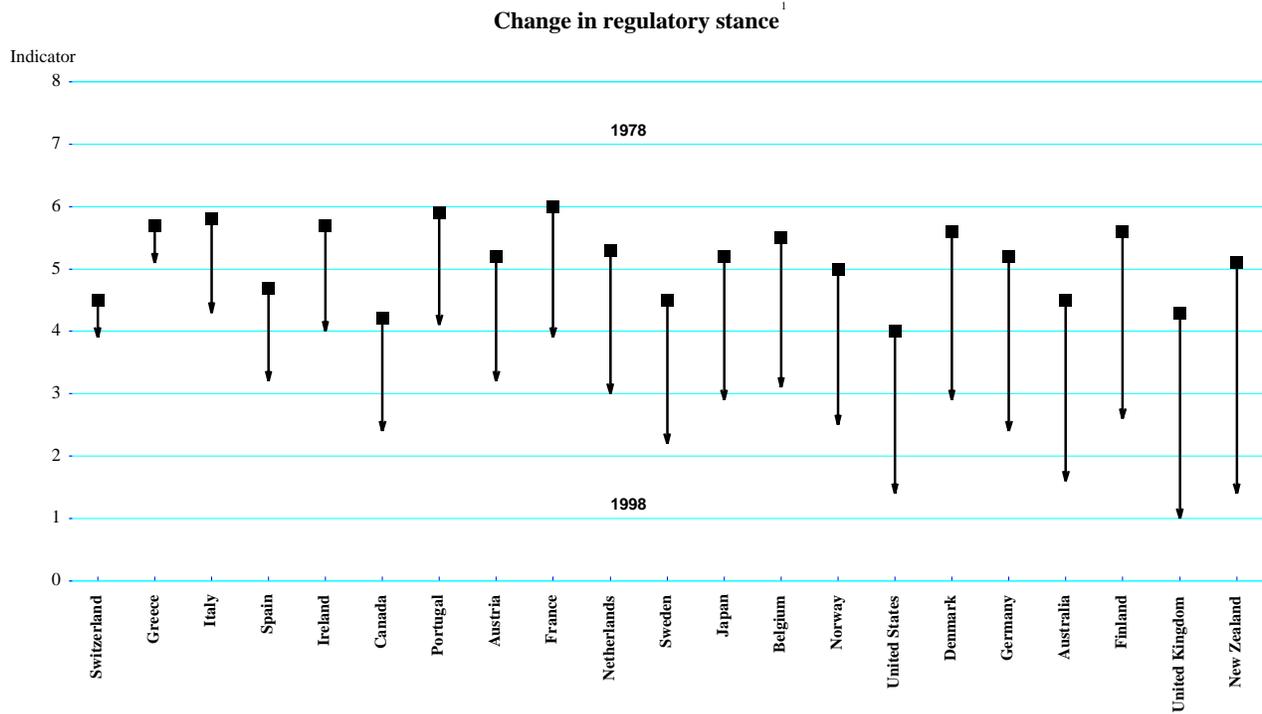
A recent study by Nicoletti *et al.* (2001) found a significant effect of regulatory reforms on the employment rate in the business sector (excluding agriculture) even after controlling for the impact of various labour market indicators and the public-sector employment rate. The study applied a time-varying indicator of the regulatory stance in seven network industries from 1978 to 1998 to represent the evolution of the general regulatory framework in individual countries.¹⁴ Although the speed of progress varied, substantial regulatory reforms were implemented in all OECD countries over this period, increasing individual countries' employment rates by an average of 1½ and up to around 2½ percentage points where reforms have been pursued most vigorously (Figure VI.2).

...there is still significant scope for additional gains

Nonetheless, there is significant scope for additional gains in employment via product market reforms. Indeed, the estimates of Nicoletti *et al.* (2001) suggest that if countries with the most restrictive regulation moved towards the situation in the least restrictive countries, they might envisage an average increase in their employment rate of 1½ to 2 per cent.¹⁵ Smaller, but nevertheless noticeable gains could also be obtained in countries with more pro-competitive regulations of product markets.¹⁶

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13. Active labour market policies, such as job search assistance and training, can help to speed up the adjustment to a more competitive environment.
 14. See Nicoletti *et al.* (2001) for further detail on the construction of the indicator.
 15. This figure is obtained by applying the estimation result in Nicoletti *et al.* (2001) (Table 13, column 3) to the observed variation in 1998 in the time-varying PMR indicator (Figure 1, panel A).
 16. These figures tend to underestimate the potential employment gains from product market reforms because they do not take into account the possible indirect effects of these reforms on labour market arrangements (*e.g.* the effects of enhanced product market competition on the bargaining power of insiders).

Figure VI.2. Product market liberalisation and labour market performance



1. Reports changes in the regulatory stance in seven non-manufacturing industries (gas, electricity, post, telecommunications, passenger air transport, railways and road freight) between 1978 and 1998. The regulatory stance is measured by a synthetic indicator ranging between 0 (least restrictive) and 6 (most restrictive).

2. Estimated contribution to the change in the non-agricultural business sector employment rate.

Source: Nicoletti et al. (2001).

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