OECD Economics Department Working Papers No. 419

Product Market Regulation in OECD Countries: 1998 to 2003

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https://dx.doi.org/10.1787/783417550348

OECD

Unclassified **ECO/WKP(2005)6**

Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development **01-Apr-2005**

English - Or. English

ECONOMICS DEPARTMENT

ECO/WKP(2005)6
Unclassified

Cancels & replaces the same document of 17 February 2005

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JT00181518

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ABSTRACT/RESUMÉ

This paper describes trends in product market regulation in OECD countries over the period 1998 to 2003. The analysis is based on summary indicators of product market regulation that measure the degree to which policies promote or inhibit competition. The results suggest that regulatory impediments to competition have declined in all OECD countries in recent years. Regulation has also become more homogenous across the OECD as countries with relatively restrictive policies have, in some areas, moved towards the regulatory environment of the more liberalized countries. Within some countries product market policies have become more consistent across different regulatory provisions, although relatively restrictive countries still tend to have a more heterogeneous approach to competition. In general, domestic barriers to competition tend to be higher in countries that have higher barriers to foreign trade and investment, and high levels of state control and barriers to competition tend to be associated with cumbersome administrative procedures and policies that reduce the adaptability of labour markets. Notwithstanding recent progress in product market reform, a 'hard core' of regulations that impede competition still persists in virtually all countries.

JEL Classification: K2, L5
Key words: Indicators: Product market regulation

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Ce document décrit les évolutions de la réglementation encadrant les marchés de produits dans les pays de l'OCDE sur la période 1998-2003. L'analyse est basée sur des indicateurs synthétiques de la réglementation des marchés de produits qui mesurent l'intensité avec laquelle les politiques favorisent ou restreignent la concurrence. Les résultats suggèrent que les entraves à la concurrence résultant de la réglementation ont décliné dans tous pays de l'OCDE ces dernières années. La réglementation est aussi devenue plus homogène à travers l'OCDE, les pays disposant de politiques relativement restrictives, s'étant ralliés, dans certains domaines, à l'environnement réglementaire des pays plus libéraux. Dans certains pays, les politiques concernant les marchés de produits sont devenues plus cohérentes au regard des différents dispositifs réglementaires, même si les pays relativement restrictifs ont toujours tendance à disposer d'une approche plus disparate de la concurrence. De façon générale, les barrières à la concurrence résultant de politiques à vocation intérieure ont tendance à être plus importantes dans les pays disposant d'importants obstacles aux échanges internationaux et à l'investissement ; de même de hauts niveaux de contrôles étatiques et d'importants obstacles à la concurrence ont tendance à être associés avec d'encombrantes procédures administratives et des politiques qui réduisent la capacité d'adaptation du marché du travail. En dépit des récents progrès accomplis par les réformes des marchés de produits, un 'noyau dur' de règlements, entravant la concurrence, persiste toujours dans pratiquement tous les pays.

Classification JEL : K2, L5
Mots Clés : Indicateurs : Réglementation des marchés de produits

PRODUCT MARKET REGULATION IN OECD COUNTRIES: 1998 TO 2003

Paul Conway, Véronique Janod, Giuseppe Nicoletti[1]

1. Introduction

1. This paper describes changes in product market regulation in OECD countries from 1998 to the end of 2003. The analysis is based on the OECD indicators of Product Market Regulation (PMR), which were developed in 1998 to illustrate broad differences in product market policies in OECD countries (Nicoletti *et al.*, 1999). The indicators are constructed from the perspective of regulations that have the potential to reduce the intensity of competition in areas of the product market where technology and market conditions make competition viable. They summarise a large set of formal rules and regulations that have a bearing on competition in OECD countries. As was the case in 1998, answers to a questionnaire sent to OECD Member governments (and collected in the *OECD International Regulation Database*) were the principal source of regulatory data used by the indicators. [2]

2. The main characteristics of the OECD PMR indicators, which differentiate them from other indicators available from private research institutes and international organisations,[3] are as follows: The PMR indicators are policy focused and 'objective' in that they are not based on opinion surveys and do not incorporate information about market outcomes; they follow a bottom-up approach, in which country scores can be related to specific underlying policies; they cover product market regulations that affect the economy at large, rather than focusing only on particular areas or sectors; and they are vetted by the national administrations of OECD member countries.

