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PRODUCT MARKET COMPETITION IN THE OECD COUNTRIES: TAKING STOCK AND MOVING FORWARD

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By Jens Høj, Miguel Jimenez, Maria Maher, Guiseppe Nicoletti and Mikael Wise

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Abstract

Product Market Competition in the OECD Countries: Taking Stock and Moving Forward

Based on 18 country reviews performed over the 2003-2005 period, this paper examines the cross-country differences in policy approaches to product market competition and their consequences for product market rents. Against this background, the paper summarises OECD recommendations to further strengthen competition in various sectors and areas. These include: removing remaining barriers to trade and inward foreign direct investments; better securing deterrence of cartels through effective sanctions; facilitate market access to inherently competitive industries by easing zoning laws (the retail sector), abolishing reserved monopolies (sales of tobacco and alcohol), limiting the scope of trade associations' self-regulation and easing residency or nationality requirements (professional services); meet competition challenges in network industries by facilitating the effective separation of monopoly components from competitive activities, reducing public ownership, clearly separating the government's ownership and regulatory functions and creating the right incentives for investing in infrastructures.

JEL codes: D43; F13; K21; L4; L8; L9

Key words: OECD countries; market imperfections; trade policy; competition law; antitrust issues and policies; inherently competitive sectors; network industries.

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Résumé

Concurrence dans les marchés des produits des pays de l'OCDE : bilan et perspectives

Ce document est basé sur 18 études économiques de l'OCDE menées entre 2003 et 2005. Il examine les différences entre pays dans les politiques de la concurrence ainsi que leur conséquences sur les caractéristiques des marchés de produits. Sur cette base, le document propose une synthèse des recommandations de l'OCDE pour renforcer la concurrence dans différents domaines et secteurs économiques. Celles-ci comprennent: la suppression des barrières commerciales et aux investissements directs étrangers encore en place; une meilleure dissuasion des stratégies de cartel à l'aide de sanctions plus efficaces; un accès plus aisé aux activités concurrentielles en assouplissant les réglementations concernant l'aménagement du territoire (commerce de détail), la suppression de certains monopoles (vente de tabac et d'alcool), la limitation des prérogatives des associations professionnelles dans le domaine réglementaire ainsi que l'assouplissement des obligations de résidence ou de nationalité (professions libérales); et un meilleur essor de la concurrence dans les industries de réseau par la séparation des activités en situation de monopole des activités concurrentielles, la réduction du degré de contrôle public, notamment en distinguant clairement les fonctions de tutelle des fonctions de régulation sectorielle et en mettant en place les bonnes incitations à l'investissement en infrastructures.

Codes JEL : D43 ; F13 ; K21 ; L4 ; L8 ; L9

Mots-Clés : Pays membres de l'OCDE ; défaillances de marché ; politique commerciale ; droit de la concurrence ; réglementations anti-trust ; secteurs concurrentiels ; industries de réseaux.

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PRODUCT MARKET COMPETITION IN THE OECD COUNTRIES: TAKING STOCK AND MOVING FORWARD

By

Jens Høj, Miguel Jimenez, Maria Maher, Giuseppe Nicoletti, and Michael Wise¹

1. Introduction

1. The OECD Growth study has shown that economic performance depends, among other factors, on the strength of competition in product markets. Based on reviews that have been carried out for 18 OECD countries and the Euro area² this paper discusses how competition and regulatory policies could be better designed in order to enhance competitive pressures and economic growth. It summarises evidence and policy lessons stemming from the OECD country reviews. The country examples, therefore, are limited to the countries reviewed and deal with the state of play at the time the OECD country reviews were written.³ However, the policy discussion, insights and guidelines are more generally applicable to OECD countries.

2. The paper is structured as follows. Section 2 reviews the channels through which competition enhances economic growth. In particular, it looks at the level of profit mark-ups in different sectors and their relationship with indicators of product market regulation and examines whether more pro-competitive policies are related to stronger competition pressures as measured by lower mark-ups. Section 3 tries to quantify cross-country differences in policy approaches to different aspects of competition policies, using both OECD indicators and country-specific evidence from country special chapters covering three areas: trade and investment barriers, competition law and enforcement policies and industry-level regulatory policies. It also discusses some common themes concerning network industries with a particular emphasis on the design of policies. Finally, Section 4 presents an overview of recommendations related to reforms of product market policies.

2. Product market competition in member countries

2.1 The strength of competition in member countries

3. Enhanced competition contributes to economic performance by reinforcing productivity and employment growth through various channels (Box 1). In practice, the concept of competition is difficult to pin down in measurable terms. Since direct measures are lacking, they must be substituted by proxies.

1. At the time of the preparation of the paper, most of the authors worked in Structural Policy Analysis Division 1 in the OECD Economics Department with Giuseppe Nicoletti as the Head of Division and with Jens Høj, Miguel Jimenez and Maria Maher as economists, while Michael Wise was a lawyer in the Competition Division in the Directorate for Financial and Enterprise Affairs. The authors wish to thank Jean Philippe Cotis, Jørgen Elmeskov, Mike Feiner and many other colleagues in the OECD Economics Department as well as representatives from OECD member countries for useful comments on a previous version of the paper. The views expressed in this paper do not necessarily reflect the position of the OECD or its member countries.

2. Special chapters on competition policy have been finished for the following countries: Australia, Austria, Canada, Denmark, Finland, France, Hungary, Iceland, Italy, Japan, Korea, Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States.

3. In some countries, policies have changed since the OECD country chapters were written.

Traditional proxies like price levels, concentration ratios or profit margins are all imperfect, and it is easy to find counter-examples where “bad” indicators do not necessarily imply that competition conditions are weak.⁴ Bearing these caveats in mind, this section looks at profit mark-ups as a measure of the intensity of competition, which can be calculated for a large number of sectors and countries and thus provide a basis for cross-country and cross-sector comparison of competitive forces.

Box 1. How competition affects economic performance

Enhanced competition has a direct impact on *per capita* growth through its effect on productivity, which arises both through static and dynamic efficiency gains. Static efficiency gains result from regulatory reform by, for example, stimulating managerial effort in the face of the risk of losing market shares or providing greater opportunities for comparing performance across firms (Nickell, 1996). Dynamic efficiencies refer to medium and long-term productivity gains that arise when increased competition reinforces incentives for R&D, the production and diffusion of innovation and the build-up of human capital attached to it, resulting in more rapid technological change. The fact that innovation and diffusion of technology have a sizeable impact on growth outcomes is empirically well established, but the link between competition and innovation is more controversial (Ahn, 2002). OECD work suggests that too strict product market regulation and too high non-trade barriers are associated with low R&D intensity in the business sector (Nicoletti *et al.* 2001; Bassanini and Ernst, 2002; Jaumotte and Pain, 2005), but some authors suggest that the relationship between innovation and concentration is non-linear, with too high and too low concentration levels associated with a low level of innovation activity (Aghion *et al.* 2005). Overall, the long-run relationship between competition pressures and aggregate labour productivity growth is likely to be positive. Using cross-country regressions with industry data, Alesina *et al.* (2005) find that pro-competitive reforms tend to raise capital deepening in crucial non-manufacturing industries, and Nicoletti and Scarpetta (2003) find that the same reforms can improve multifactor productivity, partly by allowing a faster catch-up to the technological leader. Further evidence by Conway *et al.* (2006) suggests similar effects of competition on investment in ICT and labour productivity growth.

Product market reforms also have the potential for raising GDP growth through employment. There are various possible channels for this effect. *First*, lower mark-ups resulting from increased competition pressures raise activity levels, leading to job creation and upward pressures on average real wages. In turn, the increase in real wages may stimulate labour supply. *Second*, to the extent that rents are shared with employees through higher wages, lower product market rents translate into lower wage premia in some sectors, reducing labour costs and further encouraging job creation. Labour costs also tend to be curbed by rising productivity (see above). Several studies find that regulatory reforms have a significant effect on business sector employment after controlling for the impact of various labour market institutions (Nicoletti *et al.* 2001, Nicoletti and Scarpetta, 2005; Fiori *et al.* 2007). The effect is large – an increase of up to 1.5-2.5% in the employment rate may be observed where in-depth reforms have been adopted.

4. Price-cost margins (mark-ups) have often been used to measure the strength of competition forces (Bresnahan, 1989; Schmalensee, 1989; Domowitz *et al.* 1988). Average mark-ups over time can be calculated using a relatively simple methodology that was originally developed by Hall (1988), and subsequently modified by Roeger (1995) (Box 2). In this section, Roeger’s method is applied to calculate mark-ups on average cost with sectoral data for 17 countries that cover (at most) the period 1975-2002, using the OECD-STAN database.⁵ The estimated mark-ups are then related to the OECD indicators of product market regulation to check whether regulatory policies that are more conducive to competition are related to lower margins.

4. For example, economies of scale or scope may result in relatively high concentration ratios or in prices exceeding marginal costs even though rivalry among firms may be strong.

5. Oliveira Martins *et al.* (1996) also calculated mark-ups for a large number of manufacturing industries and OECD countries in the 1980s and the 1990s, using the same methodology and database. The update now also covers non-manufacturing sectors, includes adjustments for cross-country differences in taxation and uses the most recent version of the STAN data base, which is based on new ESA-95 national accounts estimates and corresponds to a new classification of sectors (ISIC Rev.3 instead of ISIC Rev.2).

Box 2. A simple method for calculating mark-ups

Mark-ups are estimated using an equation proposed by Roeger (1995), which extends a previous method developed by Hall (1988). Hall's method exploits the fact that under competition and constant returns to scale the share of inputs on total revenue should be equal to the input elasticities of the production function (see Annex 2). Thus, his method implicitly attributes the excess of such elasticities over the revenue shares to the mark-up of price over marginal cost. Roeger derives a similar method that has the advantage of using nominal instead of volume variables for inputs and output, and provides an estimate of the mark-up over average costs. His final estimating equation is the following:

$$y - \alpha * n - \beta * m - (1 - \alpha - \beta) * k = B * (y - k)$$

where y , n , m and k and the growth rates of nominal output, labour, intermediate inputs and capital, and α and β are the revenue shares of labour and intermediate inputs in final output, and B is the average Lerner index ((Price-Cost)/Price) for the whole period, which can be transformed into a mark-up over average cost (Price/Cost). Adding an error term to this equation, B can be estimated with standard econometric techniques.⁶

Estimated mark-ups are adjusted for taxes, since part of the price, as measured in the STAN data base, covers taxes that are included in output but not in cost measures and therefore does not reflect true economic rents. The adjustment is very small (less than 2% for most countries), given that the value added measure used as the output variable in STAN for most countries already discounts value-added taxes and corporate taxes.⁷

It should be borne in mind that mark-ups are an imperfect measure of competition and the estimation method used here is only a first-order approximation to them. Moreover, measurement problems abound when working with input and output measures at the sectoral level. In addition to usual statistical measurement errors, some service sectors are dominated by large public firms where accounting may follow different criteria than those followed in the business sector. Some industries may be very small in some Member countries, possibly magnifying the aggregate impact of accounting or statistical errors in individual firms. Measurement and methodological issues are further discussed in Annex 2.

5. Figure 1 shows the (weighted) average of the estimated sectoral mark-ups in both manufacturing and non-manufacturing sectors.⁸ Estimated mark-ups for manufacturing industries are considerably lower than those for non-manufacturing sectors. This is to be expected since manufactured goods are exposed to international competition, whereas many services are difficult to trade internationally or have been subject to various types of regulations and entry barriers that reduce effective competition and generate rents. The cross-country variability of mark-up estimates is also lower in manufacturing than in non-manufacturing sectors, as the disciplining effect from vast internal markets is considerable on manufacturing sectors in large countries, while international competition is strong in small open economies. Among the G7 countries, Japan is estimated to have the lowest average mark-ups in manufacturing (below or around 10%). Other countries with low average mark-ups in manufacturing (Luxembourg, Belgium and Denmark) are smaller economies with a high degree of trade openness. The highest average mark-ups correspond to some continental European countries and Canada (around 15%).

6. Roeger's version is easier to estimate, not only because it uses nominal variables, but also because it does not require, as Hall's method does, the use of instrumental variables, which are difficult to find in this context (see Annex 2).

7. Social security taxes and other taxes on inputs do not need to be subtracted since they are included both on the measurement of revenues and costs, and therefore do not have an impact on the mark-up.

8. Final production is used as the weighting variable for aggregating sectoral mark-ups. Weights are country-specific. As an alternative, common weights could have been used for aggregation, in order to avoid the under-representation of those sectors in given countries where barriers create high mark-ups but also reduce activity. However, the small size of a given sector could also reflect country-specific factors not related to competition conditions such as the lack of a comparative advantage. Using average (cross-country) weights does not change country rankings substantially.

[Figure 1. Mark-ups in manufacturing and non-manufacturing]

6. Mark-ups have been calculated for four different groups of manufacturing industries, identified along two dimensions (Sutton, 1992): the level of exogenous sunk costs (which results in “fragmented” or “segmented” sectors) and the level of endogenous sunk costs (low or high R&D and advertising expenditures).⁹ In principle, sunk costs have to be recovered through higher mark-ups over marginal costs. However, average costs already incorporate the sunk cost so mark-ups over average costs should be homogenous if competition pressures are the same. This is indeed what is found in the data, as the cross-country mean of mark-ups for these four groups of industries are not statistically different from each other.¹⁰

[Table 1. Mark-ups estimates: industry detail]

7. In non-manufacturing, average mark-ups are estimated to be below 20% in the United Kingdom, Sweden and the United States, but higher for most European countries and Japan, and very high for Korea and Italy, where they exceed 30%. Within services, the cross-country average of mark-ups is lower in transport sectors, business services and wholesale and retail trade than in other network industries (post and telecommunications and electricity, gas and water sectors). The cross-country variability of mark-ups in individual service sectors is higher than in different manufacturing activities. Indeed, in some cases the mark-ups for given services are much larger than the average for certain countries (for instance, the transport sector in Canada, Norway and Finland, energy in Japan and Norway, retail and wholesale trade in Italy and business services in Germany). These “outliers” may well reflect low competition pressures, but they could also partly reflect measurement errors and specific national factors. In any case, the main finding of this comparison supports some of the conclusions reached in the context of country surveys: competitive pressures seem to be lacking more in services than in manufacturing sectors, and the wider dispersion of competition pressures across countries may derive from very diverse competition policy settings in different countries, a point that will be explored further in the following sub-section.

2.2 *Mark-ups and product market regulation*

8. The OECD has constructed two different types of product market indicators: economy-wide indicators (PMR), which provide a snapshot of regulation for the whole economy for two points in time (1998 and 2003), and time-series indicators for some non-manufacturing industries (airline, rail and road transport, electricity and gas, and post and telecommunications) between 1975 and 2003.¹¹ The latter have also been condensed into a single time series of regulation in energy, transport and communications for each country (ETCR). All these indicators summarise a large set of rules and regulations that have the potential to reduce the strength of competition. Taking the economy-wide indicators for 1998 as a proxy for average regulation for the period under study (1975-2002 at most), the association between the country average of mark-ups for non-manufacturing and regulations that restrict competition appears to be strong (Figure 2). Indeed, Table 2 confirms, by means of simple regressions, that product market regulations that

9. Manufacturing sectors have been mapped into this two-fold classification by Oliveira Martins *et al.* (2002), who use an estimate of the minimum efficient scale to determine which markets/industries are fragmented or segmented, and R&D intensity to classify industries according to the level of endogenous sunk costs. This mapping was developed for the ISIC Rev.2 classification of sectors, and has been adapted here to ISIC Rev.3.

10. This result differs from that of previous studies which find a small difference in mark-ups across groups of sectors (Oliveira Martins *et al.* 1996). Since the methodology is the same, the discrepancy must be attributed to the use of different vintages of the STAN data base (with the most recent one incorporating new national accounts criteria and data) and to different time and country coverage.

11. See Conway *et al.* (2005) and Conway and Nicoletti (2006).

are less conducive to competition are positively and significantly correlated with mark-ups across countries, especially in non-manufacturing. This correlation is strongest with the PMR sub-components that measure barriers to trade and investment, entry barriers and economic regulation. The correlation of mark-ups and the time-average of the ETCR indicator (which has the advantage of reflecting regulation throughout the period for which mark-ups have been estimated¹²) are also positive and significant for non-manufacturing sectors. In manufacturing, the positive correlation of mark-ups with PMR is much lower than in services and is only marginally significant (at 10%) when pooling together all manufacturing sub-sectors in the same panel regression.¹³ This is not surprising since, as illustrated below, the bulk of anti-competitive regulation in OECD countries affects the service sector.

[Table 2: Average mark-ups and aggregate regulation indicators: regression results]

[Figure 2: Mark-ups in manufacturing and services and economy-wide regulation (PMR)]

9. The sectoral dimension of regulation indicators can be further exploited. Table 3 looks at the relationship between mark-ups for six sectors (electricity, gas and water supply; post and telecommunications; transport; trade; financial services and business services) and their respective regulation indicators.¹⁴ Pooling these six sectors and all countries in the same regression, and including sectoral dummy variables to control for unobservable sector-specific influences, there is again a positive and statistically significant relationship between the time averages of sectoral regulation in non-manufacturing sectors and the corresponding time-averaged sectoral mark-ups. This correlation is robust to the exclusion of the sub-component of the regulation indicator that reflects the degree of public ownership in a given sector. Lack of sufficient observations makes it impossible to compute reliable correlations at the level of individual sectors. However, evidence seems to suggest that the link between regulation and mark-ups is particularly weak in the energy sector (see Annex 2). Indeed, excluding the energy sector results in somewhat higher correlation coefficients between mark-ups and regulation indicators. This could perhaps be ascribed to the remaining market power of incumbent participants in these markets even after liberalisation, as is stressed below. Keeping in mind the caveats that accompany the calculation and use of mark-ups as a measure of competition forces, these results suggest that there is considerable room for enhancing competition in non-manufacturing industries through regulatory reform, a point that is further elaborated in the next section.

12. A case can be made that the PMR indicator for 1998 is an acceptable proxy for cross-country regulation patterns in the whole period under consideration. The information basis for the PMR and ETCR indicators is common to a large extent, while the Spearman rank correlation coefficient between the ETCR indicator for 1980 and 1998 is high and significant. The rank correlation coefficient between the PMR indicator for 1998 and the average ETCR for the period 1975-2002 is also high and significant.

13. It is interesting to note that only the PMR sub-components corresponding to state control and economic regulation, two factors that tend to shelter domestic firms from competitive pressures, are sizeable and highly significant (at 1%).

14. These indicators are described in De Serres *et al.* (2006) (for financial services) and Conway *et al.* (2006) (for business professional services and the remaining sectors). In the case of electricity, gas and water supply, the regulation indicator used is the average of electricity and gas (as there is no OECD time-series indicator for water supply); for the transport sector, the average of the airline, railroad and road transport indicator; for post and telecommunications, the average of both sectors. In all cases, averages are un-weighted, as there is no reliable cross-country data on the size of each sub-sector. For these three broad sectors information is available as a time series, and the time average has been used in the regression. For the remaining three sectors, the indicator corresponds to either 1996 or 1998. The sector of business services excludes real estate activities since mark-up estimates for this sub-sector are unreliable.

[Table 3: Mark-ups and regulation in non-manufacturing industries: pooled sectoral regressions]

3. How policies affect competitive pressures

10. As noted above, cross-country differences in the intensity of competition in service sectors may be partly related to differences in the restrictiveness of regulations. These sectors account for around 70% of value-added in most OECD countries and, depending on the country, account for between one-third and one-half of total intermediate inputs of manufacturing activities (*e.g.* business services, transport, telecommunications and electricity). Cross-country differences in policy settings and their impact upon product market competition are discussed below, relying on both country experiences surveyed in the special chapters and on the OECD indicators of regulation. The discussion of competition policy also draws on the results of a new indicator of competition law and policy which was developed for this paper.

3.1 *Openness to trade and foreign direct investment*

11. Exposure to foreign competition – either through international trade or through foreign direct investment (FDI) is an important driver of competitive pressures in domestic markets. Continuing the trend towards greater international openness, there have been further reductions in barriers to foreign exposure in many OECD countries since 1998, although with the exception of transition countries the reductions have been fairly modest (Figure 3). Trade tariffs for manufacturing have come down further (starting from already low levels for most countries) and non-tariff impediments in the form of regulatory barriers at borders have almost disappeared in most countries. However, the presence of more indirect administrative barriers (often referred to as behind-the-border barriers) may hinder trade (particularly in services) either directly, such as the case of residence requirements for professional services, or more indirectly if regulations differ widely across countries. Aside from intrinsic features that make certain services difficult to trade, these policy-related factors may partly explain why trade in services is much smaller than goods trade and is in most countries below 10% of GDP.¹⁵

[Figure 3: Indicator of barriers to trade and investment]

12. Country-specific reviews confirm that manufacturing sectors are generally exposed to foreign competition, although some manufacturing industries have been found to be sheltered by trade protection of upstream sectors (typically agriculture) (Japan, Hungary, Korea, Norway, Switzerland), or by the need for nearness to the market, such as the printing of newspapers (Norway) (OECD, 2004a). While most explicit barriers have been removed, indirect barriers are still found more generally, such as heavy handed customs procedures (the United States), complex administrative procedures (Australia, Japan and Korea) and national standards that diverge from international standards (Finland, Japan and Korea). Other issues raised in the surveys have been the excessive use of anti-dumping procedures and safeguard actions (the United States).

13. Most OECD countries are parties to preferential trade agreements and the scope of these has increased since the end of the 1990s, with for example Australia, New Zealand and the EU accession countries entering such agreements. Preferential trade agreements aim at increasing trade among the involved parties, but may block other imports. For example, upon joining the European Union, Austria and Hungary had to restrict previously unlimited parallel import rights to EU countries only, potentially leading

15. Nicoletti *et al.* (2003) estimates large gains in bilateral service trade flows from bringing services regulations down to the level of the least restrictive OECD countries. Kox *et al.* (2004) estimates that the adoption of the EU service directive, whose main purpose is to eliminate the heterogeneity of regulations, could expand intra-EU trade in services by 13 to 21 percentage points relative to current levels.

to import distortion (OECD, 2003b). Such distortions may more than offset the beneficial effects of increased trade. For example, recent empirical research suggests that for the United States, preferential trade agreements may have acted as stumbling blocks for multilateral trade liberalisation (Limao, 2005).¹⁶

14. The progress in reducing barriers to FDI (measures such as legal restrictions on purchasing equity in public and private firms) has also been modest, although some countries, like the Czech Republic, have considerably reduced such barriers. Few signs have been found in the OECD country surveys and other OECD studies that important FDI barriers, such as screening requirements and restrictions on foreign personnel and operational freedom, have been lowered significantly (Golub, 2003 and Koyama and Golub, 2006).¹⁷ Moreover, the OECD's PMR indicators also show that domestic regulations that are potentially relevant for foreign investors exhibit a relatively high degree of cross-country heterogeneity, which acts as a fixed compliance cost barrier to FDI. This is particularly the case for firms wanting to establish an EU-wide presence and for SMEs, because the (cumulative) fixed costs of entering additional foreign markets are large relative to the potential economies of scale and scope.¹⁸

15. At the time of writing this report, examples of how inward FDI has stimulated competition in domestically-oriented service industries have been found in the retail sector (France, Finland, Japan and Norway), in the telecommunications sector (Denmark), and in the electricity sector (Italy, Sweden and the United Kingdom). Part of this is the result of relatively low explicit barriers to inward FDI. Nevertheless, ownership restrictions remain in place in many sectors,¹⁹ such as in telecommunications (Australia, Canada, Japan, Korea, Mexico, New Zealand, Spain and, more indirectly, in Norway and France), air transport (Canada, Iceland, Japan, New Zealand and the United States), real estate (New Zealand and the United States), in the media (Canada and the United States), fisheries (Iceland and Norway), and in energy sectors (Iceland, Italy and, indirectly, in Norway). In the OECD country surveys in which professional services were covered, nationality, residency or qualification requirements are common and impede foreign entry (Austria, Canada, Denmark, Hungary, Italy, Japan, Korea, the Netherlands and Switzerland).²⁰

16. More specifically, it was found that US cuts in multilateral tariffs were smaller for products that it also imports under its various preferential trade agreements relative to similar products that did not receive preferential treatment.

17. Institutional and regulatory factors may also act as a hindrance on inward FDI. For example Bénassy-Quéré *et al.* (2005) find that the level of public efficiency (including measures of tax systems, creation of companies, corruption, transparency, security of property rights and efficiency of the legal systems) have a positive impact on FDI and that differences in institutions have a negative impact on bilateral FDI. Moreover, Nicoletti *et al.* (2003) find that restrictive domestic regulations also curb bilateral FDI by making access to local markets difficult and reducing the returns to foreign investment.

18. Using the OECD indicators, Kox *et al.* (2004) estimate that the stock of foreign direct investment in services for the EU area could increase by 20-35% if bilateral variation in regulation was reduced by introducing common service regulations. Specifically, the authors estimated the effects of adopting the EU service directive in both its original and final versions.

19. For a discussion of ownership restrictions in the telecommunications sector not discussed here see OECD (2003a).

20. At times the restrictions are limited to certain categories of foreigners, such as non-EEA citizens.

3.2 *Competition policy*

3.2.1 *Competition law and enforcement policies*

16. Most OECD countries endorse or support an economics-based approach to competition policy, which motivates the application of competition law in terms of protecting the competitive process rather than the interests of particular competitors. Thus, competition laws are broadly similar across the OECD countries. On the other hand, institutions and methods for applying the competition law differ widely. Most OECD countries have revised their competition laws over the past decade, in particular to strengthen sanctions and enforcement powers. This section reviews these developments, and presents a more quantitative assessment of the current stance of competition law and policy across countries.

Institutional structure: independence and transparency

17. In virtually all OECD countries, the first-instance decision-maker in most competition cases is a court or another body that is independent of political control or instruction, with appeal or review possibilities to the court system. However, measures to protect independence of the competition authorities and ensure transparency in enforcement vary in different institutional systems, and the formal measures are not necessarily good indicators of actual practices. There are examples of active competition agencies with demonstrated independence without formal guarantees (Finland and the Netherlands), as well as more formally independent bodies that are less active (Japan) (Høj and Wise, 2004a and 2004b). In some cases, opacity regarding the independence of the first-instance decision-maker could be usefully eliminated by securing formal independence (Canada, Finland and the Netherlands). A few countries have established elaborate and complex multi-level structures of councils and tribunals, often with members designated by social partners and interest groups (Austria, Denmark and Switzerland). Compared with systems with simpler structures, the more elaborate and complex structures seem to obscure accountability without improving decision quality and potentially lead to conflicts of interest. Thus, there are likely benefits from eliminating the redundant and overlapping features of these multi-layered institutional structures, and especially from avoiding any “representative” membership features.²¹

18. Concerns about independence arise principally in connection with mergers. In some countries (France, Norway) decisions to authorise or prohibit mergers are taken by the government or a minister, not by the competition agency, or a minister may have discretion about whether to refer a proposed merger to the competition agency for review. In other countries, the independent agency typically makes the first decision based on expected impact on competition and a minister or the government may reverse or override that decision by advocating other policy goals (Germany, the United Kingdom). This ensures a transparent process. Nevertheless, competition law provisions that refer to relatively general or public interest criteria in merger cases (or other competition law areas for that matter) are likely to invite non-transparent *ad hoc* interventions, which may lead to a less effective application of the competition law as compared with merger regimes that only focus on competition effects.²²

21. An additional issue is whether resources for enforcement are sufficient. Such concerns have been raised for Austria, Finland, Italy, and Switzerland. Moreover, increasingly complex enforcement may require increased level of expertise and professional qualifications (Austria, Japan, Sweden).

22. In many countries, competition agencies will consider claims of increased efficiencies in their decisions about mergers, although it is unclear how consumers benefit when a merger leads to increased efficiency and the strengthening of a dominant position. For example, in Canada a merger was permitted under such a rule despite the subsequent increase in consumer prices.

Sector regulation issues

19. A recurrent issue in the OECD country reviews has been the interface between the general competition framework and sector regulation. The competition problems that are commonly encountered in network monopoly settings (notably in telecommunications and electricity), such as predatory tactics to foreclose actual or potential competitors or exploitation of monopoly power, in general violate competition law provisions. The issue then is how to design the most efficient institutional setting for applying competition policy in the context of network monopoly reform, which often includes regulation to encourage the development of competition after liberalisation. In the countries reviewed this has been done in a variety of ways. One model of integration is to set up sector regulators as special chambers within the general competition authority (as in the Netherlands). Another is to give the sector regulators concurrent power to apply the general competition law (the United Kingdom, and to some extent the United States and Italy).²³ Competition agencies also often have a role in establishing and implementing sector regulations. Sometimes that role is formalised, as in Australia and New Zealand, where procedures for defining and accessing so-called essential facilities have been established. While it is difficult to identify any single best model, successful institutional designs have usually avoided inconsistency between the general competition law and sector regulation and duplication of enforcement effort. In nearly all cases, the general competition authorities retain jurisdiction in the regulated sector, but defer to sector regulators where there are efficiencies in an administrative approach or in enforcing ex-ante regulation (including, for example, the determination of access charges).

Coverage and exemptions

20. Competition law usually does not fully apply to sectors that are subject to pervasive economic regulation of price or entry, and sometimes other sectors or types of conduct are also excluded from coverage to some extent. Sectors that often receive special treatment in OECD countries currently include network industries, broadcasting, publishing, agriculture, professional services, banking and insurance. In these sectors, market conditions (*e.g.* natural monopoly, incomplete information) and policy goals such as consumer protection, financial system stability or universal service are used to justify the non-application of otherwise applicable general competition law provisions. Complete exclusion is rare; rather, laws permit particular types of contracts or provide special competition rules or institutions for a sector. But some exclusions amount to legislative grants of monopoly privilege. Reform efforts have removed or narrowed many of these special interest provisions from the statute books (Korea, Japan), but some survive, such as in the media and financial sectors.

21. These issues are further complicated in the presence of state-owned enterprises in the business sector. Establishing a level-playing field between public and private firms generally requires a uniform application of competition laws. Anti-competitive activities, such as abuse of dominant positions, by publicly-owned companies and government-related entities are subject to these laws in most countries. Government-owned enterprises are not subject to antitrust law in the United States (Suppanz *et al.* 2004), and there are limits on coverage in other countries too (Austria, Australia, Mexico, Slovak Republic). However, the expected effect of sanctions is sometimes reduced by the possibility that legislative action will counter (anticipated) enforcement decisions (Finland, Norway). Moreover, the unclear demarcation line between publicly-owned companies and production units operating within the public administration may hamper the full application of the competition law as in the case of Sweden and Finland, where

23. When simultaneous powers to apply the competition law are granted to the sector regulator, procedures for allocating responsibilities between the competition authority and the sector regulator are established.

government units (without being established as firms) are engaged in market activities without being subject to the competition law (Roseveare *et al.* 2004).²⁴

22. An additional concern is that even where there is no formal exclusion, competition law cannot usually be applied to challenge anti-competitive conduct that is authorised by another law or official decision. This is a particularly delicate and important issue in federal countries, where local governments may take advantage of general principles of deference to local authority in order to protect local suppliers from competition. In the case of Canada and the United States the OECD recommended comprehensive reviews of the exclusions that result from “state action” and “regulated conduct” doctrines, to support reforms that would eliminate unjustifiable state and provincial restraints. A model for such a comprehensive reform effort in a federal setting is Australia’s ambitious National Competition Policy programme (OECD, 2004b). A related problem is the difficulty of applying competition law effectively to government entities in response to complaints that the government entity is competing unfairly, because of tax or other advantages (Finland, Norway and Sweden).

Advocacy and consumer protection

23. Competition agencies usually must resort to advocacy to change laws, rules or decisions when direct enforcement action is not possible.²⁵ Studies of market-wide problems and recommendations for legislative or regulatory reforms are high priority areas – or even a legislative requirement – for many competition agencies (Italy, Nordic countries, the United Kingdom). However, agencies in a number of countries (Austria, Greece, Mexico, New Zealand, the Netherlands, and Portugal) do not have the authority for such unprompted reporting. While only the review of Canada expressly recommended broader authority to do such in-depth studies outside the context of law-enforcement action, such policy actions could be more widely applied. Advocacy is normally aimed at amending legislative and executive actions that distort competition or harm consumers and is bolstered by the competition agencies having responsibility for consumer protection.

24. In about half of OECD countries, a competition law enforcement agency is also responsible for applying laws to protect consumers against deceptive advertising, unfair marketing practices and similar abuses. Competition and consumer policies are usually considered strongly complementary, as each seeks to correct and improve how markets function to the benefit of consumers. Moreover, integrating these policies helps to avoid overly regulatory consumer protection that could potentially diminish competition, while also encouraging competition law enforcement to ultimately benefit consumers rather than complaining competitors. In many of the countries that combine these functions (Australia, Canada, Italy, the United Kingdom and the United States) considerable synergy effects have been identified. But the different laws involve different technical issues and methods, and responding to a multitude of small-scale consumer complaints can drain resources (France, Hungary). A few countries are moving to separate these functions, at least internally, in order to better focus on competition enforcement (Hungary, Iceland). On the other hand, the review of Japan suggested adding consumer protection to the competition authority’s jurisdiction, in order to benefit consumers and raise the profile of the competition enforcement agency.

24. In any case, even when the competition law is forcefully implemented, the deterrence effect of sanctions for companies that are fully public-owned is limited by the fact that fines are ultimately paid by the public purse.

25. Only Hungary’s HCO has the power to challenge anti-competitive official actions in court. It has never actually used this power, but its threat to do so has persuaded agencies to make changes.

Restrictive agreements

25. Substantive laws about anti-competitive restrictive agreements are broadly similar across countries and typically include *per se* rules against horizontal price-fixing agreements (*i.e.* prohibiting such conduct regardless of its effects), which are the type of agreements that are most likely to harm competition.²⁶ Horizontal cartels are a high-priority enforcement target for most members, but some country reviews found that agencies needed to step up their efforts against them (Finland, the United Kingdom). In addition, other countries were found to lack true *per se* prohibitions against horizontal cartels. In these cases, the enforcement agency must demonstrate how each particular agreement actually harmed competition and sometimes the defendants can avoid liability by showing that they did not intend to reduce competition or that their effort had not been very successful. A few reviews called for stronger legal presumptions in these cases (Canada, Switzerland).

26. “Vertical” agreements on resale prices may also restrain competition, particularly where a vertical agreement is the means of enforcing a horizontal cartel. However, constraints on maximum resale prices can also be used to prevent the exercise of market power at the wholesale or retail levels, so in some countries only agreements setting minimum resale prices are condemned *per se*. For most other vertical agreements between suppliers and customers, competition enforcers are moving away from *per se* prohibitions towards more nuanced rules, and even case by case assessment of actual effects on efficiency and competition. The review of Austria recommended following the mainstream approach by adopting a “market power” test to identify vertical restraints that might deserve enforcement attention. This more market-oriented approach is supported in some countries (such as many of the EU member states) by competition laws that include *de minimis* or *bagatelle* provisions to avoid wasting enforcement resources on trivial, purely technical cases, as well as to permit what are often efficient joint ventures.²⁷

Abuse of dominance

27. The laws of all OECD countries try to control unilateral misconduct by dominant firms (that is, exploitation of a monopoly position or exclusionary strategies such as predation or foreclosure), but approaches differ. In most OECD countries, it can be a violation of the competition law for a dominant firm to exploit their market power in setting prices. But others (Canada, Mexico, New Zealand, Norway and the United States) do not treat that as a competition law violation, reasoning that high prices invite self-correction by offering an opportunity for profitable entry. Most competition laws provide for fines against dominant firm abuses, but some (Canada) only provide for orders to correct future conduct. A few laws (notably the United States and more recently the European Union) also authorise structural relief, ranging from financial or managerial separation of competitive operations to complete divestiture. The OECD country reviews generally supported expanding the range of remedies against abuse. However, some were sceptical about using competition enforcement to address issues of large-firm corporate structure and control (as is the case in Korea) or to redress claims about unequal bargaining leverage between suppliers and buyers (France).²⁸

26. According to enforcement agency estimates, the overcharges due to horizontal price-fixing cartels in 14 large cases in the period 1996 to 2000 ranged from 5% to 65%, with the median being around 15 to 20% (OECD, 2002).

27. Such provisions set threshold for market share or turnover below which it is presumed that there is no appreciable effect on competition.

28. Part of the extensive retail regulation in France was expressly introduced to rebalance the negotiating position of large retailers *vis-à-vis* producers.

Sanctions and private litigation

28. Deterring hard-core cartels depends on a credible threat of sanctions that are greater than the potential gains. Fines have been increasing everywhere over the past decade (about a third of the OECD countries have issued fines in excess of USD 25 million in individual cartel cases), but many OECD countries still fail to impose sanctions that are large enough to deter collusion. Statutory caps in some countries prevent fines at the level called for by economic models of deterrence. For example, the administrative fines applied in Japan and Korea only amount to 5-6% of the turnover affected by the violation, well below the estimated median horizontal cartel overcharge of 15-20% (OECD, 2002). Some countries extend this benchmark by applying the percentage to the entire period of the violation (up to three years) or providing for a fine equal to a multiple of the associated gain (*e.g.* double the gain or loss in the United States). In some countries, courts have been reluctant to support the heavy fines permitted under the law (Denmark, Finland). Most OECD country reviews recommended that sanctions should be increased to deterrent levels.

29. Applying sanctions to individuals would increase deterrence. This is already possible under the laws of 18 OECD countries, but only about a third of these have actually applied individual or criminal sanctions. A few countries have strengthened provisions for individual liability (Australia, the United Kingdom).²⁹ The deterrence of public law enforcement can also be supplemented by private litigation to recover damages or other relief. However, outside the United States this avenue is infrequently used. While recognising the risk of abuse of private actions, the OECD country reviews nonetheless generally recommended expanding the scope for private action. The exception is the United States, where the review supported moderating the “treble damages” to preserve incentives for violators to participate in the enforcers’ leniency programme.

Leniency programmes, enforcement processes

30. An important enforcement tool against cartels is the promise of lenient treatment to the first member of a cartel that confesses to the authorities. About two-thirds of the OECD countries have now set up such leniency or amnesty programmes, all but three of them within the last five years. Leniency programmes destabilise cartels and strengthen enforcement as direct evidence is more easily obtained. However, their success depends on their being transparent and asymmetric (that is, the first cartel member to come in and give evidence can count on getting much more lenient treatment than anyone who comes later), and that the programmes be supported by credible sanctions. Some of the programmes are weak in these respects. Too much generosity may undermine the critical incentive to be the first (Denmark, France) and, as discussed above, many countries still have not imposed sanctions strong enough to deter anti-competitive behaviour. At times, the promise of leniency is uncertain because it might be overruled by other authorities, such as courts or prosecutors (Denmark, Ireland). Thus, the OECD country reviews generally recommended the strengthening of existing leniency programmes and the establishment of such programmes where they do not exist.

29. The United Kingdom has designed a new criminal offence aimed at hard-core price fixing, which is awaiting its first application. It has also provided for a sanction that is tailored to business incentives: a violator may be disqualified from serving in a management position. Australia, which already imposes civil fines on individuals in some cases, is considering adding a criminal offence to its law. Effective deterrence requires careful design and application. Where individual or criminal penalties appear to apply indiscriminately, the threat of over-deterrence could make courts sceptical even of hard-core cases. In Norway, where financial sanctions for all violations had been criminal fines, the review called for making enforcement more effective by creating a new administrative fine for most purposes and using criminal prosecution and fines only for hard-core price fixing.

3.2.2 Competition Law and Policy Indicator

31. Partly guided by the above considerations, a competition law and policy indicator has been constructed in order to summarise and compare competition policies across OECD countries. The aim of the indicator is to measure the strength of competition policies in individual member countries, encompassing actual application as well as formal legal and institutional structures and including both general as well as sector-specific competition policies (Box 3).

32. Overall, there is relatively limited variation in the Competition Law and Policy (CLP) indicator across OECD countries (Figure 4). This reflects a convergence of competition policies over the past decade as manifested, for example, in the broad similarity in antitrust laws and the liberalisation of network industries across the OECD area, although there is greater variability in network policies. On the basis of the indicator, competition policies are most effective in the United States and countries in the European Union, as well as in some of the countries that have implemented widespread regulatory reforms over the past decade, such as Australia, Czech Republic and Korea. Among the other G7 countries, Canada, Italy, and the United Kingdom also rank well. Other countries rank well in antitrust policies but have relatively weak network policies (Germany, Japan, New Zealand and Slovak Republic) or, vice versa, have efficient network policies but weak antitrust indicators (Belgium, Denmark, France, Poland and Portugal). There are a few countries (Greece, Norway, Switzerland, Turkey, and Mexico) that score poorly in both areas.

[Figure 4. The Competition Law and Policy (CLP) indicator and its main sub-components]

33. An analysis of more detailed elements of the indicator (Høj, 2007) suggests that the low-scoring countries (*i.e.* indicating policies favourable to competition) tend to pursue pro-competition policies across the board rather than having low scores only within particular elements of the indicator. However, even for these countries, areas for reform can be identified. The United States, for example, obtains low scores for independence and enforcement, but has comparative weaknesses in parts of its legal framework, such as exemptions from the general competition law and network sector regulation.

34. At the other end of the spectrum, countries with policies that are less favourable to competition have a number of common characteristics. As regards network regulation, in these countries sectoral regulators have tended to have relatively little independence. Indeed, a number of these countries, including Japan and Switzerland but also Germany (whose overall score is lower), have yet to establish independent network regulators, particularly in the energy sectors.³⁰ The countries that have not established independent (or only granted relatively little independence to their) sectoral regulators also tend to have relatively weak policies in place for securing entry in liberalised network industries and implementing vertical separation of activities.

30. However, in countries that have established energy sector regulators, the latter tend to have a higher degree of independence than found for telecommunications regulators.

Box 3. Main elements in the Competition Law and Policy (CLP) Indicator

The purpose of the CLP indicator is to synthesise policies aimed at promoting competition.¹ Conceptually these policies can be separated into those enhancing competition in general and which are typically enforced by the competition authorities (antitrust framework), and those encouraging competition in deregulated network industries, which are typically implemented by more or less independent sector regulators (network policies).

The indicator's measure of the antitrust framework covers i) the scope and enforcement of the antitrust law, and ii) the degree of independence of the competition authorities.

- The scope of the antitrust law assesses the legal framework for dealing with cartel behaviour and other anti-competitive activities, the extent of exemptions (of sectors and activities) from the competition law, and the effectiveness of merger control regimes.
- The effectiveness of enforcement is measured by the scope for private legal actions and the risk associated with engaging in anti-competitive activities. This risk is a function of the probability of being discovered (which depends on resources allocated to competition authorities and the strength of leniency programmes), and the associated costs. The latter is taken to depend on actual sanctions imposed and the highest potential sanctions provided for in the law.
- Competition authorities in most OECD countries have a relatively high degree of independence but, as they are all part of the government, their independence varies in degree. The indicator assesses their status within the government structure, whether their decisions can be overruled by governments, and how accountable they are for their actions.

The indicator's measure of network policies covers i) the independence of sector regulators and ii) access issues, which are the only element that the CLP indicator has in common with the OECD indicators of product market regulation used in earlier sections of this paper.²

- The indicator for measuring the independence of sector regulators contains elements such as the institutional design, the regulator's sectoral authority and powers, and the accountability of the regulator.
- Access issues include entry barriers and the degree of vertical integration in the sector.

The overall indicator synthesizes about 100 data points for each country, mostly concerning antitrust policies. Each data point is measured on a scale from 0 (the best score) to 6 (the worst score). The weighting of the data points in the indicator gives a relatively higher importance to the antitrust framework (75%) than to network policies (25%). Within the antitrust framework indicator a relatively higher weighting was accorded to elements concerning actual enforcement and processes as well as legal framework elements considered important in countering hard-core cartels. Testing the sensitivity of the indicator's values to different sets of weights suggest that three broad country groupings can be distinguished: countries with relatively strong CLP (the United States, Australia, Korea, the Czech Republic, Canada, Denmark, Italy and the United Kingdom); countries with relatively weak CLP (Switzerland, Japan, Greece, Austria, Norway, Mexico, and Portugal); and the remaining countries that were not statistically distinguishable from the first two groups. Høj (2007) provides a complete description of the construction of the indicator and illustrates the sensitivity tests, which are based on a "random weights" technique. The indicator has only been constructed for 2003 (albeit containing a limited number of 2004 data points). Thus it only provides a snap-shot picture of the cross-country differences in the competition policy framework.

1. Thus, the indicator is distinct from (although partly overlapping with) the OECD indicators of economy-wide and industry-level product market regulation, whose primary aim is to measure restrictions to competition.

2. No network policy indicator was calculated for the EU as it has no sector regulators. However, the liberalisation of network industries in the European countries has followed a series of EU directives that prescribe goals and methods for national-level regulation in these areas.

35. In the area of antitrust policies, the countries with relatively high indicator scores tend to allocate insufficient resources to competition enforcement, impose light sanctions with correspondingly little deterrence, and their (mostly recently introduced) leniency programmes have limited incentives for co-

operation with competition authorities. Indeed, outside the United States countries that are estimated to have weak competition laws also tend to have weak enforcement (Figure 5). Thus, these countries need to implement relatively broad-based policy reforms. Nevertheless, some countries can significantly improve their antitrust policy setting by focusing on particular areas, such as France where the lack of independence in merger decisions contributes substantially to its relatively weak performance.

[Figure 5: Correlation between the strength of the legal framework and the effectiveness of enforcement]

36. There is some empirical evidence that countries tend to take similar approaches in antitrust policies and in the regulation of product markets. Where domestic product market regulations are friendly to competition – because state control of business enterprises and legal and administrative barriers to entry in competitive markets are low – antitrust policies also tends to protect and promote competition more actively (Figure 6). It is also worth mentioning in this context the correlation between the antitrust policy indicator and the PMR indicators for public ownership and government involvement in business operations (Høj, 2007); implying that there is a tendency for a more hesitant stance of policies aimed at strengthening antitrust law and its enforcement in countries where the government has a substantial involvement in market activities.

[Figure 6: Correlation between the antitrust framework and inward-oriented product market regulation]

3.3 *Regulatory policies in competitive sectors*

37. Sectors traditionally subject to significant regulation have been the focus of important reform efforts over the past decade and have received particular emphasis in country reviews. The remainder of this section examines developments and outstanding problems in retail distribution and professional services, sectors that are inherently competitive.