3. In the 1998 work the PMR indicators were presented as point estimates for each country covered by the survey, conditional on the system of weights used to aggregate indicators of specific regulatory provisions into summary indicator values for broader regulatory domains and for the whole economy. This paper takes a step further and uses a 'random weights' technique to test the sensitivity of summary indicator values to different weighting schemes used in the aggregation. This yields confidence intervals around the point estimates which allow the robustness of cross-country and inter-temporal comparisons to be tested. In addition, relative to the 1998 version of the PMR indicators, this paper incorporates some improvements and extensions to the system. Notably, the design of some of the indicators has been slightly modified and the coverage of the underlying regulatory data improved, allowing the number of countries

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2 The values of all of the PMR indicators in 1998 and 2003, the *OECD International Regulation Database*, and the questionnaire, called the *OECD Regulatory Indicators Questionnaire*, are available via the OECD website at www.oecd.org/eco/pmr.

3 For example, the indicators of the *World Competitiveness Forum*, the indicators of the *Economic Freedom of the World*, and the governance and "doing business" indicators of the World Bank.

included in the analysis to be extended. While these modifications make the indicators more reliable, they do not change the broad cross-country patterns previously described for 1998.

4. The paper is structured as follows. Section 2 outlines the data and methodology used to construct the PMR indicators. Section 3 discusses changes in regulatory practice since 1998 based on the updated indicators, and tests the sensitivity of the findings to the system of weights used in aggregation. Section 4 discusses the consistency of regulatory approaches across different aspects of product market regulation and with respect to selected labour market policies. Section 5 concludes and discusses possible future developments of the indicator system.

Box 1. **The effect of product market competition on economic performance**

Regulation is perhaps the most pervasive form of state intervention in economic activity. It is also essential for the good working of market economies. Over recent decades, however, policymakers have become increasingly concerned about the potential for regulation to be too intrusive and stifle market mechanisms, possibly affecting resource allocation and productive efficiency. In light of this, most OECD governments have been reviewing and updating their regulatory environment.

The process of reform has been closely intertwined with enhancing competition in product markets. Regulations that increase the role of competitive forces have been found to have important beneficial effects on GDP *per capita* -- a common measure of welfare -- through a number of channels. For instance, recent empirical research indicates that regulatory environments that favour competition have a positive impact on economy-wide productivity even when other potentially important factors -- such as human capital and country- and industry-specific effects -- are accounted for (Nicoletti and Scarpetta, 2003). An increase in the intensity of competition can enhance productivity by improving the allocation of resources and encouraging a stronger effort on the part of managers to improve efficiency. Increased innovation and technological diffusion have also been shown to be important factors in explaining this link between competition and productive performance (Aghion *et al.*, 2001; Gust and Marquez, 2002).

Enhanced product market competition can also contribute to growth in GDP *per capita* by increasing employment (Blanchard and Giavazzi, 2003). Recent research suggests that easier regulation of entry into product markets can have significant positive effects on employment (Haefke and Ebell, 2004; Nicoletti and Scarpetta, 2004). As restrictions are eased and competition increases, firms earn lower product market rents, activity is expanded and employment rates tend to rise. However, employment in some large firms, particularly in the network sectors, where previous regulations were conducive to over manning, may be adversely affected by deregulation.

Finally, although the effects of product market reform on capital formation are, in theory, ambiguous, empirical studies have found that regulatory reforms, especially those that liberalise entry, are likely to spur fixed investment in some industries (Alesina *et al.*, 2003).

2. Measuring product market regulation

5. The ability to benchmark current regulation and alternative policy options against the regulatory approaches of other countries is an important element of the OECD 'peer review' system and has proven useful in encouraging countries to implement structural reforms that enhance economic performance.[4] Quantitative measures of product market regulation are also useful in empirical analyses aimed at exploring the links between regulation, competition, and the determinants of growth (Box 1). These were the rationales for the initial development of the PMR indicators system in the late 1990s and the current update. This section outlines the data and methodology used to construct the PMR indicators.