3.3.1 *Retail distribution*

38. The retail distribution sector benefits from economies of scale and scope and in many countries this is manifest in the ongoing process of structural change involving larger retail outlets, consolidation into retail chains and greater concentration and vertical integration. Regulation in this sector, which accounts for 10-20% of value-added, is crucial for overall economic performance. Sector regulations often include restrictions on entry, operational restrictions and price regulation. For example, most OECD countries impose special regulations on large-scale retail outlets or use zoning laws to regulate the siting of such stores.³¹ A summary indicator of regulatory restrictions in retail distribution shows that there are large differences across OECD countries, suggesting that countries have very different regulatory approaches to the sector (Figure 7). Except in a few countries (Belgium, Greece, Germany, Canada, Iceland, Korea and Hungary), regulations have generally become more pro-competitive since 1998. In 2003, regulation was

31. Differences amongst countries arise mainly from the legal threshold floor area for stores becoming subject to special regulation and the use of planning restrictions (Boylaud and Nicoletti, 2001). Besides making new entry difficult, restrictions on large-scale outlets have several consequences. They limit and ration the services that new retail formats can offer consumers and they slow down consolidation and modernisation in the sector (Bertrand and Kramarz, 2000; Høj *et al.* 1995; Pellegrini, 2000).

estimated to be most stringent in Belgium, Greece and Spain while it was most liberal in the Czech Republic, Sweden, Switzerland, Ireland and Australia.³²

[Figure 7: Summary indicator of regulation in retail distribution]

39. Large stores with modern formats are by far the most productive outlets in retailing and over time they are likely to displace smaller traditional stores.³³ It is often argued, however, that there is a cost for consumers due to the decline of traditional retailing, offering specialisation, location convenience and urban amenities. While evidence seems to suggest that in general small shops survive because consumers are willing to pay a mark-up for their services (Dobson and Waterson, 1999), there are specific instances where out-of-town retail store development has had a major impact on town centres (Maher and Wise, 2005a). In response to these concerns, many countries have tightened their planning policies since the mid-1990s (*e.g.* Belgium, France, Spain, Portugal, the United Kingdom). In some cases, the tightening of planning regulations has arisen from the devolution of these decisions to local levels of government (*e.g.* Italy, the Netherlands) where local governments are less inclined to grant planning permission to large retail outlets, possibly because they are more subject to pressures from incumbents. The rigour of current planning restrictions are questionable in a number of OECD countries and recommendations regarding the need to review zoning laws to ease entry were made in most of the OECD country reviews (Austria, Denmark, Finland, France, Italy, Japan, Korea, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom).

40. Restrictions on shop opening hours, often motivated by a desire to protect workers against long working hours, have traditionally varied considerably across the OECD area. The recent trend, however, has been towards liberalisation, mainly as a response to consumer demands. As part of their transition to market economies, Eastern European OECD countries have generally left opening hours with few or no regulatory restrictions. In addition, in 2003 a number of other countries (Ireland, Iceland, Japan, Korea, Mexico, New Zealand, Sweden and the United States) had no restrictions on shop opening hours. Those countries that still have restrictions have all, with the notable exception of Belgium and Portugal, moved towards more flexible opening hours during the past decade. Nonetheless, recommendations regarding the further easing of restrictions of shop opening hours were made in a number of OECD country reviews (Australia, Austria, Denmark, Finland, France, Italy, the Netherlands, Norway and Switzerland).

41. Regulation of promotional activities is also still fairly widespread. Besides limiting marketing practices, such regulation frequently includes restrictions on certain discount practices and on sales, both with respect to limits on the timing and duration of sales periods and restrictions on below-cost selling. At present, sales below-costs (loss-leading) is restricted or prohibited in a number of countries (*e.g.* France, Hungary and Japan).

42. Recent evidence suggests that less restrictive regulations in the retail sector are associated with positive effects on sectoral efficiency and employment performance.³⁴ Over the past decade, productivity

32. These findings may be downward biased for some countries, notably those with a federal structure, when regulatory policies are controlled by sub-central levels of government. Also, some countries may have regulations that are formally restrictive but are administered flexibly (or vice-versa).

33. Larger retail outlets, providing one-stop shop services, offer greater convenience and lower prices arising from improved efficiency and resulting cost savings that are passed on to consumers (Dobson *et al.* 2003).

34. For example, Kalirajan (2000) finds that price-cost margins in countries' retail sectors increase with the size of regulation-induced entry barriers facing potential foreign entrants. Bernardt (1997) estimated that the liberalisation of shop opening hours in the Netherlands would boost employment in the sector by 2.5 %. Conversely, restrictions on large outlet entry in France are estimated to have curbed employment growth in

growth in the retail sectors of most OECD countries, with the exception of Norway and Sweden, has lagged behind that observed in the United States, even though this country is estimated to have one of the highest productivity levels in this sector (Figure 8).³⁵ The retail sector in the United States has been one of the most important sectors in driving up aggregate productivity growth, partly by virtue of its size and partly due to the application of ICT (van Ark *et al.* 2002). A possible explanation for slower growth compared with the United States is that most countries still have a higher proportion of retailing undertaken by smaller stores that have a lower propensity to innovate, and even the largest stores are still small compared with those found in the United States (MGI, 1998). In a few countries, where regulation is relatively restrictive, productivity growth has been weakest (Austria, Belgium, Germany, France and Spain).³⁶

[Figure 8: Labour productivity growth in the distribution sector]

43. Increased consolidation and concentration in the retail sector have raised concerns that this is leading to a lessening of competition with possible adverse affects on consumers and suppliers. In addition to concerns that consolidation may be leading to increased market power, concerns were also been expressed about the possible monopsony (*i.e.* buying) power of retailers and its effects on economic welfare.³⁷ While the scope for anti-competitive behaviour is often limited by the threat of entry, entry into retailing since the mid-1990s has not been that easy, due to the tightening of planning and zoning regulations discussed above.³⁸ Over the past few years a number of competition authorities have addressed both these issues (Australia, France, the Netherlands and United Kingdom) and for the most part have advised against heavy-handed reforms (Box 4).

this sector (Bertrand and Kramartz, 2002). And Johnston *et al.* (2000) find that fiercer competition has been a major factor behind the pick-up in productivity growth in the Australian retail sector.

35. See MGI (2002) for a comparison of productivity levels in the sector.

36. Evidence on the negative effects of regulation on ICT use in the retail sector is found in Conway *et al* (2006).

37. However, recent research indicates that the link between concentration and competitive pressures is complex in retail distribution and differs from other industries. On the one hand, greater market concentration in the retail market may benefit consumers through lower retail prices arising from increased buying power on the part of retailers. On the other hand, if superior trading terms by leading retailers reinforces competitive advantages over smaller rivals, further consolidation might lead to market power in the retail market, resulting in higher retail prices (Dobson *et al.* 2001).

38. Even where entry is possible, incumbent firms typically have a strategic advantage due to better location and reputation effects (Dobson and Waterson, 1999; Dobson *et al.* 2003).

Box 4. Market power and buyer power in retail markets

The UK's Office of Fair Trading (OFT) and Competition Commission (CC) have undertaken inquiries into supermarkets in the United Kingdom. The CC found that in general the UK market is competitive but that some of the pricing practices of the major retailers reflected market power and were found to be against the public interest. However, no remedies were recommended as it was felt that the remedies would require monitoring and a level of intervention that would be disproportionate to the adverse effects they were designed to fix. For example, as regards the practice of below-cost selling, the CC found that prohibitions in other countries against this practice had not been very effective and that prohibition often resulted in higher prices overall and a decrease in competition. As regards buyer power, the CC did find that large retailers could dictate trading relations with suppliers which distorted competition in the supplier market. How protection against powerful, opportunistic buyers should be afforded to suppliers remains contentious.¹ The UK's CC recommended that the most effective way to remedy these adverse effects would be through a legally enforceable Code of Practice.²

In the Netherlands, where buyer groups are prominent, concerns have also been expressed about both the buying power of retailers and their market power and its effects on economic welfare. Once buyer groups are taken into account, concentration in the Netherlands is high compared with other European Union countries, with only Sweden and Denmark having higher five-firm concentration ratios (Maher and Wise, 2005b). While concentration and buyer power may lead to a lessening of competition, the competition authority, NMa, like the UK's CC, has been unwilling to discourage consolidation activity in retailing due to the possible efficiency benefits, and the belief that anti-competitive behaviour in the retail market is limited by the threat of entry.

Australia's retail sector is also highly concentrated by OECD standards and this has raised concerns regarding the market power of dominant retailers. In response to these concerns, there have been proposals to cap the market share of each major chain or for divestiture. However, these proposals have been rejected on the grounds that, although heavily concentrated, the market is generally competitive. The Australian competition authority (ACCC), recognising that competition is healthy despite the concentration level, has permitted several recent acquisitions in this sector, but it continues to monitor the market for anti-competitive conduct. The ACCC also looked at concerns regarding buyer market power but concluded that the market is "dynamic, innovative and competitive" (OECD, 2004b). Both these issues will be closely monitored by the ACCC and wider powers were granted to the competition authority allowing it to bring representative actions and to seek damages on behalf of third parties.

In France – in contrast to the United Kingdom, the Netherlands and Australia – concerns regarding increasing concentration and buyer market power have led to the strict enforcement of the ban against pricing below costs (*loi Galland*) and very prescriptive regulations concerning the producer-retailer negotiation process. However, the combined effect of entry restrictions and the *loi Galland* has been to increase the relative bargaining power of large-scale producers and retailers to the detriment of small producers and consumers, weakening both the incentives for price competition amongst retailers and the incentives for retailers to negotiate lower wholesale prices with producers (OECD, 2005b).

1. In general Competition Authorities appear unwilling to prohibit retailer practices that potentially offer efficiency benefits even if they serve to reinforce buyer power (Dobson *et al.* 2003).

2. A voluntary code was not thought to be sufficient to remedy the behaviour of retailers. The code requires firms meeting a market share test to offer standard, non-discriminatory terms to all suppliers and to make commitments to "reasonable" dealing with regard to payment delays, price reductions and marketing costs (Maher and Wise, 2005a).

3.3.2 Professional services

44. Professional services are usually subject to pervasive regulation, particularly as regards entry, access and residency requirements; recommended or fixed prices; the exclusive exercise of certain functions; and restrictions on advertising and business structures. These regulations can be in the interests of both consumers and members of the profession if they improve service quality and prevent market

failure.³⁹ There is, however, little empirical evidence to suggest that the pervasive set of restrictions applied to professional services in many countries improves consumer welfare. In practice such restrictions have been correlated with higher prices and less innovation, without improving quality (Nguyen-Hong, 2000; OFT, 2001; Paterson *et al.* 2003).⁴⁰ The OECD country reviews revealed that in most countries a reassessment is needed of government restraints that permit professional associations to restrict price and other forms of competition among their members (see below). However, attempts to address these problems through application of the competition law have typically been frustrated in a number of countries due to the “regulatory conduct doctrine” that exempts anti-competitive behaviour if it is required by regulation.⁴¹ Recommendations regarding the removal of such exemptions from the competition law were made for a number of OECD countries (Australia, Austria, Canada, Hungary, Italy, Japan, Korea and Switzerland). The United Kingdom, however, is one of the few examples where the competition authority has been successful in this regard (Box 5).

Box 5. Competition advocacy and reforms in professional services in the United Kingdom

In comparison with other OECD countries, the United Kingdom has a relatively low level of regulation in professional services. Nevertheless, competition in the professions in the United Kingdom is rather weak due to self-regulation by professional bodies. In light of these competition concerns, the Office of Fair Trading (OFT), using its powers to undertake market studies, carried out an investigation of professional services (OFT, 2002). The aim of the investigation was to identify restrictions which had the effect of preventing, restricting or distorting competition in the professions. The investigation looked not only at restrictions and practices of professional association but also government regulations. The report recommended (amongst others) that:

- The entitlement to request that professional rules be excluded from the Competition Act prohibitions on anti-competitive agreements should be removed.
- Restrictions on price competition by fee guidance and, in particular, recommended fee scales should be abolished.
- Restrictions on advertising should be eased or removed.
- Indirect restrictions on entry including restricted consumer access (e.g. in the legal profession) and restrictions on permitted business structures where professional rules and government regulation prevent multi-disciplinary partnerships (e.g. legal, accountancy and management consultants) should be lifted.

In response to these recommendations, the government has removed the entitlement to request exclusion from the Competition Act, and professional bodies have undertaken a number of actions towards removing unjustified restrictions, or, in some cases, have justified the existing restrictions. While much progress has been made, areas where serious restrictions to competition remain include continued restrictions on multi-disciplinary practices, especially in the legal profession.

39. Such interventions are often explained by the need to correct market failures arising from information asymmetries and transactions costs. However, restrictions on price competition and advertising do not explicitly address the issue of quality and can have a negative impact on competition. For example, recommended prices may facilitate the co-ordination of prices amongst service providers and can mislead consumers about reasonable price levels.

40. OFT (2002) provides an overall review of the empirical evidence. Nguyen-Hong (2000) examined the effects of regulations on price-cost margins in engineering services and found that they led to an increase in prices on the order of 10% to 15% in countries with the most restrictive practices. And Paterson *et al.* (2003) found a negative correlation between productivity and the degree of regulation, and no evidence that less restrictive regulation led to a lower quality of services.

41. For example, the regulatory structure of these professions, where the associations are often acting as an authorised regulatory body, has prevented the competition authorities from taking actions against certain activities, such as collective price setting, that might otherwise have been found to be anti-competitive.

45. A summary indicator of regulatory restrictions in professional services shows that there are large differences across OECD countries (Figure 9).⁴² In 2003 regulation was most stringent in Italy, Turkey, Luxembourg, Germany and Canada, while it was most liberal in Denmark, Sweden, Australia, Finland, Switzerland, the United Kingdom and Ireland. The reviews found that heterogeneity of regulations is still serious and creates important obstacles to trade (*e.g.* Australia, Canada, the United States and the European Union). Licensing requirements and other restrictions effectively make it difficult for professionals to practice across jurisdictions within a country or in different countries. Governments can, and do, impede labour mobility in professions by designing occupational qualifications for licensing, certification or registration in ways that discriminate against those from other countries or jurisdictions. And in a number of countries, labour mobility is also impeded by residency or nationality requirements (Australia, Austria, Canada, Denmark, France, Korea, the Netherlands, New Zealand, Switzerland). Restrictions on advertising and permitted business structures, the exclusive exercise of certain functions and mandatory membership in professional associations also continue to exist in the majority of OECD countries. Recommendations regarding the easing of these types of restrictions were made in almost all of the OECD country reviews. In particular, considerable scope exists to ease restrictions on advertising and on permitted business structures in the legal and accountancy professions, where professional rules and government regulations prevent multi-disciplinary practices.

[Figure 9: Summary indicator of regulation in professional services]

3.4 *Regulatory policies in network industries*

46. There is now a solid body of cross-country evidence that liberalisation policies in network industries have led to higher productivity, better quality and, often, lower prices.⁴³ However, capturing these benefits is not straightforward and close attention needs to be paid to the design of reforms (Gonenc *et al*, 2001). This section first discusses general issues that are relevant for all network industries, such as third-party access and vertical separation, investment incentives, universal service obligations and public ownership. Next, reforms in the telecommunications, electricity, air and rail sectors are examined in more detail.⁴⁴

3.4.1 *Cross-sectoral themes emerging from the country reviews*

47. A number of themes cutting across network industries emerged from the analysis of country-specific evidence. These included enabling effective non-discriminatory third-party access, if needed by vertical separation in liberalised industries; supporting investment incentives in the network to achieve successful reforms; securing universal service obligations in a competitive environment; and establishing a level-playing field when the public sector or publicly owned companies participate in market activities.

42. The professional services covered by the indicator include the accounting, legal, architectural and engineering professions.

43. See OECD (2001), which reviews the literature and adds more evidence on the relationship between regulation and performance in these sectors. The *OECD Reviews of Regulatory Reform* also provide information on the effects of industry-specific reforms on performance.

44. Individual OECD country reviews also addressed competition problems in taxi markets, road transport, and harbours, but not in sufficiently large number to allow for drawing general conclusions.

Third party access and vertical separation

48. For competition to develop in liberalised network industries, competitive service providers must be able to access the network on a non-discriminatory basis.⁴⁵ The main policy lesson arising from country-specific evidence is that this objective is most easily attained by disciplining the market power of the network owner through both structural separation and the use of cost-based access charges that apply equally to all network users (Australia, Austria, Canada, Finland, France, Hungary, Japan, Korea, the Netherlands, New Zealand, Norway, Switzerland and the United Kingdom). Various forms of separation of vertically-integrated companies have been implemented in OECD countries. The most common approach has been accounting separation, which in theory should provide the necessary cost information for setting non-discriminatory access prices. However, the presence of asymmetric information between the regulator and the incumbent, the subjective nature of accounting and the fact that government-owned incumbents seldom have been subject to capital accounting (unlike private firms), means that in practice accounting separation does not suffice (France, Japan, Norway).⁴⁶ Management separation is an extension of accounting separation which adds a clearer distinction between units (at times even involving the creation of separate companies, so-called legal separation), but suffers from the same weaknesses as accounting separation, especially when it keeps the separated functions within the same top management structure (France).⁴⁷ Only ownership separation can ensure that the owner of the natural monopoly segment no longer has incentives to favour itself (or its subsidiaries) over alternative providers and prevent the network owner from exploiting informational advantages and cross-subsidising competitive activities with profits from monopolistic market segments. Particularly in the electricity industry, a number of countries have increasingly moved towards this kind of separation (*e.g.* Finland, Italy, the Netherlands, Norway, Sweden and the United Kingdom).

49. However, difficult policy challenges can arise also in the context of vertical separation. Notably, the success of ownership separation closely depends on both the sector characteristics and the design of the accompanying regulatory framework. For example, in industries characterised by rapid technological change or where alternative networks are available, such as in telecommunications, vertical separation may not be as critical, since facilities-based competition can arise through competition via alternative technologies (*e.g.* fixed and mobile telecoms networks and cable networks). However, as discussed below, attempts to calculate cost-based access charges in telecommunications proved to be fraught with difficulties in the countries surveyed.⁴⁸ Moreover, in some cases network separation can create a monopoly (of the infrastructure operations) which lacks market-based investment incentives (*e.g.* electricity markets in Canada, Finland, Italy and the United States, and railways in the United Kingdom).

45. Securing unrestricted access is also important to some non-natural monopoly segments. For example, securing access to rolling stock in railways (Finland, France, the United Kingdom) and storage in natural gas markets (France, Italy) is considered important to stimulate new entry. Naturally, such regulatory intervention should be withdrawn as new supply comes onto the market.

46. Although accounting separation increases transparency, there is still considerable scope for the network provider to load both the costs of services and common costs onto the network access price.

47. Staff working for the network business will be aware of the financial interests of their parent company and its competitive activities, and may take decisions to further these. In the electricity industry, numerous studies argue that only full ownership separation of transmission networks, when the network is an independent company, rather than a subsidiary, can completely remove the incentive to favour one market participant over others. For example, see Newbery (2002a; 2002b).

48. Recent policy measures have, therefore, moved away from cost consideration and towards lowering access charges to the local loop and termination charges on mobile phone networks (Australia, France, Hungary, Iceland, Japan, Norway, Switzerland, the United Kingdom and the United States).

Supporting investment incentives in deregulated network industries

50. A lesson from country-specific evidence is that regulators need to pay close attention to the design of policies and ensure that they provide the right incentive mechanisms, particularly with respect to investment. The need to secure investment in the electricity sector was a concern in a number of the countries surveyed (Australia, Canada, Denmark, Italy, New Zealand, Sweden, the United States). Failure in securing appropriate investment incentives was one of the main reasons for the problems encountered in the deregulation of the Californian and Ontario electricity markets and in British railways (Box 6). The Californian and Ontario experiences revealed that partial regulation with regulated prices in downstream markets and free price setting in upstream markets is unlikely to be successful in the electricity industry, contrasting with the successful extensive liberalisation in the Nordic countries and the United Kingdom. Although such controls may have a role to play as transitional measures during the initial phase of market opening, they can have negative consequences for competition and investment. The British rail experience suggests that reforms need to address the question of how to secure market-based investment incentives for the private monopolist owning the network. These experiences suggest that, when investment incentives are weak, there is a need to establish clear lines of responsibility regarding investment decisions, perhaps with regulators taking more direct responsibility of infrastructure planning.

Box 6. The importance of regulatory design: Californian and Canadian electricity and British railways

The Californian electricity market was deregulated in the late 1990s. Consumers were allowed to freely choose their electricity supplier and electricity generation was deregulated, while the natural monopoly elements (transmission and distribution) remained regulated. To encourage competition in generation, the vertically integrated utilities were encouraged to disinvest about half of their generation capacity and all electricity was to be sold through a wholesale power exchange. The absence of long-term contracts meant that wholesale prices were solely determined on the exchange, creating opportunities for large generators to engage in strategic withholding of supplies to increase wholesale prices, particularly at peak demand. As retail prices remained regulated (the regulation was originally implemented to allow utilities to recuperate stranded costs) the incentives for investing in generation capacity were greatly diminished. Additional problems included opposition on environmental grounds to constructing new generators and limits on long-distance transmission capacity. This combination of factors created financial problems for the utilities when wholesale prices increased during the summer 2000. Instead of letting retail prices adjust, regulators chose in the short term to introduce rationing, which acted to exacerbate investment problems in the sector. Subsequently, a more durable regulatory response was introduced, including real-time pricing for large industrial and commercial customers, abolishment of the restrictions on long-term contracts, and investment in transmission capacity to reduce bottlenecks (and thus generators' market power).

Ontario (Canada) experienced similar problems when the Provincial government capped downstream retail prices (below the cost of new entry), while allowing wholesale prices to be determined by market forces (Maher and Shaffer, 2005). However, contrary to both California and Ontario, Alberta allowed retail prices to increase, maintaining investment incentives in generation, which was instrumental in permitting wholesale prices two years later to return to their pre-2000 level.

One of the motivating factors behind the liberalisation of the British railways was the need to attract private capital to fund investment following a legacy of public sector under-investment. Competition was introduced by vertical separation of track infrastructure (operated by a monopoly track company – Railtrack) from the operation of train services and separation of three rolling stock companies and 25 passenger operating service companies. In addition, a freight operating company and a large number of service suppliers were created. This market structure provided few market-based incentives for investment by Railtrack in infrastructure or by rolling stock companies as these companies had no incentives to invest in new rolling stock and undermine their market positions. In addition, service providers' contracts were too short to make it economically viable to invest in rolling stock. Continual changes to the complex regulatory structure (consisting of one regulator for Railtrack, one franchising authority, and another regulatory body responsible for safety) increased the political risk associated with investing in the sector.

In the decade following the liberalisation in the early 1990s, there was a significant improvement in operating efficiency and rail traffic grew significantly, reversing decades of decline. However, as the expected private investments were not forthcoming there was a deterioration of service quality (declining punctuality and reliability, and increasing overcrowding) and safety became a concern with a number of fatal accidents and widespread incidents of cracking rails – the latter leading to severe speed restrictions with a consequent further deterioration of service quality. Eventually, Railtrack went bankrupt and was taken over by a private non-profit company Network Rail with substantial public board representation and with the government taking a more direct responsibility for infrastructure planning.

Universal service obligations

51. Historically, universal service obligations (USO) in network industries have been met by granting monopoly rights to publicly-owned companies, which financed the cost of USO through cross-subsidies from profitable market segments. This approach proved effective in reaching non-economic goals, even though rationing phenomena (*e.g.* in the form of queuing) have often arisen. As traditional USO operators have lost monopoly rights in the wake of liberalisation, new ways of ensuring the provision of universal service were sought.⁴⁹ A level-playing field can be established by compensating the provider of universal services for the associated net costs. Country-specific evidence points to three main issues arising in this regard: the estimation of the relevant costs, the method of financing them and the assignment of USO contracts.