4 For example, see the series of *OECD Reviews of Regulatory Reform*.

2.1 The OECD International Regulation Database

6. The *OECD International Regulation Database* contains all the regulatory information used to construct the PMR indicators. As in 1998, answers to a detailed questionnaire on regulatory practices in OECD countries are the principal source of these data. The 2003 version of the questionnaire contains six sections spanning important aspects of general and sectoral regulatory policies as well as some aspects of industry structure (Table 1). Each section was answered by civil servants in national administrations that have knowledge and/or responsibilities related to the relevant policy areas. Within each country the respondents were usually coordinated by a single contact person. In total, the 2003 questionnaire collected 805 data points for each OECD country. It was distributed in October 2003 and responses from most countries were received by mid-February 2004. Therefore, most of the data reflect regulations in place at the end of 2003.

Table 1: Number of basic data points in the OECD regulatory indicators questionnaire 2003

Section	*Number of data points*	*Short description*
Section 1: General Policies	**223**	Section 1 focuses on public ownership, market access and competition issues, market structure and vertical relationships in utilities and other network industries
1.1 Firm ownership, control and legal status	129	
1.2 Antitrust exclusions and exemptions	6	
1.3 Market access, market dominance and vertical separation of network sectors	88	
Section 2: Regulatory and administrative policies	**44**	Section 2 focuses on regulatory processes and capacities in the public administration.
2.1 Regulation	32	
2.2 The treatment of foreign parties	12	
Section 3: Administrative requirements for business start-ups	**129**	Section 3 focuses on the administrative requirements that entrepreneurs must satisfy in order to start a new business.
Section 4: Regulation of professional services	**227**	Section 4 focuses on regulations that may have an impact on the accounting, legal services, engineering, and architectural professions.
4.1 Exclusive and shared exclusive tasks	83	
4.2 Entry Requirements	36	
4.3 Treatment of foreign professionals	32	
4.4 Regulations on Market Behaviour	76	
Section 5: Regulation in transportation industries	**131**	Section 5 focuses on regulations affecting access, business conduct, and industry and market structure in three transport sectors: road freight, railways and passenger air travel.
5.1 Road freight	25	
5.2 Railways	74	
5.3 Air Travel (non freight)	32	
Section 6: Regulation in the retail distribution industry	**51**	Section 6 focuses on regulations affecting access and business conduct in the retail sector.
6.1 Regulatory environment	31	
6.2 Industry behaviour	13	
6.3 Prices	7	
Total	**805**	

7. The quality of the data in the OECD regulation database is clearly an extremely important consideration. Accordingly, a great deal of effort was put into ensuring that responses to the questionnaire were consistent across countries and in comparison to the 1998 data. In particular, national administrations were asked to provide further information on the answers to specific questions in the following circumstances:

- If the answer to a question changed between 1998 and 2003 or was inconsistent with other 'dynamic' data (from the questionnaire or other sources) on the direction of policy change in the relevant area. In theses cases respondents were asked to provide additional information to substantiate the 2003 response and the direction of recent policy changes.

- If a country's answer to a question appeared to be inconsistent with other countries. In these cases respondents were sent additional guidance on how to interpret the question and asked to review or confirm their answer.

- If answers to questions were not given. Respondents were asked to provide missing information, especially if it is used directly in the PMR indicators system.

After this second iteration with countries, the regulation data were also vetted by OECD economists and other in-house experts. In some cases, the data issues identified at this stage warranted an additional iteration with respondents in national administrations.

8. At the end of the data collection process, the average response rate to the questionnaire across all countries stood at around 92%. The average response rate for the subset of questions used directly in the PMR indicators was also around this level. In some cases gaps in the data could be filled with data from 1998, bringing the average availability of questionnaire data used directly in the indicators to almost 97%. For a number of countries, 100% of the data necessary to construct the indicators were available in 2003. In addition, the quality and consistency of the data were also significantly improved relative to the first-round responses.

9. In total, the PMR indicators summarise information on 139 economy-wide or industry-specific regulatory provisions. Of these, 129 data points are extracted or computed from answers to the questionnaire. The remaining 10 data points are taken from OECD publications or other sources. In particular, the primary external data sources are:

- Data on the telecommunications sector come from the *OECD Communications Outlook* (2003).

- Data on average tariff rates are drawn from the Integrated Data Base (IDB) of the World Trade Organization.

- Data on the proceeds from the sale of state-owned enterprises are provided by Privatisation Barometer, Fondazione Eni Enrico Mattei (www.privatizationbarometer.net).

- Data on the number of busiest air transport routes subject to price regulation are drawn from the Digest of Bilateral Air Transport Agreements database of the International Civil Aviation Organization.

- For member countries of the European Union, data on the administrative burdens on business start-ups and professional services had already been collected in recent reports.[5] Accordingly, these countries were given the option of not answering these sections of the questionnaire if they considered the data in these reports to be accurate and up-to-date. Some European Union countries did take this opportunity to update or revise the data contained in the previous reports.[6] Questionnaire replies were therefore used for these European Union countries as well as for non-European Union countries.

10. The subset of data included in the PMR system was chosen to match the earlier vintage of 1998 indicators, fitting the broad policy areas covered by them (see below). It was also aimed at reflecting both all-purpose and industry-specific regulations that would be representative of the economy-wide regulatory approaches. Finally, it was delimited by the wish to ensure a complete coverage of OECD countries.[7]

2.2 The PMR indicator system

11. The structure of the indicator system is shown in Figure 1. The system is in the form of a pyramid with 16 low-level indicators at the base and one overall indicator of product market regulation at the top. Each of the low-level indicators captures a specific aspect of the regulatory regime. In total, the low-level indicators span most of the important aspects of general regulatory practice as well as some aspects of industry-specific regulatory policies (in particular, in retail distribution, air and rail passenger transport, rail and road freight, telecommunications) (see Box 2).

12. To calculate the indicators, the qualitative information contained in the *OECD International Regulation Database* – such as YES/NO answers – is coded by assigning a numerical value to each of the possible responses to a given question. Quantitative information is subdivided into classes using a system of thresholds. The coded information is normalised over a scale of zero to six, reflecting increasing restrictiveness of regulatory provisions for competition. These data are then aggregated into low-level indicators by assigning subjective weights to the various regulatory provisions. Given the normalisation of the basic data all the low-level indicators also have a scale of zero to six. Details of how each of the low-level indicators is calculated, including the weights used in its construction and the techniques used to handle missing data, are given in the annex.

13. At each step up the pyramid the regulatory domain summarised by the indicators becomes broader. Higher-level indicators are calculated as weighted averages of their constituent lower-level indicators. The attribution of lower-level indicators to each higher-level indicator, and the weights used in the averaging, are based on principal component analysis. For a given regulatory domain this technique reveals sets of lower-level indicators that are most associated with different underlying (unobserved) principal components. In most cases, these principal components represent sub-domains of regulation that can be given a straightforward economic interpretation. Within each principal component, the lower-level indicators are weighted according to the proportion of the cross-country variance of the component that is