52. In several countries, the relevant cost of universal service is defined net of the derived benefits from having a nation-wide network and associated benefits such as brand recognition.⁵⁰ For example, neither the Swedish nor the New Zealand postal service providers are compensated for their USO as costs and benefits are considered to balance. In the telecommunications sector, the incumbents in Spain and the United Kingdom are not compensated for their USO for similar reasons. Compensation for the (net) cost of USO is financed in a number of network industries through the establishment of universal service funds to which all (or the largest) companies contribute. Such funds have been established in France (energy, telecommunications), Austria, Germany, Italy, and Japan (telecommunications). However, in telecommunications only two countries (France and Italy) have activated these funds as in the other countries the net cost of USO has been estimated to be negligible. Country-specific evidence suggests that the appropriate financing mechanism depends on the existence of network externalities, deadweight losses, and distributional effects. However, while financing of the funds through a fiscal transfer is regarded to be more neutral with regard to competition and entry (*i.e.* not distorting relative prices), this approach is generally not used.

53. In a number of countries where funding USO has been deemed necessary, competitive tendering has been used to ensure that they are provided at the lowest cost to society. For example, the EU directives in the passenger transport area (railways and air transport) require that compensation be set through open bidding for USO contracts. OECD (2004d) finds that opening up USO to other service providers leads to a decline in compensation claims. To harvest such benefits, open bidding for service provision is currently required in Germany and Denmark whenever the incumbent USO provider seeks compensation – even though no requests for compensation have been submitted in either country so far. However, some country experiences highlight that making competitive tendering effective requires a careful design of USO contracts. For example Norwegian public service contracts in domestic air transport were so specific that the contracts could only be served using one specific airplane, which only the incumbent provider possessed and which other companies were not able to purchase as they were no longer produced, pointing to the need to avoid technology dependent definitions of USO (Høj and Wise 2004c). Another important design issue is that, in the absence of careful targeting, there is a risk that the number of beneficiaries may turn out to be larger than the intended recipients. An example is when affordability is ensured administratively through the setting of “reasonable” prices, such as particularly low electricity prices for

49. This requires preventing non-USO providers from gaining market shares by only operating in the most profitable market segments (so-called cream-skimming) at the expense of operators that bear the costs of USO.

50. For instance, the British telecom regulator includes such considerations as customer life-cycle benefits (unprofitable customers becoming profitable), ubiquity (a household moving from an uneconomic area to an economic area may contact its former service provider), brand enhancement and corporate reputation, and call boxes (that may become economically viable over time by promoting the logo of the company) (OECD, 2004d).

consumers with low level of demand in France and Italy. OECD (2004d) found that, in general, to avoid both production inefficiencies and consumption distortions, it is preferable to align prices on costs and achieve affordability through the tax and benefit system.⁵¹

State control and public ownership

54. All OECD countries have seen a reduction in public ownership, but the declines were generally modest over the past five years (Figure 11).⁵² English-speaking countries continue to have relatively small public enterprise sectors and the countries with the largest sectors (Austria, France, Italy, Norway, Poland, Greece and Turkey) continue to have considerable scope for further privatisation. In some cases, privatisation may be hindered by the need for parliamentary consent (Norway), constitutional restrictions (Finland and Austria), or the legal requirement to maintain controlling stakes (France). A number of OECD country reviews also recommended policy action against the persistence of “golden shares” or ownership restrictions in energy markets (Austria, Hungary, Italy, the Netherlands, and Norway) and in telecommunications markets (Australia, Canada, Hungary, Iceland, Italy Japan, the Netherlands and Norway), and OECD data suggest that further progress in this area could also be made in transition countries, Portugal and, to a lesser degree, Finland and the United Kingdom. At times, privatisations have been delayed due to unfavourable stock market conditions. Moreover, in a number of countries the implementation of privatisation programmes may have been hampered by the presence of public-owned enterprises at several levels of government: for example, extensive local government ownership in the electricity sector (Austria, Canada, Denmark, Finland, Germany, Iceland and Norway) and in the telecommunications sector (Finland).

[Figure 10: Indicator of state control]

55. The competition problems associated with government involvement in market activities are still largely concentrated in the network industries.⁵³ There has been some privatisation in telecommunications, although in most countries the government remains involved in this industry; while in some countries the scope of public enterprises has increased in the transport and/or energy sectors (Luxembourg and New Zealand). Finally, command-and-control approaches were increasingly replaced by incentive-based regulations (especially in transport and telecommunications). However, a number of countries have further scope for reform in this area, including central and southern European countries together with Norway, Japan, Ireland and Spain.

56. The principal competition issue identified in the surveys was how to establish a level-playing field between state-controlled enterprises and private firms. Publicly-owned (or controlled) companies are typically vertically-integrated incumbents with dominant positions in newly-liberalised markets and they usually operate in both the natural monopoly and competitive segments of the market. Competition problems originating from cross-subsidisation of competitive activities with profits from non-competitive segments, are compounded by soft budget constraints or lower financing costs, arising from either (implicit or explicit) state guarantees (France and Germany), favourable tax treatment (France and Japan) or lower

51. For an example in telecommunications, see Maher (1999).

52. To strengthen corporate governance incentives, there has also been a trend towards corporatising the firms and transferring ownership and control to a single ministry (France, Norway, Italy) or a holding company (Austria).

53. The modest reduction in the scope of the public enterprise sector mostly reflected the continued withdrawal of governments from the manufacturing and banking industries.

required rates of return.⁵⁴ Privatisation addresses the competition problems that arise from the government's dual role as owner and regulator, and vertical separation would reduce the potential for cross-subsidisation. However, to date only in a few cases has ownership separation been combined with privatisation, such as in the British rail and electricity sectors and (partially) the Italian electricity sector (Maher and Wise, 2005a; OECD, 2003c).

3.4.2 Sectoral issues

57. Network industries have witnessed important regulatory reforms over the 1980s and 1990s, with some countries being early reformers (the United States, the United Kingdom, Australia and New Zealand). Using OECD industry-level indicators, Figure 11 shows the extent of reforms that have been undertaken in some of these sectors over the past few decades. By 2003, there is relative homogeneity amongst OECD countries as regards regulation in the telecommunications sector. This is less the case in the energy and transport sectors, where the restrictiveness of regulation still varies considerably across OECD countries. Energy, transport and communication account for 10-15% of value-added and 5-10% of total employment in OECD countries and also make up a large share of intermediate inputs. Thus, policies and outcomes in these industries have important consequences for aggregate economic performance.

[Figure 11: Regulatory stance in OECD countries in energy, transport and communication]

Telecommunications

58. Performance in the telecommunications sector has greatly improved following successful regulatory reforms that introduced competition. Over the past decade, the sector has experienced relatively high growth rates of labour productivity,⁵⁵ and prices have also fallen with the increase in competition. Overall, prices between 1990 and 2004 have fallen by 10% for residential users and by around 30% for business users (Figure 12, Panels A and B). For residential users it is worth noting that these gains occurred since the second half of the 1990s when the decrease in usage charges began to outpace the rise in fixed charges. Internet access prices have also decreased by almost 25% between 1998 and 2002 (Figure 12, Panel C). Country-specific evidence suggests that where prices have not fallen (*e.g.* mobile services in some countries), or where reforms have not been successful, it has been due primarily to continuing market power on the part of incumbent firms, or in some cases, ineffective regulation.

[Figure 12: Telecommunications prices]

59. In most countries an independent regulator is charged with promoting competition and the interests of consumers and with regulating the sector, including interconnection, price regulation and universal service obligations. However, the need to strengthen the independence of the regulator arose in a number of country reviews. For example, the regulator is sometimes appointed by a Minister rather than a professional board or Parliament (Austria) and, in some cases, the government is both owner and regulator, which defeats the purpose of an independent regulator (France, Iceland, Japan, Norway). The need to strengthen the regulator's powers was also an issue in a number of reviews. Regulatory powers were weak where the regulator lacked the authority to initiate actions (the Netherlands); spectrum licences are granted

54. A recent manifestation of such problems was found in the telecommunications industry, where some financially distressed publicly-owned firms could retain all their assets whereas competitors in similar situations were forced to divest (OECD, 2005b).

55. Productivity growth over this period has been somewhat lower in countries that began reforms earlier (*e.g.* the United Kingdom and the United States). In countries where there was considerable scope for improvement, reforms in the past decade have resulted in average annual growth rates of over 8% (Germany, Norway, Finland and Italy).

by the ministry rather than the regulator (Canada, Italy, Korea); and interconnection issues were dealt with by the ministry (France, Hungary, Korea). In order to ensure a level playing field and provide the right incentives for competition to develop, a number of countries were also advised to reduce their public control or eliminate their golden shares or ownership restrictions in the sector (Australia, Canada, Hungary, Iceland, Italy, Japan, the Netherlands, Norway).

60. In almost all OECD countries there is now considerable competition in long-distance services, and wireless and internet services are also rapidly becoming competitive. Despite the large number of operators in many OECD countries, facilities-based competition,⁵⁶ as measured by new entrants' share of access lines, has been slow to develop (Figure 13). In the United Kingdom and the United States, both early starters in introducing telecommunications competition, the market share of access lines of new entrants remains disappointingly low (around 15%). However, in a number of countries, facilities-based competition from cable companies had led to high take up of broadband services (Canada, Denmark, Korea, the Netherlands). Facilities-based competition is one form of competition. An alternative, and more common, approach in member countries has been to unbundle the network (*i.e.* local-loop unbundling), through either physical or notional separation.⁵⁷ The OECD country reviews found that unbundling still needed to be effectively put into practice in a number of countries (Australia, Hungary, Korea, Norway, Sweden, Switzerland) and recommended that the United States continue mandatory unbundling for the foreseeable future.⁵⁸

[Figure 13: Access line market share of new entrants, 2003]

61. Ensuring non-discriminatory third-party access to the network was also found to be an issue (Australia, Hungary, Iceland, Japan, Norway, Sweden, Switzerland, the United Kingdom and the United States). Competition has been slow to take off in the United Kingdom due to the lack of progress on local-loop unbundling and one of the reasons for this is that charges for access to the network, both shared and unbundled, are amongst the highest in the European Union (Maher and Wise, 2005a).⁵⁹ Access prices are excessively high in a number of other countries, stifling the potential competition that could emerge from local-loop unbundling (Australia, Finland, Hungary, Iceland, Ireland, Norway and Switzerland). The weakness of accounting separation for the network was highlighted in some of the country reviews (*e.g.* Australia and Norway); and the need to replace *ex-post* with *ex-ante* regulation of access charges was also raised (*e.g.* Finland and Norway). Countries that have unbundled a significant percentage of lines and lowered access charges, often have seen an explosion in new services (*e.g.* France and Italy).

62. Incumbent operators maintain dominant positions in almost all segments of the market (OECD, 2005a), and a large number of countries had concerns with abuse of market power by incumbent operators (Australia, Denmark, Finland, France, Hungary, Iceland, Korea, the Netherlands, New Zealand, Norway,

56. Under facilities-based competition new entrants build competing networks that duplicate that of the incumbent operator.

57. Local-loop unbundling promotes competition by allowing competitors and new entrants to offer services over the incumbents fixed network, and is not only key for fixed telephony, but also for competition and the development of broadband services.

58. Recent regulatory and court decisions in the United States have reduced reliance on unbundling to promote competition in favour of giving incumbents greater incentives to appropriate the benefits of their investments (Suppanz *et al.* 2004).

59. The United Kingdom has been relatively slow in implementing local-loop unbundling. Only 1% of British customer lines are unbundled, compared with an EU average of 13%. Ending a five year dispute with the regulator and under a threat of break-up, BT has agreed to substantially decrease the cost of access to its network in 2005. Details of BT's agreement with the regulator, Ofcom can be found on Ofcom's website www.ofcom.org.uk

Switzerland and the United Kingdom). Recommendations regarding the need for regulatory and competition authorities to remain vigilant were made in a number of country reviews. Abuse of market power by incumbents has been of particular concern in the mobile telecommunications sector. Competition authorities and regulators have taken actions to address this problem in a number of countries (the United Kingdom, Denmark, the Netherlands and Switzerland).⁶⁰ Investigations into the sector found that the problem arises because mobile network operators have a monopoly on call termination on their own networks and competitive pressures at the retail level do not seem to constrain termination charges. The OECD country reviews, therefore, highlighted the need for price regulation on call termination charges (Denmark, Finland, Japan, Korea, New Zealand, Norway and the United Kingdom). Alternative measures such as requiring mobile operators be obliged to lease network capacity to those who do not have their own infrastructure were also recommended (France and Sweden).

Electricity

63. Liberalisation and privatisation of the electricity industry have been implemented in many OECD countries. Reforms, however, have varied widely across countries, including in the European Union, in spite of EU Directives, with various experiences providing useful lessons. Problems with reforms have occurred in some countries. However, as illustrated above, where these problems have occurred (*e.g.* California and Ontario), they were generally the result of failure to properly design regulation, rather than with liberalisation *per se*. The country reviews found that, in general, competitive electricity markets can work satisfactorily if they are well designed and regulated (the United Kingdom, Nordic countries).

64. Country experiences suggest that the legal opening of electricity markets needs to be supported by measures to ensure the development of competition, which requires that entrants are able to deliver electricity to consumers on the same terms as incumbents. Most countries in the European Union have secured some degree of separation of the transmission and distribution grids in order to improve access to networks, unbundle cost-based tariffs for the use of the networks, and lessen informational advantages to the incumbent.⁶¹ Finland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden and the United Kingdom all have full ownership separation of the transmission network, while all other countries (with the exception of Luxembourg) have introduced legal separation with an independent system operator (Table 4). As argued earlier, however, incentive problems can still occur in this case. Outside of the EU, for the most part, reforms have been hesitant and the electricity sector is primarily characterised by vertically-integrated utilities (Australia, Canada, Japan, Korea, Switzerland, United States). However, in some federal states structural reforms to separate the transmission network are being under-taken or planned by some lower levels of government (Australia, Canada).

[Table 4: Implementation of the EU Electricity Directive and electricity market indicators]

65. Likewise, although distribution system operators need to be adequately separated from supply (*i.e.* retail) companies to ensure cost-reflective tariffs and the removal of any cross-subsidies that distort competition, this remains an issue in almost all countries reviewed, and these activities are often owned or controlled by municipal government agencies. Several country reviews pointed to the need to separate distribution and retail activities (Australia, Austria, Canada, Hungary, Japan, Korea, New Zealand, Switzerland), particularly when government ownership of the distribution network was combined with the

60. In the Netherlands the competition authority dropped the case after mobile operators voluntarily lowered their termination charges.

61. The British experience in particular shows that unbundling ownership of transmission from generation has been critical in enabling competition to deliver cost reductions in England and Wales. This has been in contrast to vertical integration in Scotland, where there appeared to be no improvement in efficiency after privatisation (Newbery and Pollitt, 1997).

participation of a government-owned enterprise in the retail market (Finland, France, the Netherlands, Norway).⁶² Non-discriminatory third-party access, therefore, is still a problem in a number of countries. In the European Union, for example, there is a significant degree of divergence in network tariffs, which appear to mainly reflect differences in distribution charges (Table 4). Some countries appear to have network tariffs significantly above the average (Austria, Belgium, France, Germany, Ireland) and the reasons for this should be closely examined by regulators.

66. Third-party access can be facilitated by privatisation and the establishment of independent regulators, but in most countries substantial government ownership is still the norm in the sector (Australia, Austria, Canada, Finland, France, Hungary, Italy, Korea, the Netherlands, New Zealand, Norway and Switzerland). In this case, it is difficult to establish an “independent” regulator since the government is both owner and regulator. A number of countries still needed to create an independent regulator for the sector (Switzerland, Korea, Japan, and some provinces in Canada); and in some cases there is a need for the regulator’s powers or independence to be strengthened (Hungary, Italy, France, the Netherlands). In a number of federal states, the OECD country reviews also found that the co-existence of state and national regulators generated problems with regulatory consistency that needed to be addressed (Australia, Canada and the United States). Many of the country reviews highlighted that the absence of consistent and transparent regulation can be an obstacle to the development of competition as private investors will be reluctant to invest in the sector.

67. Concentration is another important obstacle to both the development of more vigorous competition in the sector and the development of liquid wholesale markets. In the EU, concentration in the sector remains high, with the exception of the Nordic and UK markets which now have between five and ten major competitors plus a range of fringe companies in the generation sector (Table 4). In other OECD countries, the electricity generation market is also characterised by a few firms with dominant positions. A recurring problem is the ability of dominant utilities to affect electricity prices, particularly during peak demand periods (the Netherlands, Nordic countries, the United Kingdom, the United States). The OECD country reviews also found that the tendency for integration between generation and retail companies, particularly in the absence of liquid wholesale markets, was an impediment to the development of competition in the retail market since in this case it can be difficult for non-integrated entrants to break into the retail sector of the market (Australia, Austria, Canada, France, the Netherlands, New Zealand, the United States). EC (2005) also finds that in most EU countries, competition in the retail market appears to be limited by regulatory barriers and unfavourable market structures (Austria, Belgium, France, Germany, Greece, Hungary, Italy, the Netherlands, Poland, Portugal, Spain).⁶³

Air passenger transport

68. Since the late 1990s entry barriers in a number of countries in the air passenger transport sector have been removed (France, Portugal, Switzerland and the United States) or reduced (Korea, Mexico, Poland and Turkey). However, countries that still maintain entry barriers in this sector include Australia, Canada, Czech Republic, Greece, Hungary, Ireland, Japan, Slovak Republic, Spain, and the United Kingdom (Figure 14). The progress in reducing public ownership has been more uneven. Government-owned airports have been privatised (Australia, Italy) or restructured as limited liability companies (New Zealand) and a couple of countries (Belgium and Spain) have completely privatised their national carriers, while many of the other European countries have reduced their stakes in the national carriers without giving up public control. However, a couple of countries (New Zealand and Switzerland) have increased

62. The Netherlands subsequently announced its intention to split retail from distribution and then privatise retail but keep distribution networks in public hands.

63. See EC (2005) for a discussion on how an unfavourable market structure limits consumer choice in the retail market.

their stakes in the national carriers – often to save financially troubled companies from bankruptcy. Country experiences suggest that incumbents tend to be protected against take-overs, either by being – fully or through controlling interest – publicly-owned companies (France, Nordic countries, New Zealand, Italy) or through foreign ownership restrictions (Canada, Australia, Japan, New Zealand, the United States). In a number of cases, the competition law’s provision of a “failed firm defence” has helped incumbents to strengthen their dominant position by allowing them to take over competitors in financial trouble (Norway, Canada).⁶⁴ In a number of cases this pointed to the need to complete on-going privatisation programmes of government-owned airports and carrier incumbents (Finland, France, Norway); and the need to abolish foreign ownership restrictions (Australia, Canada, New Zealand and the United States).

[Figure 14: Regulatory stance in the air passenger transport sector]

69. The regulation of international air transport under (mostly) bilateral open-sky agreements was also addressed in a number of surveys. Bilateral agreements provide reciprocal access to main international airports, but seldom include cabotage rights for foreign carriers (*i.e.* the provision of domestic air services by a foreign carrier), thus shielding domestic air transport markets from international competitive pressures. In a number of countries entry is prevented by the lack of cabotage rights for foreign carriers (Australia, Canada, New Zealand and the United States) or for carriers outside a regional trade agreement on air services (the European Union countries). EU directives allow for the introduction of cabotage rights for EU carriers only. Therefore, the OECD country reviews recommended in a number of cases that open-sky agreements should be multilateral and inclusive of cabotage rights (Australia, Canada, New Zealand and the United States).

70. Competition in the air passenger transport sector has been furthered by rules for the allocation of landing and take-off rights and the liberalisation of ground services, particularly in the EU. Nevertheless, a number of frequent problems emerged, particularly with respect to securing the non-discriminatory access to airports and their facilities. Incumbent carriers in a number of countries often continue to benefit from preferential treatment. The most obvious example is the predominance of grandfathering of landing slots in spite of attempts by the EU to discipline slot allocation. Very few airports have implemented market-based slot allocation mechanisms. Grandfathering provides a particular advantage for incumbents in the high value business segment where competition is centred on offering peak time flights (France, Sweden, Norway). Often liberalisation of air passenger transport has only led to increased competition in the low price segment (Australia, Canada). A number of country reviews thus recommended the introduction of market-based slot allocation mechanisms.

71. The high costs of using government-owned infrastructures may also create entry problems. In some countries (Finland and Norway) most of the airports belong to a government-owned company. Often the airport companies keep a large number of unprofitable (regional) airports operating through cross-subsidies from profitable (main) airports. Adding to the cost of using airports is the provision of ground-handling services on a non-competitive basis (Japan, Norway) or when incumbent carriers have a dominant position in the provision of such services (France). Such high usage costs of airports create entry barriers for low-cost carriers that compete on a no-frill basis. Thus, new entry could be enticed by less distortionary support measures of regional airports, such as cost-reflective airport charges or relying on competitive bidding for regional service contracts and by securing competitive provision of ground-handling services (France, Japan, Norway).

64. Entry may also be hampered in countries where overly lenient reconstruction procedures allow incumbents to avoid exit (*e.g.* US Chapter 11).

Railways

72. The degree of competition in the OECD railway markets varies greatly, in part because railways in different countries operate in different market segments and in competition with different alternative service providers (OECD, 2004c). For example, railways in the United States provide mostly freight transport in competition with road freight transport, while European railways focus much more on passenger transport, such as with French railways almost exclusively providing passenger services in competition with passenger air transport (OECD, 2005b). The EU railway directives are introducing competition in international freight transport, adding to the competitive pressures arising from other types of freight transport. On the other hand, less attention has been devoted to competition in domestic passenger transport so far – a segment where competition is hampered by government-owned incumbents with a high degree of vertical integration. Experiences from railway reforms indicate that benefits in terms of higher efficiency can be considerable (Australia, the United Kingdom). However, these experiences also show that reforms need to be carefully designed (see Box 6 above).

73. Despite some easing, regulation in the railway sector remains pervasive, and particularly so in the continental European Union countries (Figure 15). Since the end of the 1990s, only a few countries (Denmark, Italy) have substantially reduced regulatory restrictions in the railway sector by both removing entry barriers and improving market structures. Other countries have improved their regulatory stance in the sector through a more piecemeal approach, either lowering entry barriers (Australia and Switzerland), or improving the market structure (Czech Republic, Germany, the Netherlands, Poland and, from already low levels of regulation, the United Kingdom). Efforts have centred on separation of the network (*i.e.* tracks) and allowing entry of alternative providers of freight and/or passenger services. In most cases, accounting (Hungary) or legal separation has been implemented, and only rarely was it extended to ownership separation, involving privatisation of segments of the industry, the notable exception being the United Kingdom. In many OECD countries, railway companies are publicly-owned monopolies, although some countries have turned the incumbents into joint stock companies to improve corporate governance in view of privatisation and as an attempt to level the playing field (Sweden, Switzerland). Belgium, Poland and, to a lesser degree, Denmark, Japan and Mexico have moved in the direction of privatisation (the United Kingdom privatised its rail sector in the first half of the 1990s).

[Figure 15: Regulatory stance in the railways sector]

74. The experience of OECD countries highlights the importance of securing non-discriminatory access to rolling stock for the development of competition in the sector, since incumbents often have an effective monopoly. Because of safety and technical specifications and country-specific regulations, international competitive pressures in the provision of rolling stock are currently inexistent. To date, the United Kingdom is also the only country to have assigned the rolling stock to separate domestic private companies. However, investment incentives in rolling stock in the United Kingdom have been found to be insufficient because the owners of rolling stock do not want to undermine their market position and service providers are often faced with relatively short contract lengths.