5 See CSES (2002) and Paterson *et al* (2003) respectively.

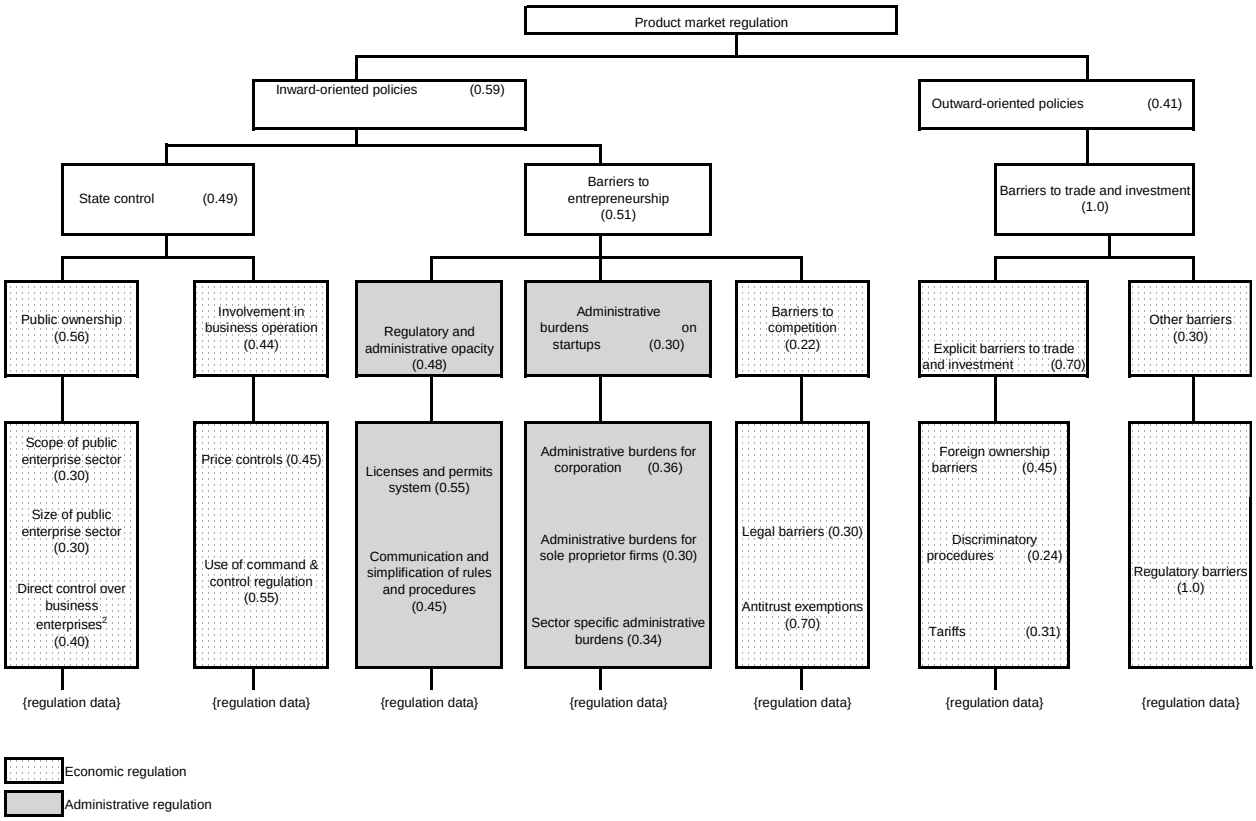
6 For administrative burdens on start-ups the following European Union countries elected to submit new data: Austria, Belgium, Greece, Ireland, Italy, Netherlands, and Portugal. For professional services the following European Union countries elected to submit new data: Austria, Belgium (accounting and architectural services only), Germany, Ireland, Italy, Spain, Sweden, and the United Kingdom.

7 The additional data collected by means of the questionnaire also constitute the basis for the OECD industry-level indicators of regulation and other OECD policy indicators.

explained by them. In this way, indicators that have the largest variation across countries are assigned the largest weights.[8] Figure 1 provides a summary of the weights used in aggregation.

14. At the top of the structure the overall indicator of product market regulation summarises the main features of the regulatory framework in the product market of each country. One important advantage of this system is that the value of higher-level indicators can be traced with an increasing degree of detail to the values of the more disaggregated indicators and, eventually, to specific data points in the regulation database. This allows differences in indicator values across time and countries to be decomposed into specific differences in regulation. This is not possible with indicator systems based on opinion surveys, which can identify perceived areas of policy weakness, but cannot attribute these to specific policy settings.

Figure 1. The PMR indicator System[1]



1.The numbers in brackets indicate the weight given to each lower level indicator in the calculation of the higher level indicator immediately above it.
The weights were derived by applying principal components analysis to the set of indicators in each of the main regulatory domains (state control, barriers to entrepreneurship, barriers to trade and investment, economic regulation and administrative regulation). The same approach was used to derive the weights used to calculate the indicators of inward and outward-oriented policies and the overall PMR indicator. The principal components analysis was based on the original 1998 data.
2. Two indicators from the 1998 version of the PMR indicators ('Special voting rights' and 'Control of public enterprise by legislative bodies') have been combined into this indicator.