75. Contracts for providing railway passenger services have in some cases been introduced prior to the introduction of competition as an efficiency-enhancing measure (Norway, Sweden) or in preparation of competitive tendering. Nevertheless, the latter have at times been introduced without a level playing field. For example, competitors in Denmark face stricter service requirements than the incumbent. Other problems have been created by the incumbent's predatory pricing strategies (Sweden).⁶⁵ Problems with implementing competitive tendering have also been encountered in Switzerland, where there is no tender

65. The aggressive bidding for contracts eventually forced the Swedish state to bail out the financially troubled incumbent, demonstrating that governments need to pay careful attention to auction design.

obligation and tenders cannot be awarded to profit making firms. Competitive pressures in the passenger market are also weak because inter-modal competition from long-distance road passenger transport is often impeded. In Denmark, long-distance bus companies are faced with higher charges for crossing the bridge connecting the two halves (population-wise) of the country, and in Norway, licensing for long-distance bus transportation has only recently been permitted and still requires approval of both operations and tariffs.

76. Country-specific evidence suggests that the hesitant reform pace in the railway sector probably reflects the vested interest of incumbents and that international reform experiences have revealed the difficulties of designing successful measures. In New Zealand, the liberalisation process has even been reversed with the recent nationalisation of the railway network and the granting of exclusive freight transport rights to a private company (Mourougane and Wise, 2005). The experiences with railway liberalisation across the OECD countries are currently too varied and piecemeal to identify a common model for introducing competition in the sector. Also, the more recent academic literature on the subject is becoming more nuanced in terms of how competition is best introduced (Nash, 2002; Friebel *et al.* 2004). The common lessons from the surveys quoted above show that some degree of unbundling of vertically-integrated railway companies (including through privatisation) is necessary for securing non-discriminatory third-party access. The precise way in which these policies should be implemented has to vary according to such issues like the degree of inter-modal competition, possibilities for competition on parallel tracks, and other country-specific features (for a more detailed discussion of all the involved issues, see OECD (2004c)).

4. Synthesis of recommendations from the OECD country surveys

77. Table 5 presents a detailed summary of the recommendations made by the OECD country reviews for countries in which product market competition was analysed. Some of the key points that emerge are discussed here. Competitive pressures from international trade were found to be strong in almost all countries. Thus, removing implicit or explicit barriers to trade is a recommendation that applies to only a few countries, and mostly relates to barriers deriving from agriculture. On the other hand, many countries needed to ease restrictions on inward FDI (often in the form of ownership restrictions) in service industries where trade pressures are lower. The country reviews (Austria, Japan, New Zealand, the Nordic countries and Switzerland) also showed that competitive pressures could be enhanced by extending the role that competition can play in the procurement of public services.

[Table 5: Recommendations from country surveys]

78. In the area of competition law and enforcement, OECD country-specific recommendations focussed on deterrence of cartels as the single most important issue. In this regard, the need to secure effective sanctions and increase the scope for personal liability was raised in a number of countries, as well as the need to adopt or improve leniency programs to support cartel investigations. A few country reviews also highlighted the need to make it easier for private parties to sue so as to permit public enforcement authorities to devote more of their own resources on hard-core cartel cases. The OECD country reviews supported stronger sanctions where courts have been reluctant, such as in Norway and Finland, or where the laws have set limits too low, such as in Australia, Korea and Japan. Recommendations also focussed on the need to improve merger control regimes; and the need to avoid the introduction of political considerations in the merger decision process was raised in a number of cases. In a few instances it was also recommended that countries: improve the coherence and consistency of competition policy by limiting exclusions; take better advantage of complementarities between consumer and competition policies; and bolster the competition enforcers' capacities for advocacy and general economic studies.

79. Several recommendations were concerned with strengthening competitive pressures in inherently competitive industries. The main issue most frequently identified in the retail sector was the need to review

zoning laws in order to ease the entry of large scale outlets. Further liberalisation of shop opening hours was recommended for about half the countries surveyed. In a few cases, the implementation of prohibitions against selling at prices below costs was also seen as a problem. In these cases, the recommendation was to replace these prohibitions by more general application of competition law rules against predatory pricing. Reserved monopolies were also found in a few countries, typically in areas of public health, such as alcohol retailing and tobacco, and the countries in question were encouraged to remove them. In almost all of the reviewed countries, it was recommended that competition in professional services be enhanced by limiting the scope of associations' self-regulation, which often implied ending the exemptions from the general competition law that made it possible. In many countries, residency or nationality requirements were also found to inhibit competitive pressures in professions, and needed to be eased.

80. The OECD country reviews found that many of the competition challenges faced by regulators or governments in network industries were similar, although with different degrees of importance, across the sectors examined. The dominant positions of incumbents remain a primary concern in telecommunications, electricity and rail. Moreover, assuring non-discriminatory third-party access to essential facilities in these sectors remains the key challenge facing regulators and governments. The OECD country reviews found that this task is made easier when regulators are able to secure effective separation of the network monopoly component from competitive activities, and recommendations in this regard were made in a large number of cases, particularly in the electricity and rail sectors. In many instances, it was also recommended that countries privatise and eliminate golden shares or ownership restrictions, as government control was deemed to inhibit competition and the effective enforcement of competition laws, particularly in the electricity and telecommunications sectors. Recommendations in this regard were also made in order to strengthen regulation in these sectors by establishing a clear separation of the government's ownership and regulatory functions. A number of country reviews also highlighted the need to pay close attention to the design of regulatory policies so as to provide the right incentives for investment, and the need for regulators to perhaps take a more active role in infrastructure planning, particularly in the electricity and rail sectors.

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ANNEX 1: TABLES AND FIGURES

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Table 1. Mark-ups estimates: industry detail.

	AUT	BEL	CAN	DEU	DNK	ESP	FIN	FRA	GBR	ITA	JPN	KOR	LUX	NLD	NOR	SWE	USA
All manufacturing²	0.15	0.10	0.15	0.13	0.11	0.14	0.18	0.12	0.11	0.15	0.09	0.12	0.07	0.13	0.13	0.11	0.12
<i>Fragmented-Low R&D industries²:</i>	0.16	0.11	0.19	0.14	0.13	0.16	0.21	0.12	0.12	0.18	0.08	0.12	0.04	0.16	0.13	0.10	0.13
Textiles, wearing apparel, leather	0.13	0.05	0.13	0.14	0.12	0.13	0.14	0.09	0.10	0.16	0.06	0.12		0.14	0.12		0.09
Wood and wood products	0.10	0.12	0.25	0.14	0.18	0.16	0.19	0.05	0.16	0.22	0.05	0.13	-0.03	0.08	0.11		0.19
Pulp, paper, printing and publishing	0.19	0.14	0.20	0.19	0.10	0.18	0.23	0.13	0.12	0.18	0.10	0.11	0.10	0.20	0.14		0.13
Other non-metallic mineral products	0.24	0.17	0.22	0.19	0.17	0.19	0.24	0.16	0.16	0.22	0.15	0.18	0.03	0.20	0.14	0.05	0.17
Fabricated metal products	0.13		0.13	0.07			0.16			0.19	0.01	0.10	0.03	0.11	0.13	0.12	0.12
<i>Segmented-Low R&D industries²:</i>	0.17	0.09	0.14	0.13	0.08	0.13	0.13	0.14	0.11	0.13	0.08	0.09	0.12	0.13	0.14	0.11	0.09
Food, beverages and tobacco	0.13	0.09	0.13	0.12	0.08	0.13	0.10	0.14	0.11	0.14	0.07	0.05	0.13	0.12	0.08	0.08	0.09
Basic metals	0.25		0.17	0.18			0.18			0.10	0.10	0.14	0.11	0.24	0.27	0.16	0.08
<i>Fragmented-High R&D industries²:</i>	0.16	0.12	0.13	0.13	0.11	0.15	0.17	0.17	0.12	0.16	0.09	0.11	0.06	0.13	0.09	0.13	0.10
Machinery and equipment	0.19	0.20	0.16	0.13	0.09		0.17	0.19	0.12	0.15	0.08	0.11	0.08	0.15	0.09	0.13	
Other manufacturing and recycling	0.09	0.06	0.08	0.16	0.15	0.15	0.17	0.13	0.13	0.17	0.11	0.11	-0.05	0.10	0.09		0.10
<i>Segmented-High R&D industries²:</i>	0.13	0.09	0.12	0.13	0.11	0.14	0.18	0.12	0.11	0.14	0.10	0.13	0.03	0.12	0.14	0.12	0.13
Chemical, plastics, rubber and fuel products	0.11	0.09	0.12	0.16	0.11	0.17	0.15	0.11	0.12	0.13	0.10	0.14	0.03	0.13	0.18	0.15	0.15
Electrical and optical equipment	0.15		0.14	0.13	0.12		0.22	0.15	0.13	0.17	0.13	0.12		0.09	0.12	0.12	
Transport equipment	0.14	0.09	0.13	0.09	0.08	0.11	0.17	0.11	0.07	0.14	0.08	0.11	0.02	0.09	0.11	0.08	0.10
Non-manufacturing^{1,2}	0.28	0.20	0.20	0.25	0.25		0.27	0.26	0.16	0.38	0.26	0.32	0.22	0.24	0.26	0.17	0.19
Electricity, gas and water supply	0.34	0.23	0.35	0.37	0.41		0.37	0.27	0.15	0.30	0.46	0.32		0.19	0.48		0.20
Wholesale and retail trade, repairs	0.28		0.16	0.12	0.28		0.25	0.25	0.16	0.45			0.24	0.30	0.24		0.14
Transport and storage	0.14		0.26	0.13	0.18		0.33	0.22	0.10		0.17			0.21	0.27	0.18	0.16
Post and telecommunications	0.20		0.35	0.38	0.24		0.36	0.40	0.21		0.32			0.26	0.29		0.28
Financial intermediation	0.37		0.14	0.18	0.35		0.34	0.20	0.21	0.32	0.27		0.21	0.33	0.34		0.25
Business services	0.27			0.44	0.20		0.19	0.28			0.16		0.19	0.12	0.16	0.14	0.20

(1) Non-manufacturing excludes construction, real estate activities and personal services.

(2) Averages using sectoral production as weights. Weights are country-specific.

(3) Unweighted average.

Source: OECD STAN database and Secretariat calculations.

Table 2. Average mark-ups and aggregate regulation indicators: regression results

<i>Independent variable:</i>	<i>Dependent variable: average country mark-ups</i> ²				<i>Dependent variable: sectoral-country mark-ups</i> ³			
	Non-manufacturing		Manufacturing		Non-manufacturing		Manufacturing	
	<i>Coeff</i> ⁵	<i>st. error</i>	<i>Coeff</i> ⁵	<i>st. error</i>	<i>Coeff</i> ⁵	<i>st. error</i>	<i>Coeff</i> ⁵	<i>st. error</i>
Economy-wide regulation (PMR in 1998) ¹	0.099 ***	0.023	0.013	0.012	0.071 ***	0.020	0.011 *	0.007
Sub-components:								
State Control	0.051 ***	0.015	0.013 *	0.007	0.037 ***	0.011	0.013 ***	0.004
Barriers to entry	0.070 ***	0.023	0.002	0.013	0.045 **	0.017	-0.001	0.007
Barriers to trade and investment	0.075 *	0.037	0.002	0.020	0.066 **	0.031	-0.001	0.008
Administrative regulation	0.052 **	0.018	0.004	0.008	0.031 **	0.013	0.002	0.004
Economic regulation	0.077 ***	0.018	0.016	0.010	0.058 ***	0.016	0.015 ***	0.005
Sectoral fixed effects	No		No		Yes		Yes	
No. observations	15		16		83		167	
Industry-level regulation (ETCR ⁴ average over 1975-2003)	0.044 ***	0.015			0.034 ***	0.011		
Sectoral fixed effects	No				Yes			
No. Observations	14				82			

1. See Conway et al. (2005). The indicator is increasing from least to most restrictive of competition.

2. Mark-ups are aggregated for each country over manufacturing and non-manufacturing sectors, respectively, before regressing them on PMR indicators, which are country specific. The number of observations is as large as the number of countries.

3. Mark-ups for each sector-country are regressed on regulation indicators, which are common for all sectors in the same country. Sector-specific dummy variables are included in the regressions.

4. *ETCR* is the regulation indicator that averages the sub-indicators of seven network industries (transport sectors, electricity and gas, post and telecommunications) [see Conway and Nicoletti (2006)]. It is available as a time series for each country. Here the average over time has been calculated and used as independent variable, since the dependent variable (markups) also represent an average over time.

5. *** indicates that the value is statistically significant at 1% level; ** at 5%; * at 10%. The coefficients come from bivariate regressions of mark-ups on each regulation indicator variable.

Source: OECD STAN database and Secretariat calculations.

Table 3: Average mark-ups and regulation in non-manufacturing industries: pooled sectoral regressions¹

	<i>Dependent variable: Mark-ups non-manufacturing</i>				<i>Dependent variable: Mark-ups non-manufacturing excluding energy sector</i>			
	<i>Coeff³</i>	<i>st. error</i>	<i>Fixed-effects</i>	<i>No. Obs.</i>	<i>Coeff³</i>	<i>st. error</i>	<i>Fixed effects</i>	<i>No. Obs.</i>
<i>Independent variable:</i>								
Sectoral regulation indicators	0.118 **	0.047	Yes	69	0.135 ***	0.046	Yes	56
Sectoral regulation indicators (excluding public ownership)²	0.107 **	0.050	Yes	69	0.115 **	0.048	Yes	56

1. Mark-ups for six non-manufacturing sectors (transport, post and telecommunications, energy, trade, financial services and business services) are regressed on their respective regulation indicator. Mark-ups and indicators for transport, post and telecom and energy are averages over time. Indicators for the remaining sectors correspond to a point in time (1996 or 1998). Sectoral dummy variables ("fixed effects") are included in the regressions.

2. Sectoral regulation indicators are built as the average of several sub-components. In these regressions, the sub-component corresponding to public ownership is eliminated from the indicator.

3. *** indicates that the value is statistically significant at 1% level; ** at 5%; * at 10%.

Source: OECD STAN database and Secretariat calculations.

Table 4. Implementation of the EU Electricity Directive and electricity market indicators¹

	Unbundling		Large users switching Suppliers ³ percent	Concentration Generation Capacity share		Concentration Retail sales Market Share of Top 3 Retailers	Network access charge ⁴	
	Transmission ²	Distribution ²		Largest firm	Top 3 firms		Medium voltage	Low Voltage
Austria	L	L	22	45	75	67	11	56
Belgium	L	L	35	85	95	90	14	50
Denmark	L	L	>50	15 ⁵	40 ⁵	67	n.a.	23
Finland	O	A	>50	15 ⁵	40 ⁵	30	16	32
France	L	M	22	85	95	88	12	40
Germany	L	A	35	30	70	50	9	55
Greece	L	none	0	97	100	100	n.a.	n.a.
Hungary	L	A	24	30	65	56	9	30
Ireland	L	M	>50	85	90	88	17	44
Italy	O	L	15	55	75	35	11	52
Luxembourg	M	M	10	n.a.	n.a.	100	n.a.	n.a.
Netherlands	O	L	30	25	80	88	11	31
Norway	O	L/A	>50	15 ⁵	40 ⁵	44	13	27
Poland	L	A	10	15	35	32	13	34
Portugal	O	A	9	65	80	99	6	42
Spain	O	L	18	40	80	85	7	36
Sweden	O	L	>50	15 ⁵	40 ⁵	70	11	22
United Kingdom	O	L	>50	20	40	60	15	35

1. The information is the latest available by the European Commission and prepared in consultation with European Regulators Group for Electricity and Gas (ERGEG).

2. Unbundling concerning operators. A = Accounting, L = Legal, M = Management and O = Ownership.

3. Large eligible industrial users switching suppliers since market opening.

4. Estimated average charge, €/MWh.

5. Data for Denmark, Finland, Norway and Sweden are for the countries combined.

Source: EC (2005)

Table 5. Recommendations from OECD country reviews

A. Competition law and enforcement

	Limit or eliminate unjustified exclusions	Improve co-ordination of competition policy and consumer protection	Ensure independent enforcement decisions	Improve advocacy or market studies	Secure deterrent sanctions	Increase scope for personal liability	Improve the scope for private suits	Make leniency programmes effective	Improve merger control ¹
Australia					X	X	X		X
Austria				X			X	X	X
Canada	X		X	X	X				X
Denmark	X							X	X
Finland			X		X	X			
France								X	X
Hungary		X					X		X
Iceland	X	X							
Italy						X		X	
Japan		X	X		X		X	X	X
Korea	X				X	X			
Netherlands		X	X			X			
New Zealand									
Norway			X		X	X			X
Sweden						X		X	
Switzerland			X			X			X
United Kingdom			X						
United States	X						X ²	X	

1. This can either be to improve procedures, refocus merger control on competition criteria, or reconsider provisions about efficiencies and failing firms.

2. The legislative framework in the United States encourages too much litigation, thus the recommendation went in the other direction.

Note: X = this was an issue for the country concerned.

Table 5. Recommendations from OECD country reviews (contd.)

B. Regulation: Competitive sectors

	Professional services			Retail sector			
	Remove exemptions from the competition law	Review self-regulation	Remove or ease residence or nationality requirements	Liberalise shop opening hours	Review zoning laws to ease entry	Remove reserved monopolies	Remove price restrictions
Australia	X	X	X	X		X	
Austria	X	X	X	X	X		
Canada	X	X	X	n.c.	n.c.	n.c.	n.c.
Denmark			X	X	X		
Finland		X		X	X	X	
France			X		X	X	X
Hungary	X	X	X				X
Iceland	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Italy	X	X	X	X	X		
Japan	X	X			X		
Korea	X	X	X		X		
Netherlands		X	X	X	X		
New Zealand		X	X				
Norway		X		X	X	X	
Sweden	n.c.	n.c.	n.c.		X	X	
Switzerland	X	X	X	X	X		
United Kingdom		X			X		
United States	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.

Note: n.c. = not covered in the OECD country review.

Table 5. Recommendations from OECD country reviews (contd.)**C. Regulation: Telecommunications**

	Securing effective vertical separation ¹	Assuring non-discriminatory third party access	Strengthen regulator's power or independence	Market power concerns ²	Privatise or eliminate golden shares or ownership restrictions
Australia	X	X		X	X
Austria			X		
Canada			X		X
Denmark				X	
Finland				X	
France			X	X	
Hungary	X	X	X	X	X
Iceland		X		X	X
Italy			X		X
Japan		X	X		X
Korea	X		X	X	
Netherlands			X	X	X
New Zealand				X	
Norway	X	X	X	X	X
Sweden	X	X			
Switzerland	X	X		X	
United Kingdom		X		X	
United States	X	X			

1. Local loop unbundling

2. OECD recommendations regarding the need for regulators to be more active in tackling problems of market power in the sector and the need to improve sector regulation to address these concerns.

Table 5. Recommendations from OECD country reviews (contd.)

D. Regulation: Electricity

	Securing investment	Securing effective vertical separation	Assuring non-discriminatory third party access	Strengthen regulator's power or independence	Market power concerns ¹	Privatise or eliminate golden shares or ownership restrictions
Australia	X	X		X		
Austria		X	X			X
Canada	X	X		X		
Denmark	X				X	
Finland		X		X	X	X
France		X	X	X	X	X
Hungary		X	X	X	X	X
Iceland			X		X	X
Italy	X			X		X
Japan	X	X	X	X		
Korea		X		X	X	X
Netherlands		X		X	X	X
New Zealand	X	X		X		X
Norway	X	X		X	X	X
Sweden	X				X	
Switzerland		X	X	X		
United Kingdom					X	
United States	X	X		X	X	X

1. OECD recommendations regarding the need for regulators to be more active in tackling problems of market power in the sector and the need to improve sector regulation to address these concerns.

Table 5. Recommendations from OECD country reviews (contd.)
E. Regulation: Transportation

	Air passenger transport				Railway passenger transport			
	Improve slot allocation mechanisms	Ownership issues ¹	Non-discriminatory access to infrastructures ²	Bilateral open sky agreements/lack of cabotage rights ³	Implementation of vertical separation	Public ownership	Competitive tendering of services or new entry	Barriers to inter-modal competition
Australia		X	X	X	X	X		
Austria	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Canada		X		X	n.c.	n.c.	n.c.	n.c.
Denmark		X			X		X	X
Finland		X	X		X		X	
France	X	X	X		X		X	X
Hungary	n.c.	n.c.	n.c.	n.c.	X			
Iceland			X		n.c.	n.c.	n.c.	n.c.
Italy	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Japan	X	X	X		n.c.	n.c.	n.c.	n.c.
Korea	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Netherlands	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
New Zealand		X		X		X		
Norway	X	X	X		X	X	X	X
Sweden	X	X			X		X	
Switzerland	n.c.	n.c.	n.c.	n.c.	X	X	X	
United Kingdom	n.c.	n.c.	n.c.	n.c.	X	X	X	
United States		X	X	X	n.c.	n.c.	n.c.	n.c.

1. Including both public ownership and restrictions on foreign ownership

2. Including cross-holdings between air service providers and ground-handling provision.

3. The lack of cabotage rights in the EU for outside carriers is in this context an issue for all EU members.

Note: n.c. = not covered in the OECD country review.

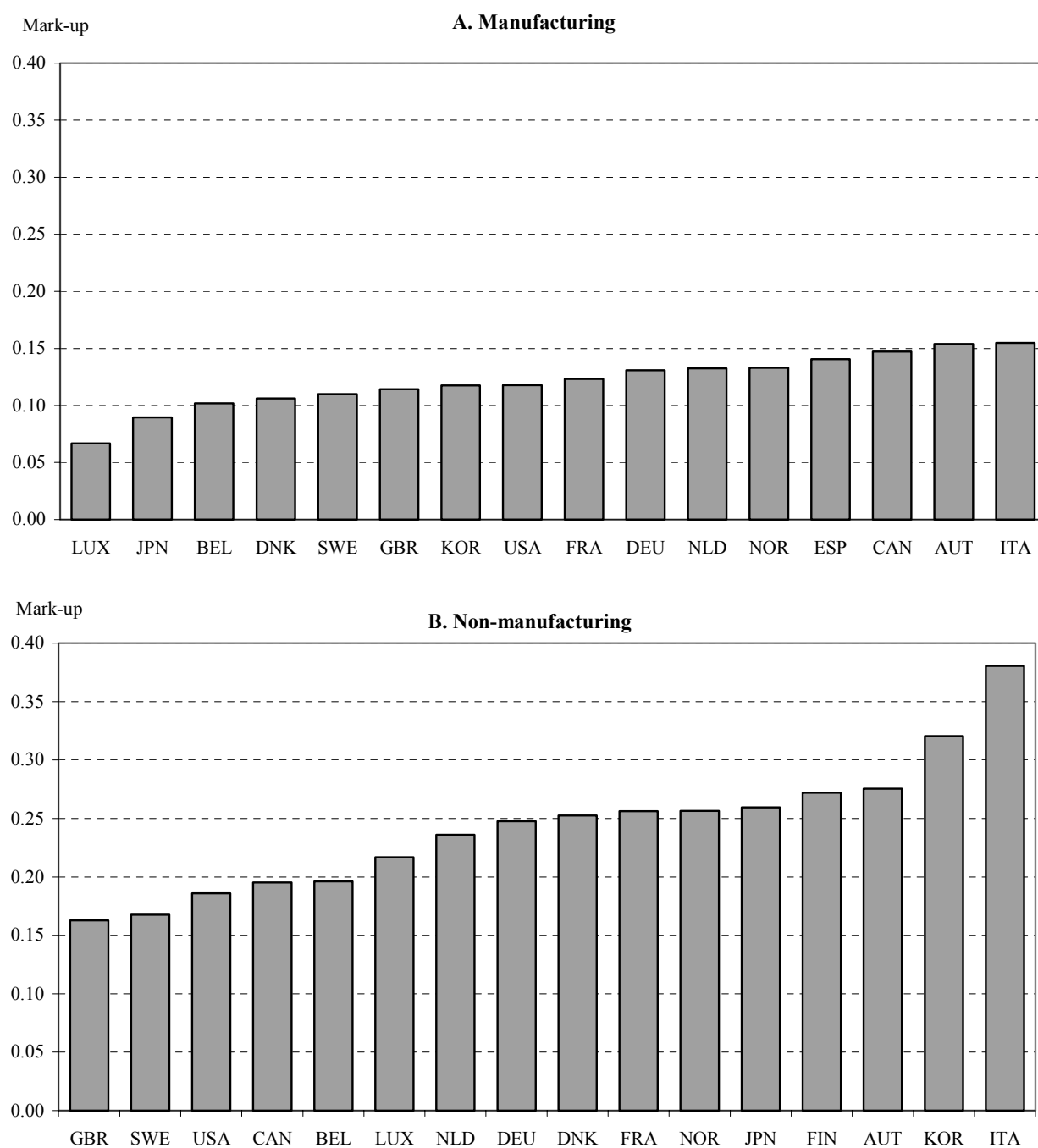
Table 5. Recommendations from OECD country reviews (contd.)

F. Other issues

	Public ownership and involvement in competitive markets		Securing universal service obligations				Ease FDI restrictions	Lower implicit or explicit trade barriers
	Privatisation	Other ¹	Postal services	Electricity	Air transport	Telecommunications		
Australia	X	n.c.	n.c.					X
Austria	X	X	n.c.		n.c.		X	
Canada	X	n.c.	n.c.				X	
Denmark	X	X	n.c.					
Finland	X	X	X		X			
France	X	X	n.c.	X	X	X		
Hungary	X	X			n.c.		X	
Iceland	X	n.c.	n.c.			X	X	
Italy	X		n.c.		n.c.		X	
Japan	X	X	X				X	X
Korea	X	n.c.	n.c.		n.c.		X	X
Netherlands	X	n.c.					X	
New Zealand	X		n.c.					
Norway	X	X	n.c.		X			
Sweden		X	n.c.					
Switzerland		X	X		n.c.		X	X
United Kingdom		n.c.	n.c.		n.c.			
United States		X	n.c.			X	X	X

1. Such as when publicly owned companies or public units are not subject to the competition law or the introduction of competition in the provision of public services.

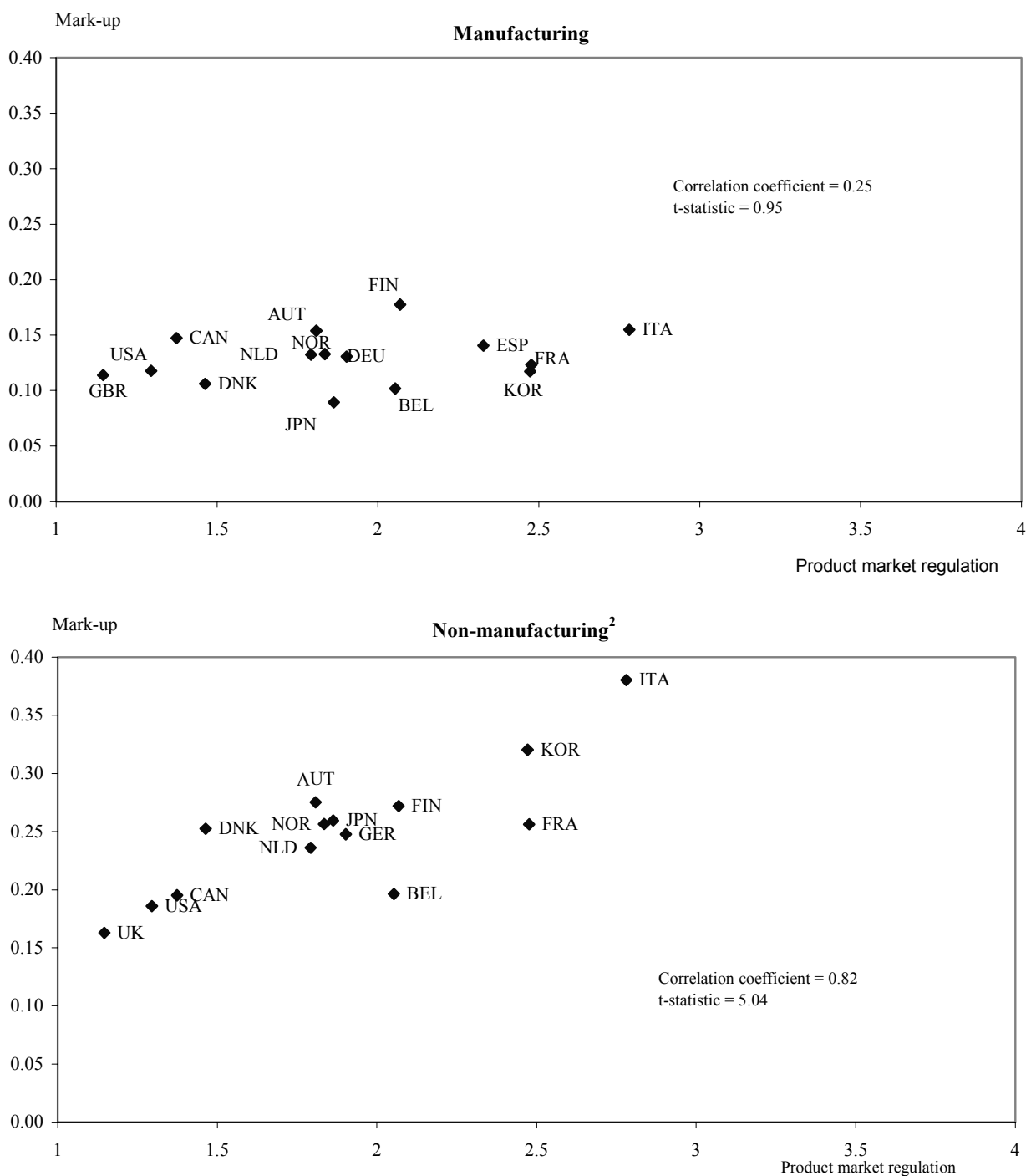
Note: n.c. = not covered in the OECD country review.

Figure 1. Mark-ups in manufacturing and non-manufacturing¹

1. Mark-ups are calculated for individual 2-digit ISIC sectors and aggregated over all sectors using country-specific final sales as weights.

Source: OECD STAN database and Secretariat calculations.

Figure 2. Mark-ups in manufacturing and services and economy-wide product market regulation ¹
 (regulation in 0-6 scale from most to least favourable to competition)

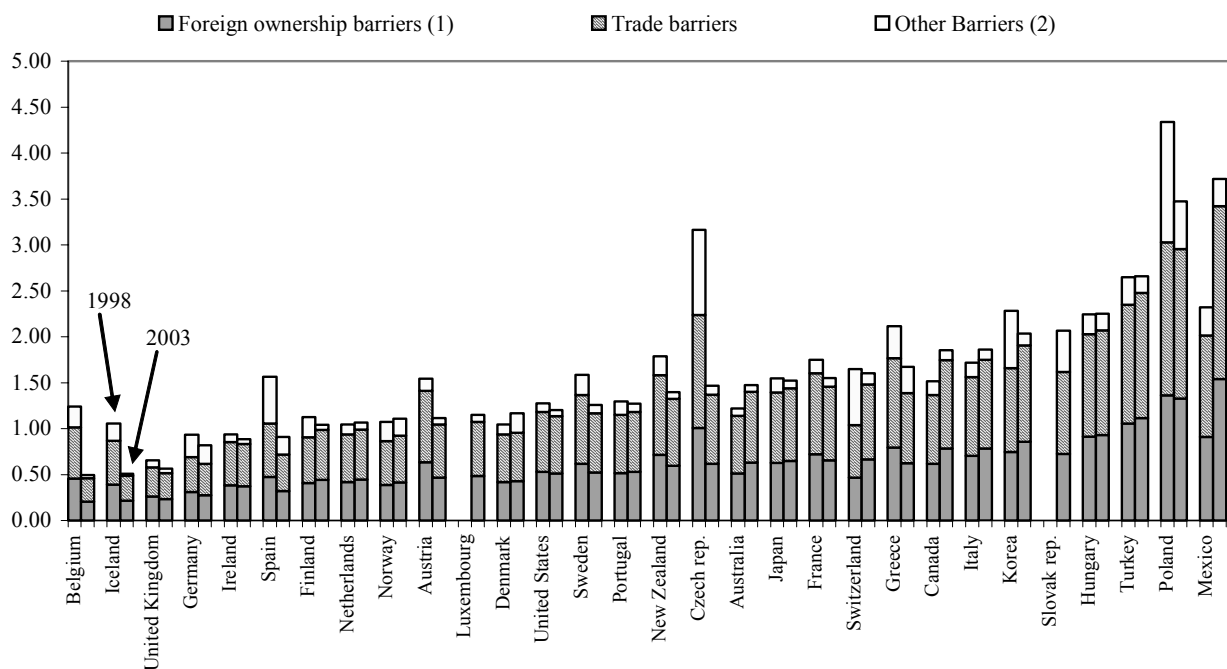


1. The economy-wide indicator is the 1998 overall product market regulation indicator of Conway et al (2005). Mark-ups are weighted averages across 2-digit ISIC industries, using country-specific final sales as weights.

2. Non-manufacturing excludes personal services and real estate services.

Source: OECD STAN database and Secretariat calculations; Conway et al (2005).

Figure 3. Indicator of barriers to trade and investment
(0-6 scale from most to least favourable to competition)



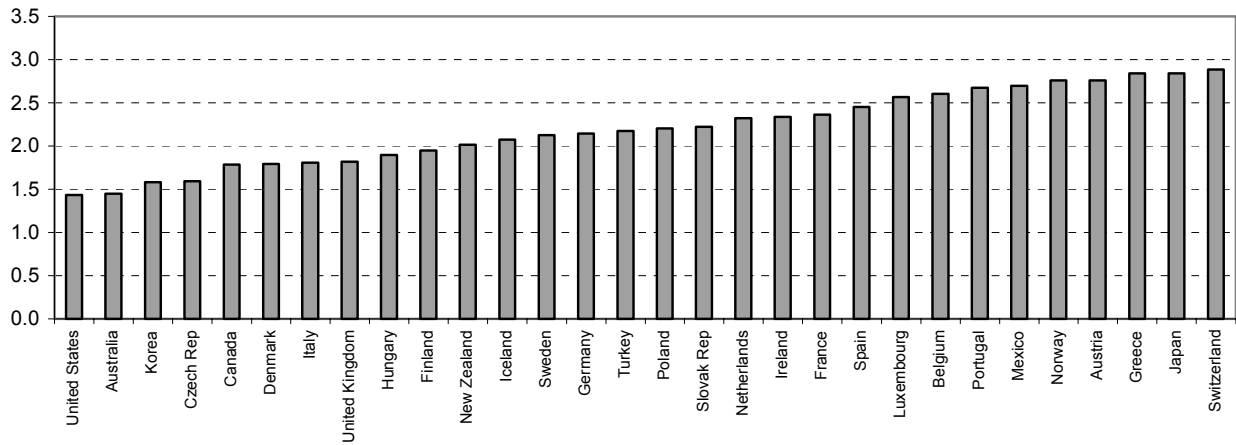
1. Includes only restrictions to foreign acquisitions of shares. See Golub (2003) for a broader indicator of FDI restrictions over the 1980-01 period.

2. Includes regulatory barriers and discriminatory procedures.

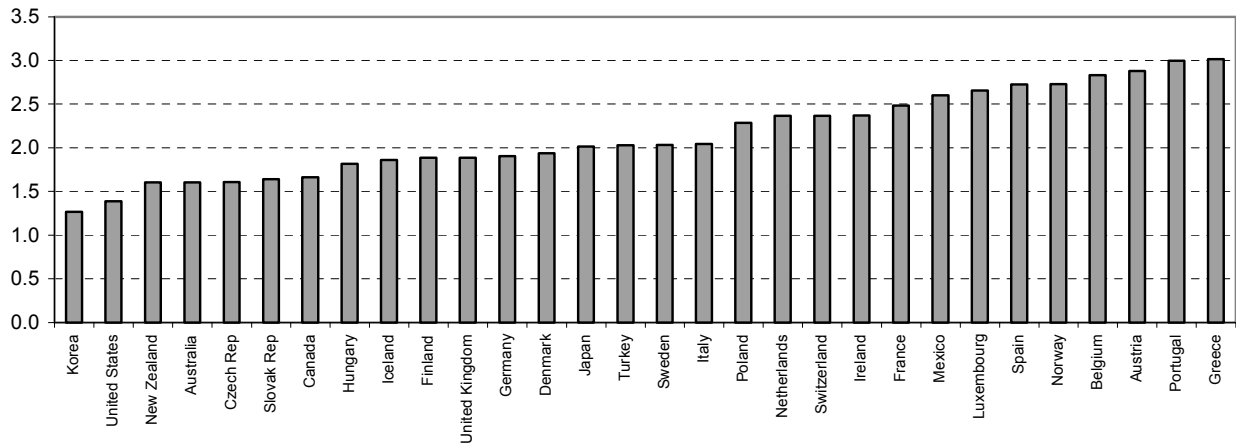
Source: Conway *et al* (2005).

Figure 4. The Competition Law and Policy (CLP) Indicator and its main sub-components¹
 (0 to 6 scale from most to least favourable to competition)

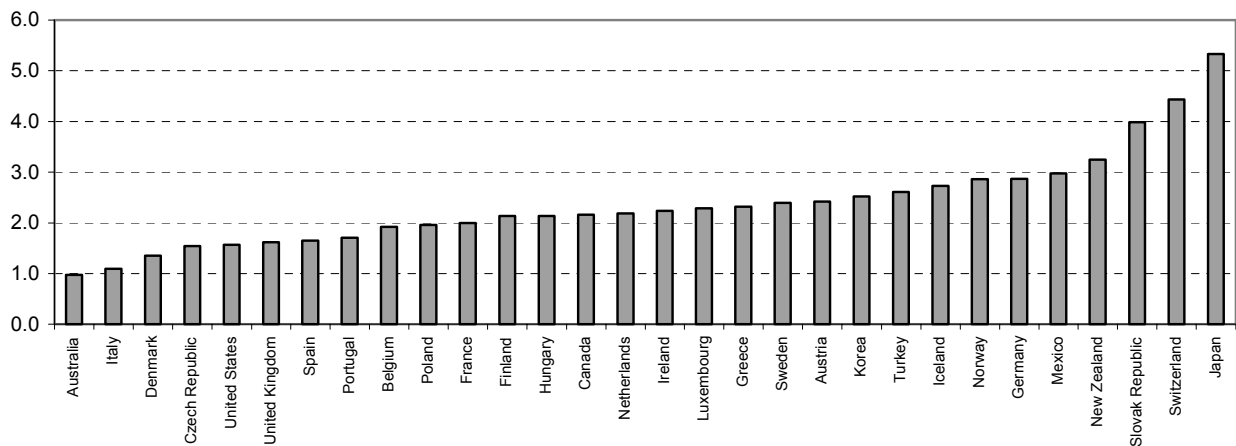
A. CLP indicator



B. Antitrust framework



C. Network policies

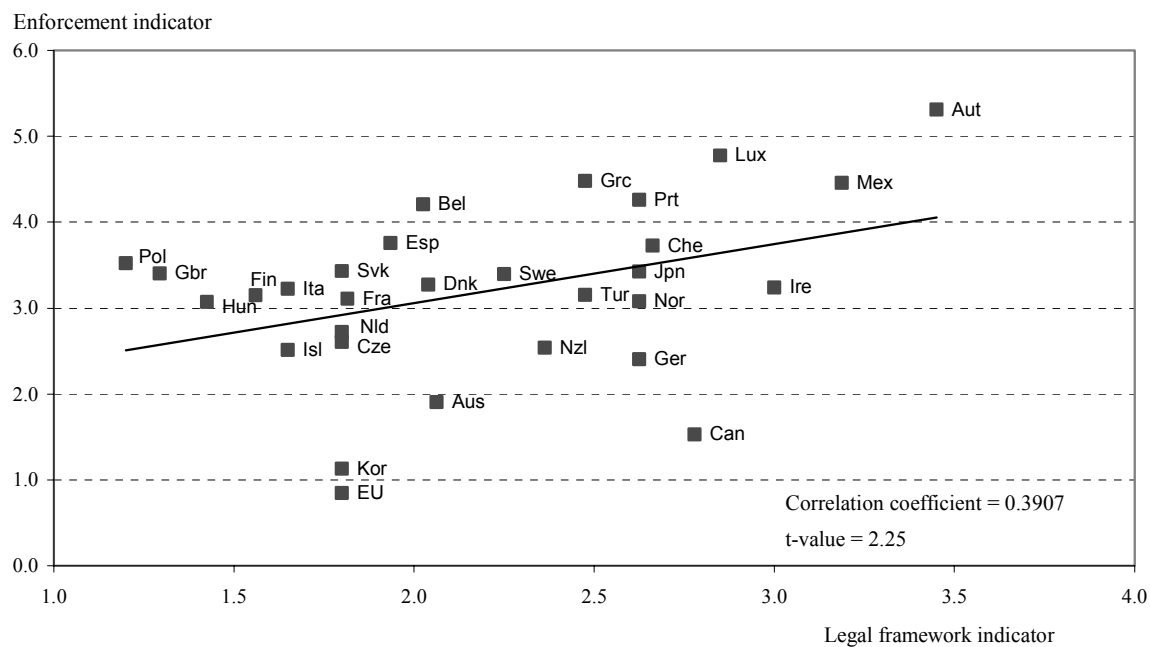


Source: Hoj (2007).

Figure 5. Correlation between the strength of the legal framework and the effectiveness of enforcement

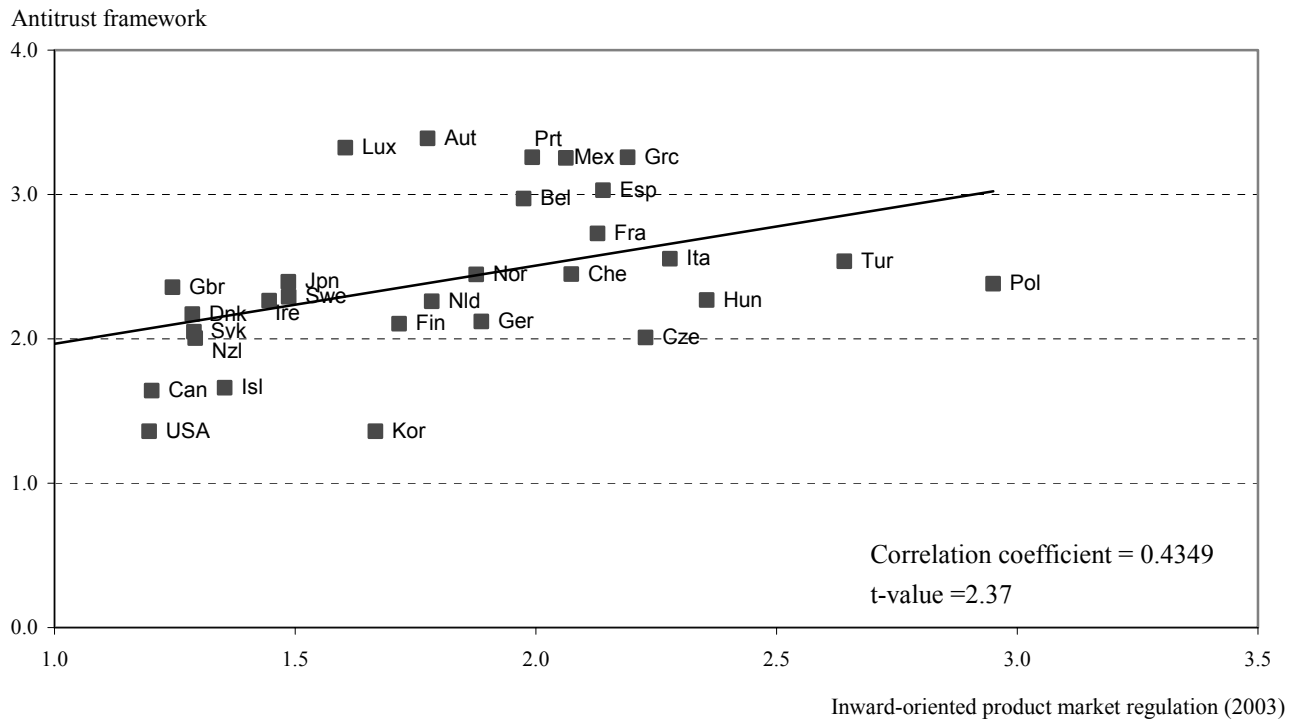
1

(0-6 scale from most to least favourable to competition)



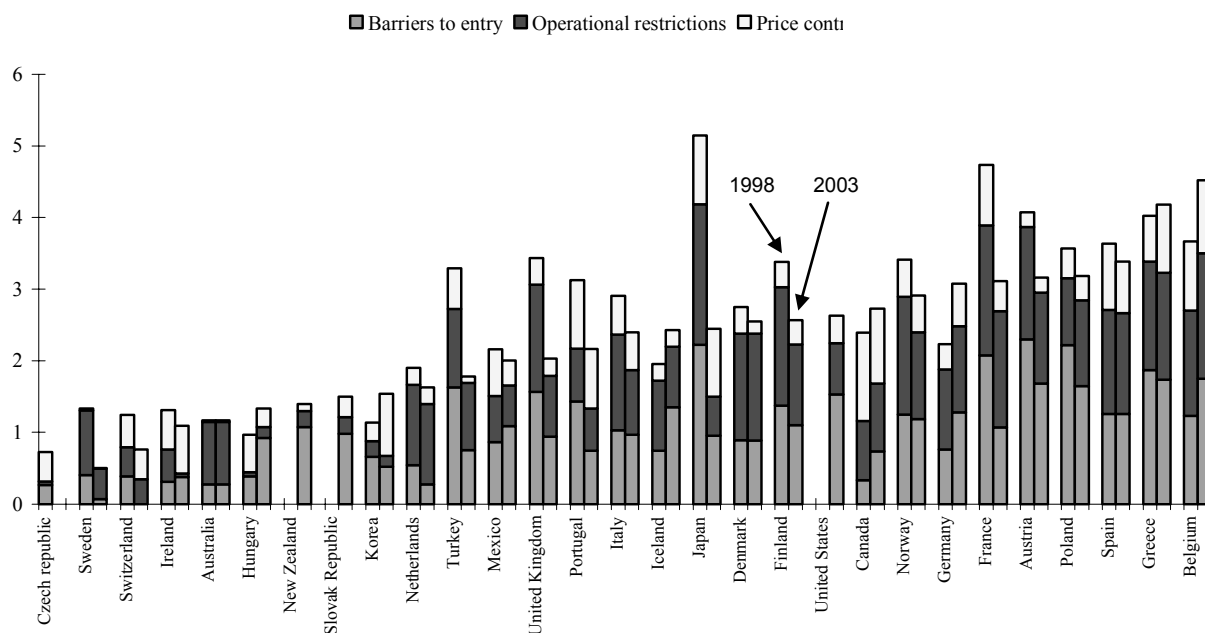
1. The legal framework indicator measures the strength of competition law provisions countering anti-competitive behaviour, such as restrictive agreements, abuse of dominance and treatment of abusive practices. The enforcement indicator measures the strength of enforcement of the competition law, including resources devoted, potential and actual fines, scope for private initiatives and leniency programmes.

Figure 6. Correlation between the antitrust framework and inward-oriented product market regulation
 (0-6 scale from most to least favourable to competition)



1. For the antitrust indicator, see footnote 1 in figure 5. The indicator of inward-oriented product market regulation is drawn from Conway *et al* (2005).

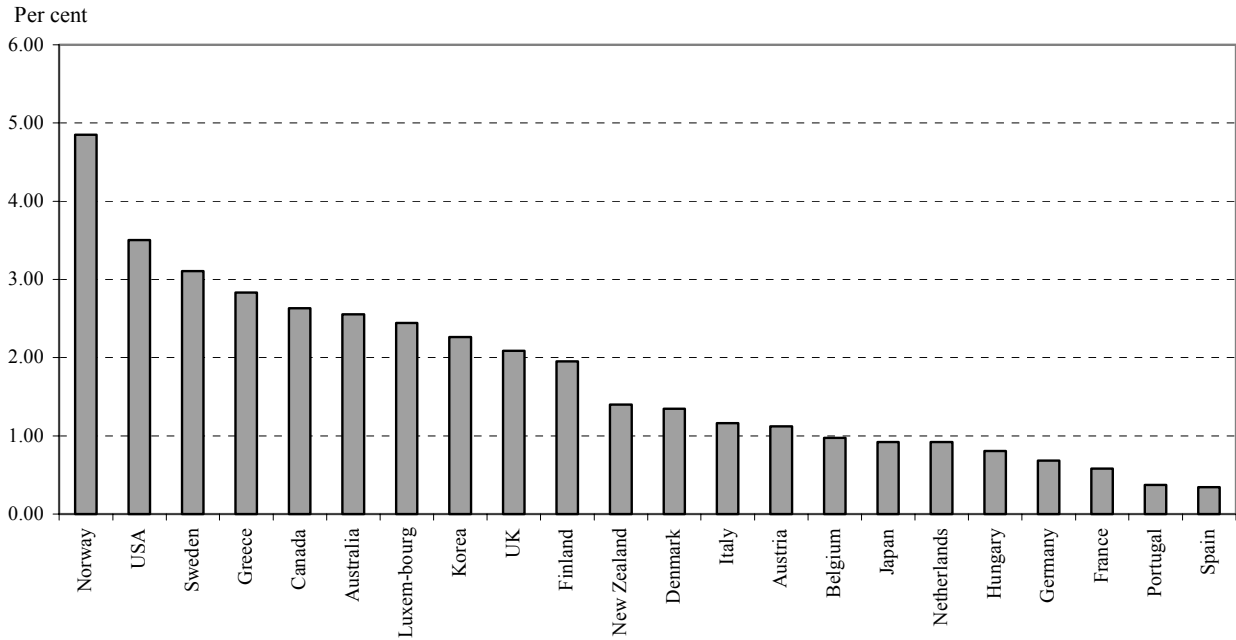
Figure 7. Anticompetitive regulations in retail distribution
(scale is 0-6 from least to most restrictive of competition)



1. These indicators cover barriers to entry, operational restrictions and price controls. The construction of the indicator is discussed in detail in Conway and Nicoletti (2006).

Source: Conway and Nicoletti (2006).

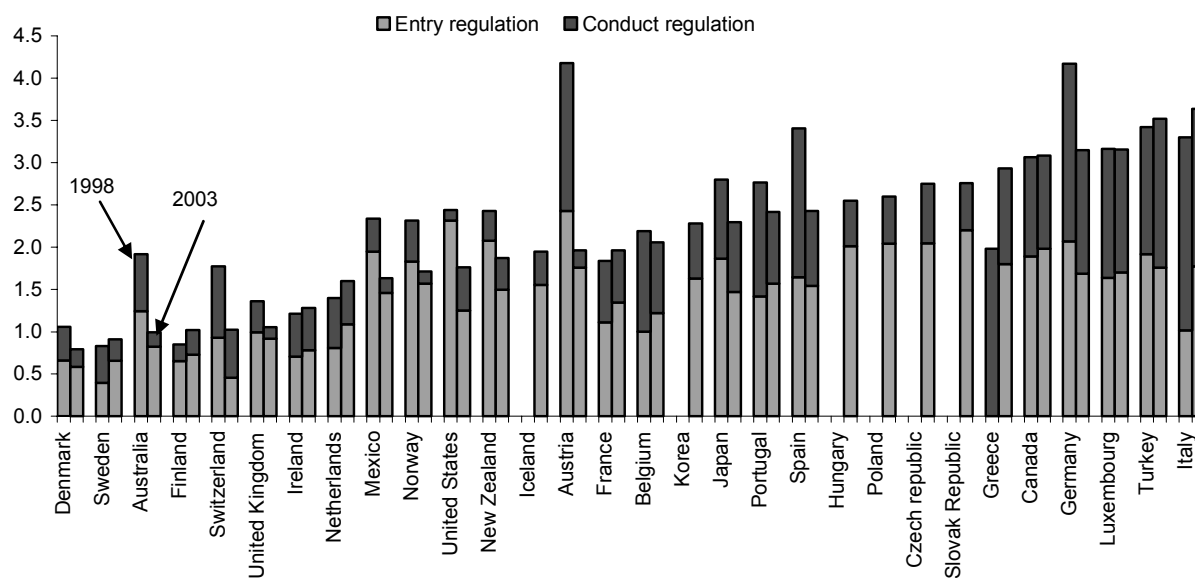
Figure 8. Labour productivity¹ growth in the distribution sector
 Average growth 1991(or earliest year) to 2003 (or latest year)



1. Per worker.

Source: The OECD STAN Database for Industrial Analysis.

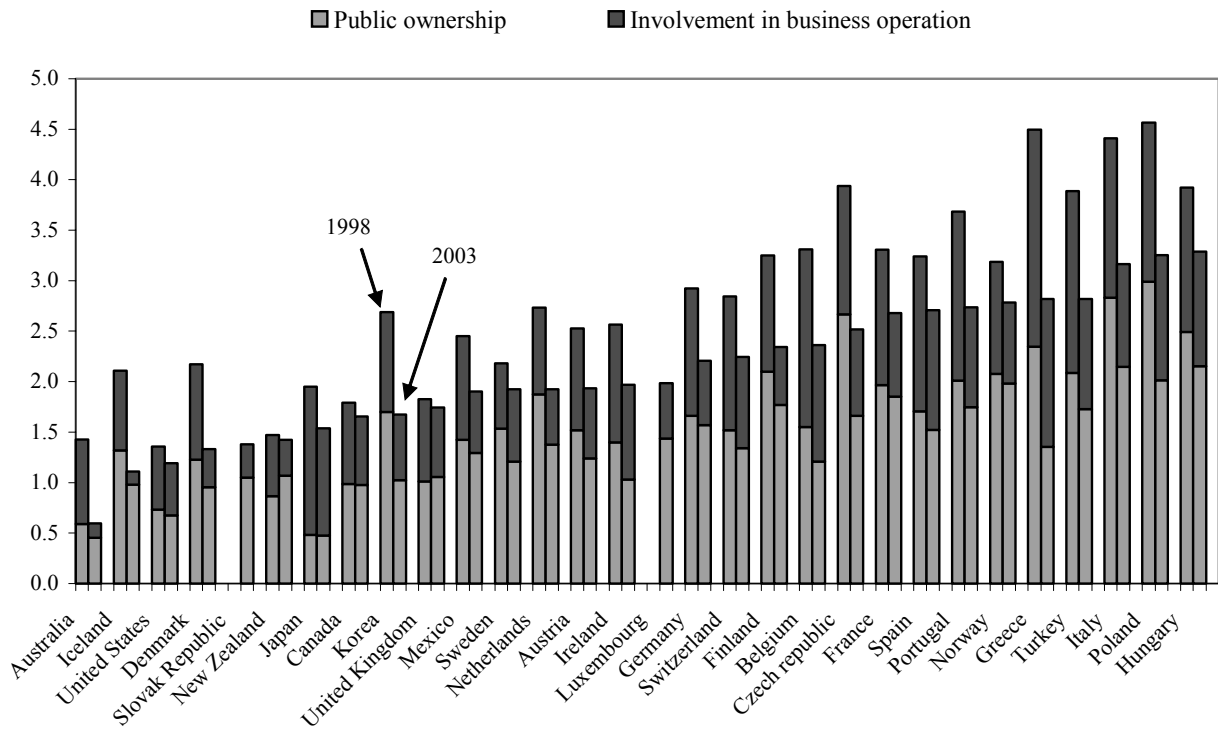
Figure 9. Regulation in the professional services
(scale is 0-6 from least to most restrictive of competition)



1. These indicators cover entry and conduct regulations in the legal, accounting, engineering and architecture professions. These indicators are based on the methodology developed by Paterson *et al* (2003) and effectively extend this study to non-EU OECD countries. The construction of the indicator is discussed in detail in Conway and Nicoletti (2006).

Source: Conway and Nicoletti (2006).

Figure 10. Indicator of state control
(0-6 scale from most to least favourable to competition)

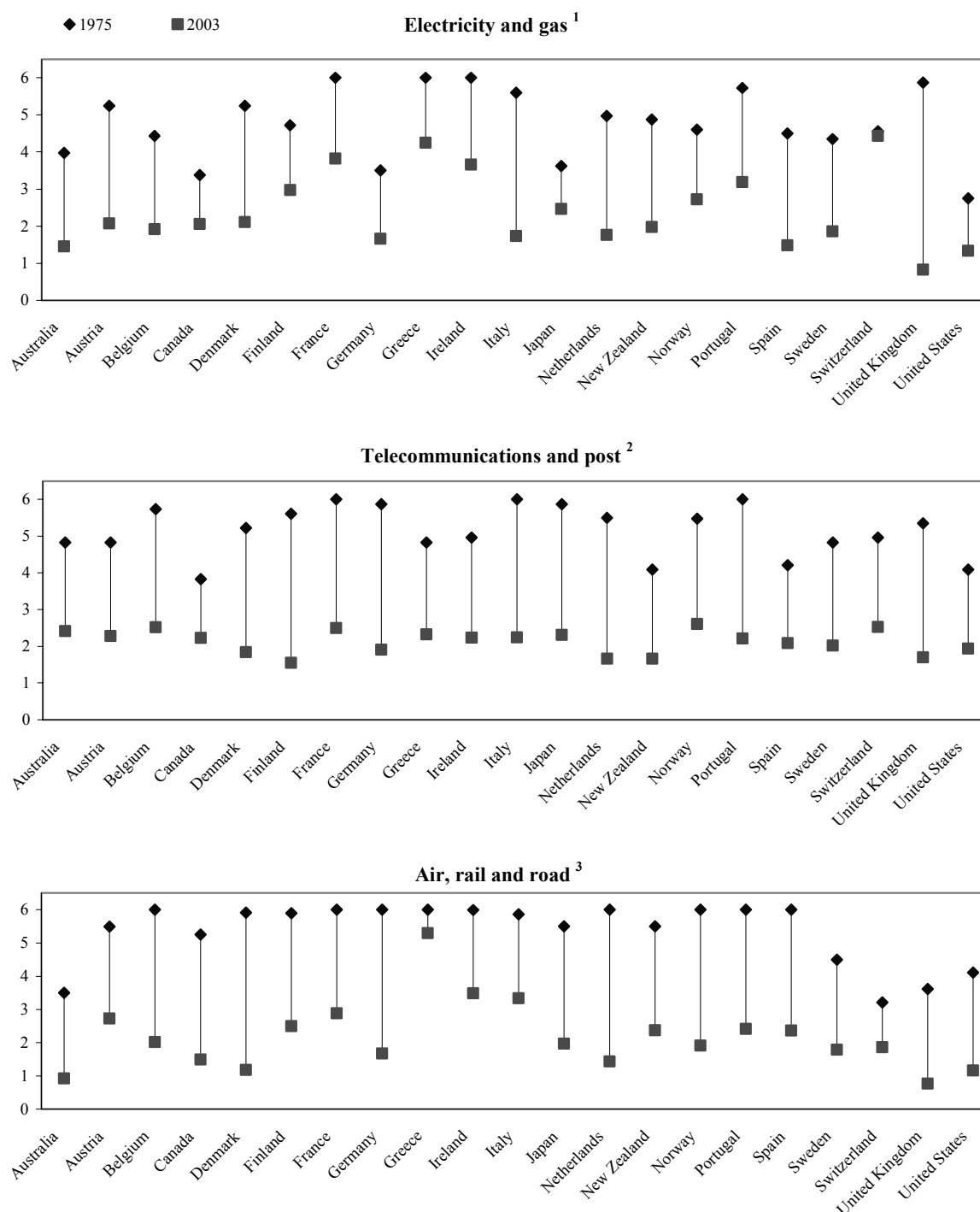


1. These indicators are part of the indicators of product market regulation (PMR) which are discussed in detail in Conway *et al* (2005).

Note: There are no 1998 observations for Slovak Republic and Luxembourg.

Source: Conway *et al* (2005).

Figure 11. Regulatory stance in OECD countries in energy, transport and communications
(0-6 scale from most to least favourable to competition)



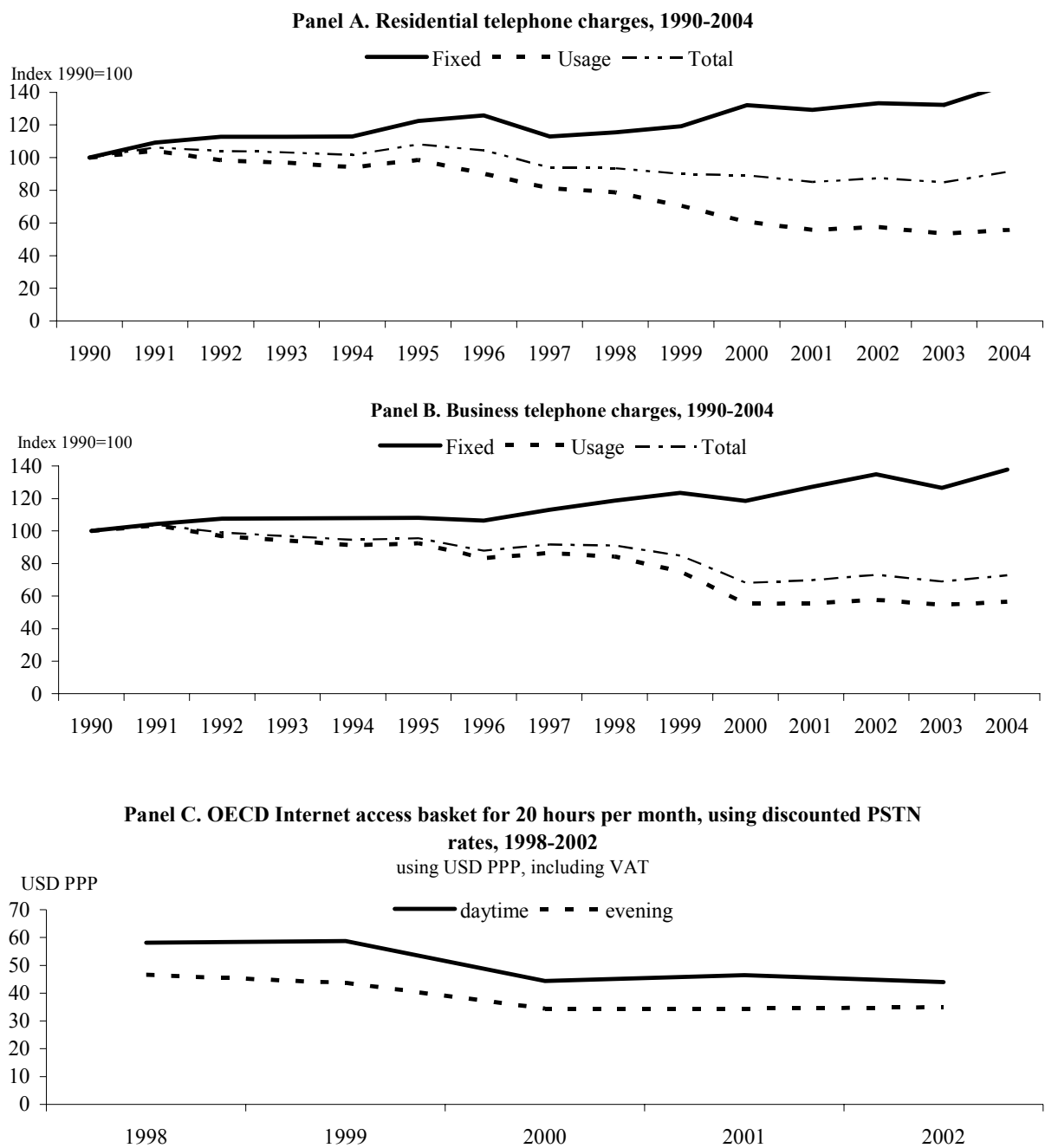
1. The indicator summarises sub-components on entry barriers, public ownership and vertical integration for electricity and gas and market structure in the gas sector.

2. The indicator summarises sub-components on entry barriers, public ownership and vertical integration for telecom and post and market structure for telecom.

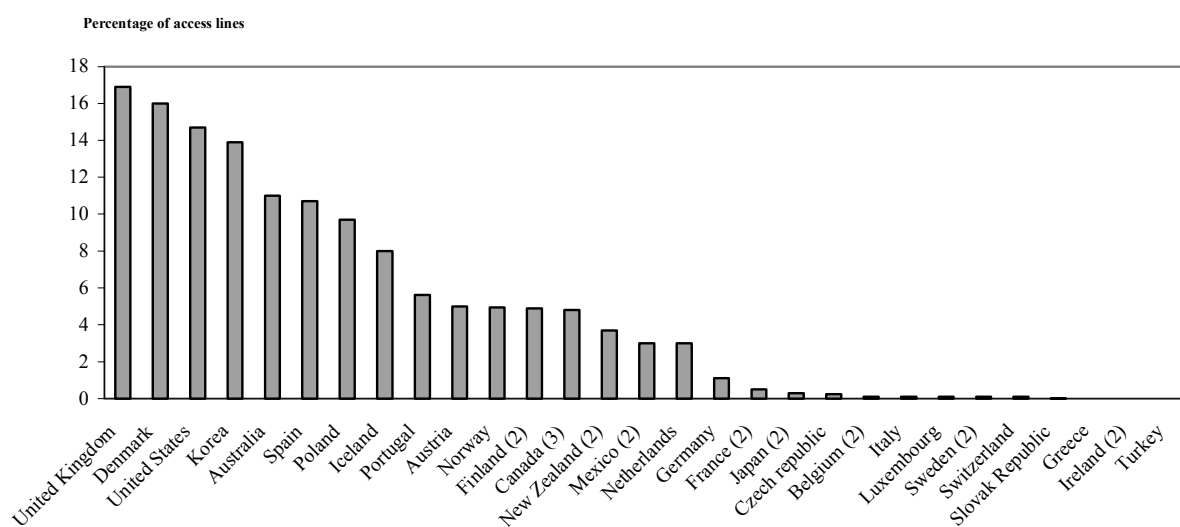
3. The indicator summarises sub-components on entry barriers for airlines, rail and road, public ownership for airlines and rail, and market structure and vertical integration for rail.

Source: Conway and Nicoletti (2006).

Figure 12. Telecommunications prices



Source: OECD Communications Outlook (2003 and 2005).

Figure 13. Access line market share of new entrants¹, 2003

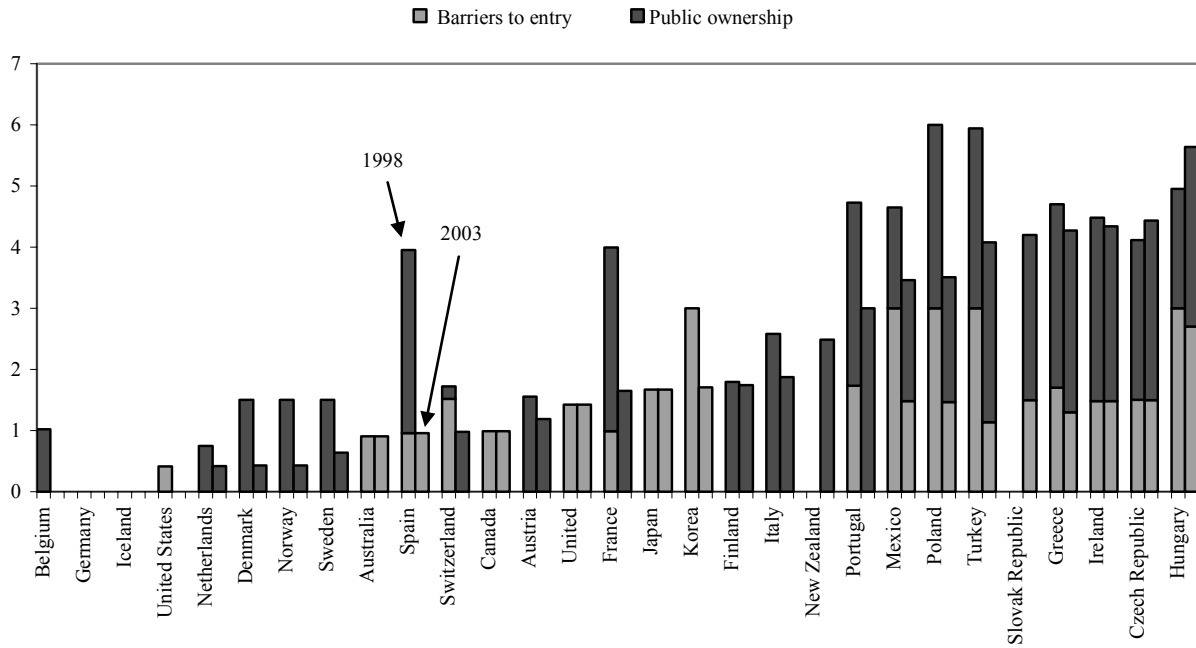
1. Access lines are defined as fixed wires (telephone or cable) carrying communication to the user.

2. 2001.

3. 2002.

Source: OECD *Communications Outlook (2005)*.

Figure 14. Regulatory stance in the air passenger transport sector¹
 (0-6 scale from most to least favourable to competition)

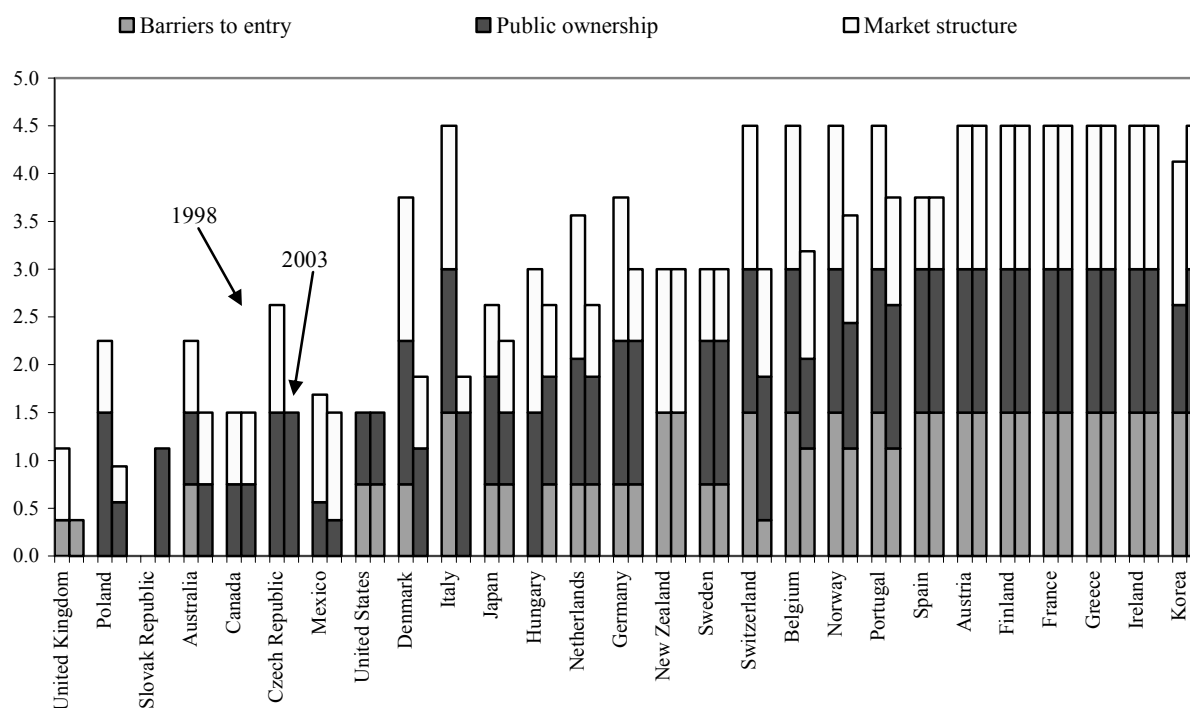


1. The indicator contains information about open skies agreements (regionally and with the United States), the liberalisation of domestic aviation markets and the share of public ownership of the largest carrier. The construction of these indicators is discussed in detail in Conway and Nicoletti (2006).

Note: There are no 1998 observations for Slovak Republic.

Source: Conway and Nicoletti (2006).

Figure 15. Regulatory stance in the railways sector
(0-6 scale from most to least favourable to competition)



1. The barrier to entry indicator contains the legal conditions for entering the rail freight and passenger markets. The public ownership indicator measures the degree of public ownership in the largest rail firm. The market structure indicator measures the number of operators in the freight and passenger rail markets. The construction of these indicators is discussed in detail in Conway and Nicoletti (2006).

Note: There are no 1998 observations for Slovak Republic.

Source: Conway and Nicoletti (2006).

ANNEX 2: ESTIMATION OF MARK-UPS

81. This annex presents the methodology used for estimating mark-ups, and discusses its advantages and disadvantages with respect to other methods proposed in the literature. It also describes data sources, the method for imputing a price to capital services, and the adjustment applied for taxes. Finally, the annex reports more detailed results on the relationship between mark-ups and the sectoral indicators of regulation than those provided in the main text.

Framework

82. A methodology for estimating the average level of mark-up over marginal cost was first derived by Hall (1988), starting from a fairly simple framework. Assuming all the firms in a given sector have the same generic production function:

$$Y = F(N, K, M) \cdot A \quad (1)$$

where Y is output, N is labour, K is capital, M is intermediate inputs, A is multifactor productivity growth and F is a homogenous function of degree lambda (the degree of returns to scale). Log differentiation of the production function implies that:

$$y = \varepsilon_N \cdot n + \varepsilon_M \cdot m + \varepsilon_K \cdot k + a \quad (2)$$

where small letters refer to growth rates of variables and ε_i to the elasticity of the production function with respect to input i (N , K and M). First order conditions from profit maximization imply, for each factor i :

$$\varepsilon_i = \alpha_i \cdot \mu \quad (3)$$

where α_i is the revenue share of factor i and μ is the mark-up of price over marginal cost (P/MC). Substituting (3) into (2) yields

$$y = \mu \cdot (\alpha_N \cdot n + \alpha_M \cdot m + \alpha_K \cdot k) + a \quad (4)$$

Assuming that the mark-up is constant over time and that multifactor productivity growth is random, (4) can be taken as a regression equation in order to obtain an estimate of μ , which would represent the average mark-up of price over marginal cost for the estimation period. Implicitly, this method is equivalent to estimating the production function in first differences (equation 2) and comparing the elasticities found with the revenue shares to obtain the mark-up.

83. Hall's method has two main drawbacks. First, it requires data in volume terms, which may be difficult to find at the sectoral level, especially for intermediate inputs. Second, it is likely that the error term (productivity) is correlated with the right hand side variable (inputs), which requires instrumental variables estimation techniques. Finding instruments uncorrelated with productivity but correlated with input use (typically pure demand instruments) is difficult.

84. Roeger (1995) proposes a method for calculating mark-ups that overcomes the need to use variables in volumes and instrumental variables estimation, although it provides an estimate of the mark-up

of price over average cost, not marginal cost. His formula is derived by combining Hall's equation with a dual version of the cost minimization problem (with prices instead of quantities), although it can be also obtained from a direct definition of the mark-up over average cost (Oliveira-Martins *et al.* 1996):

$$\frac{P}{AC} = \frac{P \cdot Y}{(W \cdot N + M \cdot PM + R \cdot K)} = \frac{\mu}{\lambda} \quad (5)$$

where AC is average cost, P , W , PM and R are the prices of output, labour, intermediate inputs and capital, respectively, whereas λ is an index of returns to scale (AC/MC). Note that the productivity term A does not enter this equation. Differentiating this equation and assuming constant returns to scale ($\lambda=1$) we obtain an estimating equation for the Lerner index B ($= (P-AC)/P$), which is a direct transformation of the mark-up:

$$(p + y) - \alpha_N \cdot (w + n) - \alpha_M \cdot (pm + m) - (1 - \alpha_N - \alpha_M) \cdot (r + k) = B \cdot [(p + y) - (k + r)] \quad (6)$$

Note that the left-hand side of equation (7) is a Solow residual with variables measured in nominal terms (SRN), instead of real terms. Adding an error term u to this equation provides us with an estimating equation for the Lerner index, that can be directly transformed into a mark-up (over average costs). This equation includes only variables in nominal terms and does not have a productivity term in the residual, and thus is not subject to endogeneity problems:

$$SRN = B \cdot [(p + y) - (k + r)] + u \quad (7)$$

This equation was used to estimate the mark-ups reported in the main text.

Data

85. The main data source was the OECD-STAN database, which covers 19 Member OECD countries and a large number of manufacturing and non-manufacturing sectors (3-4 ISIC digit-level) since 1975. The database is elaborated by the OECD's Directorate of Science, Technology and Industry, and is based on sectoral data from member countries' national accounts. The current version of the dataset uses ISA-1995 methodology for national accounts. In this respect, this study differs from previous OECD estimations of mark-ups that used similar data sources and methodology but with older national accounts criteria. An additional difference from previous data is that the new vintage of STAN is based on the International Standard Industrial Classification of all Economic Activities, Revision 3 (ISIC Rev. 3) which covers service sectors as well as manufacturing, whereas previous versions of the dataset included only manufacturing.

86. With the exception of the cost of capital (R), all the variables used in the estimation of mark-ups with equation 8 come from the STAN database. They refer to the following series:

- Nominal gross output (PxY): which corresponds to the variable *production* in STAN and is the sum of value added and intermediate inputs. It includes production of intermediate inputs consumed within a given sector. Value added is measured at basic prices for most countries.
- Labour compensation (WxN): measured as *compensation of employees* in STAN. It includes wages and salaries, as well as supplements such as contributions to social security, private pensions, health insurance, life insurance and similar schemes.

- Intermediate inputs ($MxPM$): calculated as the difference between production and nominal value added in STAN. It comprises expenditures in energy, materials and services (including any rentals for machinery and equipment but not capital services from own machinery and equipment).
- Capital stock (K): which refers to *gross capital stock* and is the sum of all past investments in assets with each vintage valued at prices “as new”. It does not account for depreciation nor physical efficiency, and it reflects only retirement of goods. Capital stock series are not available for a number of sectors and countries. In those cases, new series have been computed applying the permanent inventory method to net investment series and using the following criteria:
 - For those detailed sectors where capital stock and gross investment series were lacking, the capital stock series at the immediately higher level of aggregation were used. (Note that this variable enters the estimating equation only in growth rates).
 - For those detailed sectors where capital stock was lacking but gross investment was available, the permanent inventory method was applied to the investment series, using as scrapping rate and initial capital stock those of the higher level sector. Both the scrapping rate and the initial capital for the higher level sector were calculated by inverting the permanent inventory equation and using the data for capital stock and gross investment series.
 - Whenever capital series were lacking even at a higher level of aggregation for a given country but investment series were available, the permanent inventory equation was applied to the investment series using as scrapping rate and initial capital stock those of the country for which capital stock series were more complete, *i.e.* Finland.
 - For those sectors and countries where capital series were lacking and investment series were only available in nominal terms, investment deflators of a higher level of aggregation were used to obtain investment series in volume terms. Subsequently, the above rules were applied. In cases where no sector-specific investment deflators were available, the economy-wide investment deflator was used.
 - For those sectors where investment series were lacking, even in nominal terms, no capital series was calculated and mark-ups were not estimated.
- The rental price of capital (R) is not available in STAN, and has been calculated using a simplified version of the Hall and Jorgenson (1967) method, following Oliveira Martins *et al.* (1996):

$$R = ((i - \pi_e) + \delta) \times pk$$

where i is the nominal long-run interest rate and π_e is the expected inflation rate. Nominal long-term interest rates were proxied by yields on benchmark government bonds of around 10 years maturity. Inflation expectations were generated using the trend of the Hodrick-Prescott filter applied to the GDP deflator (lambda value=1600). Both series were drawn from the OECD Analytical Database (OECD-ADB). The delta coefficient, which can be interpreted as the discard rate corresponding to the gross capital stock, was set at 5% across sectors and is equivalent to an average service life of 20 years. The final term pk represents the economy-wide deflator for fixed business investment, and was derived from the OECD's ADB database.

Tax adjustment

87. Part of the profits made by a given industry go to pay taxes, and therefore must be deducted from the mark-up estimation in order to reflect correctly the degree of competition. Corporate taxes (the largest tax component affecting profits) are not included in the measurement of value added in STAN, and therefore do not need to be deducted. Other taxes are included in the measurement of both input and output variables. These are several “production” taxes that affect intermediate output and payroll taxes on labour compensation. To the extent that they affect both the cost and revenue side, they do not affect profits and do not need to be taken into account. Only those taxes that affect output but not inputs should be deducted.

88. The STAN database includes different definitions of value added (VA), which feed into the measurement of output Y . Not all of them are available for all countries. They are linked by the following identities:

$$\begin{aligned}
 & \text{VA at factor costs} \\
 & \quad + \text{net taxes on production} \\
 & = \text{VA at basic prices} \\
 & \quad + \text{net taxes on products} \\
 & = \text{VA at producer prices} \\
 & \quad + \text{net taxes on imports, trade and transport costs; VA tax} \\
 & = \text{VA at market prices}
 \end{aligned}$$

89. All the net taxes that appear in this list apply to value added, but not to inputs. Taxes on production include items such as taxes on buildings and vehicles, whereas taxes on products include excise duties. The “correct” value added concept for the estimation of mark-ups is value added at factor costs, as it excludes all these taxes. However, for many countries the only available measure of value added is at basic prices; for a few countries, value added is also available at factor costs; for the United States and Japan, it is only available at producer’s prices. As a consequence, the chosen procedure for adjusting taxes has been the following: In a first step, mark-ups have been estimated using output variables that include value added at basic prices (even if they exist at factor costs), or at producer prices if these are not available. In a second step, a specific time-invariant sector-country factor has been applied to correct for taxes:

$$\text{Adjustment factor} = (1 - \text{Net taxes} / \text{Final production})$$

90. To measure this adjustment factor, the variable *Net taxes* has been calculated as the difference between VA at basic prices (or VA at producer prices) and VA at factor costs, averaged over time. Whenever VA at factor costs was not available in STAN, this adjustment factor has been calculated using input-output tables from the mid-1990s, elaborated by the OECD Directorate for Science, Technology and Industry.⁶⁶ For those sectors for which value added at factor costs was not available in any of these two sources, the national average was applied.

66. For those sectors and countries for which time series data exist for value added at factor and basic prices, the ratio between the two measures is very stable over time, which suggests that it is reasonable to use information from input-output tables from one year to proxy the average tax wedge for the whole period.

91. The resulting adjustment factors, averaged over all sectors for each country, are presented in Table A2.1. With the exception of the United States, Canada, Korea and Japan, the adjustment factors applied are very small.

Other results

92. Figure A2.1 complements results from Section 2 in the main text and presents the relationship between mark-ups and regulation indicators for individual non-manufacturing sectors. These relationships lie behind the regression results presented in Table 3 of the main text, which finds a significant statistical association between both variables when all sectors are pooled in a regression including sector-specific fixed effects. The limited number of observations prevents from making any meaningful statistical inference for single sectors. However, as pointed out in the text, the figures suggest that the positive relationship found in the pooled regressions seems to be absent from the energy sector.⁶⁷

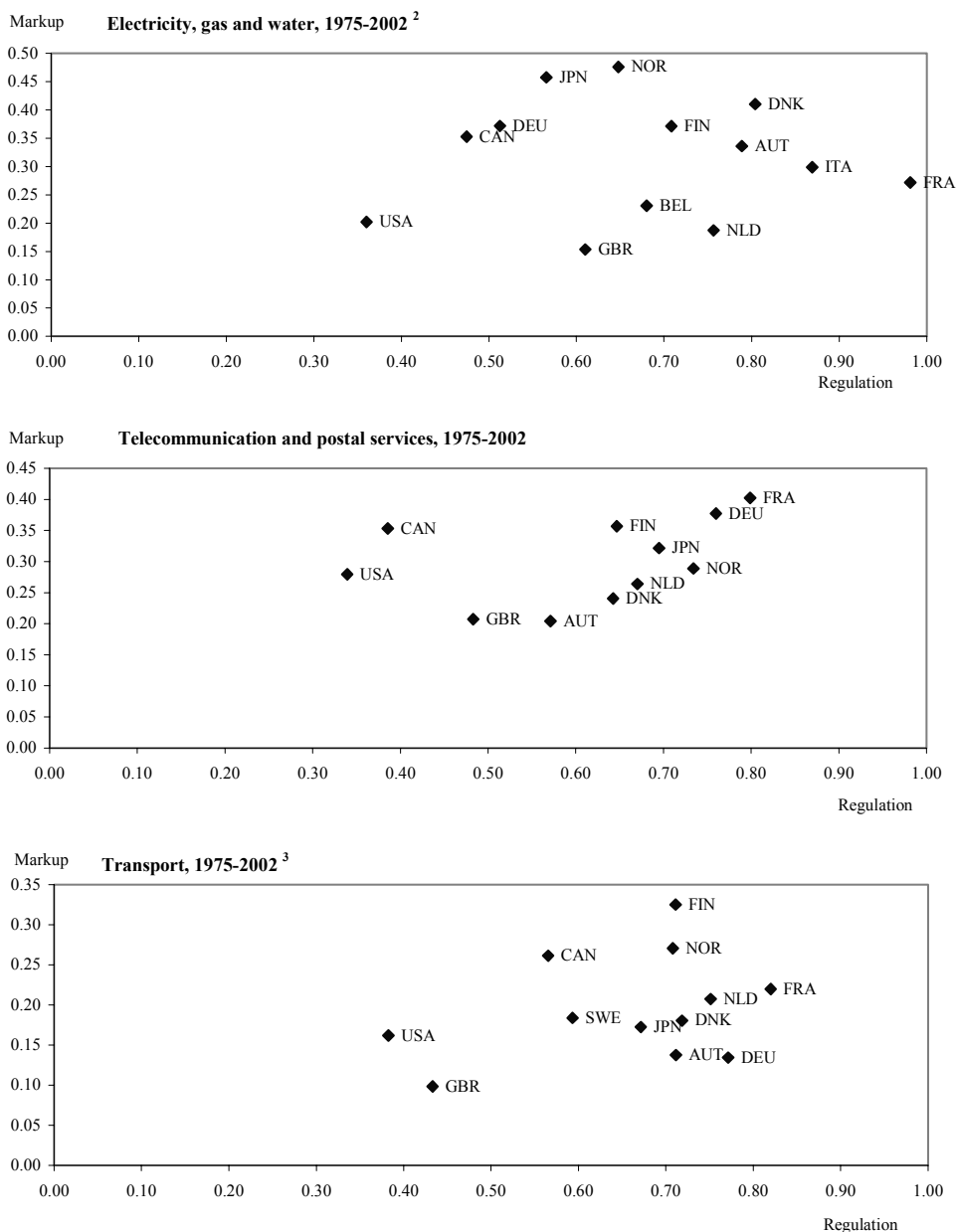
67. The regulation indicators are averaged over the whole estimation period (for the energy sector, post and telecommunications and transport) or correspond to a point in time around the mid-1990s (trade, business service and financial services). They are also averaged from more disaggregated sectoral indicators in order to match as close as possible the industry classification for which mark-ups were available. For instance, a single mark-up is calculated for the electricity gas and water supply sector, which is crossed with an average of regulation indicators for electricity and gas only due to lack of regulation data for the water industry. The mark-up for wholesale and retail distribution is compared with an indicator for retail distribution due to lack of regulation data for wholesale trade.

Table A2.1. Tax adjustment factors for mark-ups¹

Austria	0.99
Belgium	1.00
Canada	0.98
Germany	1.00
Denmark	1.00
Spain	1.00
Finland	1.00
France	0.99
United Kingdom	0.99
Italy	1.00
Japan	0.97
Korea	0.96
Luxemburg	1.00
Netherlands	1.00
Norway	1.01
Sweden	1.00
United States	0.98

1. Average over available sectors for each country.

Figure A2.1. Markups and regulation indicator
1975-2002¹

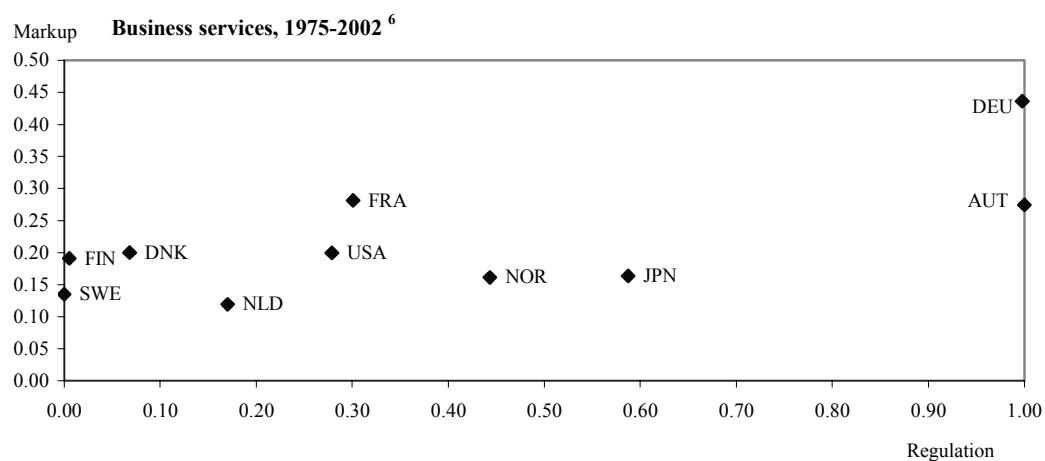
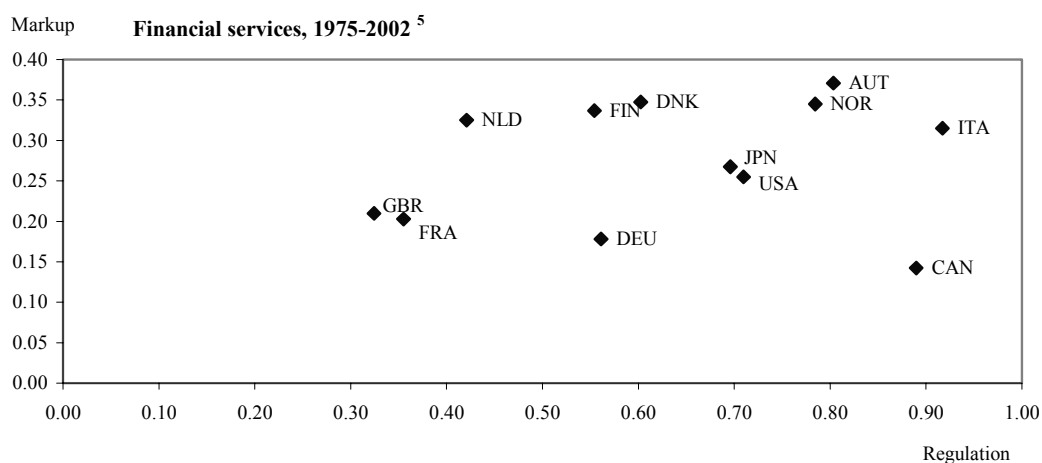
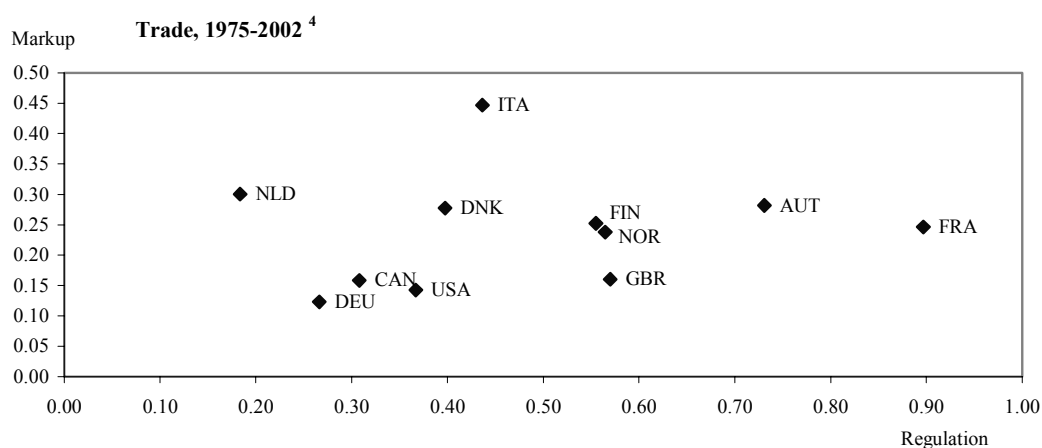


1. Estimation period for the markups is 1975-2002 at most. Due to data availability, for some countries and sectors the estimation period is shorter. The regulation indicators for the first three sectors is the average between 1975 and 2002. For trade, financial services and business services, the regulation indicator correspond to 1998.

2. The markups correspond to the sector "Electricity, gas and water supply". The regulation indicator is the average of sub-indicators for electricity and gas.

3. The markups correspond to transport and storage. The regulation indicator is the average of sub-indicators for airlines, railways and road transport.

Figure A2.1. (cont.)



4. The markups correspond to the sector "wholesale and retail trade". The regulation indicator corresponds to retail trade.

5. The regulation indicator is the sub-component for competition conditions in the financial services indicator developed in Hoj (2007).

6. The markup for business services excludes the real estate sector. The regulation indicator corresponds to professional services.

Source: OECD calculations.

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