8 More information on factor analysis in the context of the PMR indicators can be found in Nicoletti *et al.* (1999). One downside of weights estimated using this technique is that they are sensitive to revisions in the basic data. As discussed below, the 1998 data on which the weights were originally based has been revised as part of the current update. However, the weights were not re-estimated, partly because the sensitivity analysis presented later suggests that the main conclusions of the paper are to a large extent robust to the choice of weights used in the construction of the indicators.

Box 2. **The low-level PMR indicators**

There are 16 low-level indicators in the PMR system. These indicators cover a wide range of product market policies. This box gives a brief description of each low-level indicator. Comprehensive details on the data and methodology used to construct the low-level indicators are provided in the annex.

Scope of public enterprises: this indicator measures the pervasiveness of state ownership across business sectors as the proportion of sectors in which the state has an equity stake in at least one firm.

Size of public enterprise: reflects the overall size of state-owned enterprises relative to the size of the economy.

Direct control over business enterprises: measures the existence of government special voting rights in privately-owned firms, constraints on the sale of state-owned equity stakes, and the extent to which legislative bodies control the strategic choices of public enterprises.

Price controls: reflects the extent of price controls in specific sectors.

Use of command and control regulation: indicates the extent to which government uses coercive (as opposed to incentive-based) regulation in general and in specific service sectors.

Licenses and permits systems: reflects the use of 'one-stop shops' and 'silence is consent' rules for getting information on and issuing licenses and permits.

Communication and simplification of rules and procedures: reflects aspects of government's communication strategy and efforts to reduce and simplify the administrative burden of interacting with government.

Administrative burdens for corporations: measures the administrative burdens on the creation of corporations.

Administrative burdens for sole proprietors: measures the administrative burdens on the creation of sole proprietor firms.

Sector-specific administrative burdens: reflects administrative burdens in the road transport and retail distribution sectors.

Legal barriers: measures the scope of explicit legal limitations on the number of competitors allowed in a wide range of business sectors.

Antitrust exemptions: measures the scope of exemptions to competition law for public enterprises.

Ownership barriers: reflects legal restrictions on foreign acquisition of equity in public and private firms and in the telecommunications and airlines sectors.

Tariffs: reflects the (simple) average of most-favoured-nation tariffs.

Discriminatory procedures: reflects the extent of discrimination against foreign firms at the procedural level.

Regulatory barriers: reflects other barriers to international trade (*e.g.* international harmonisation, mutual recognition agreements).

15. The PMR indicators are based primarily on explicit policy settings and only account for formal government regulation. Thus, the indicators only record 'objective' data about rules and regulations, as opposed to 'subjective' assessments of market participants in indicators based on opinion surveys. This isolates the indicators from context-specific assessments and makes them comparable across countries, but also implies some limitations. 'Informal' regulatory practices, such as administrative guidance or self-disciplinary measures of professional associations, are only captured to a very limited extent in the PMR indicators system. Similarly, the way in which regulations are applied by enforcement authorities, which

can have a considerable impact on competition in a given market, is also only reflected in a relatively minor way in the PMR indicators system. [9]

3. Progress in regulatory reform, 1998-2003

16. This section uses the updated PMR indicators to illustrate progress made by OECD countries in regulatory reform. It begins with a brief review of the indicator values for OECD countries in 1998, which have been extended, reviewed, and revised in the context of the updating. It then outlines the broad trends in regulatory policy that have occurred between 1998 and 2003, before finishing with a review of regulatory patterns in OECD countries in 2003.

3.1 1998 revisited

17. The current update has provided the opportunity to extend and review the 1998 indicators, which were originally described in Nicoletti *et al*. (1999). A comparison of the 1998 and 2003 data identified some inaccuracies in the 1998 version of the OECD's *International Regulation Database*, which, in consultation with national administrations, have been corrected so as to ensure consistency across time. Some of the gaps in the 1998 data set have also been filled, making it possible to calculate point-estimates of the indicators for a number of OECD countries that were not included in the original analysis.[10] In addition, some small modifications have been made to the design of some of the low-level PMR indicators. However, the effect of these modifications, which are described in the annex, is very minor.

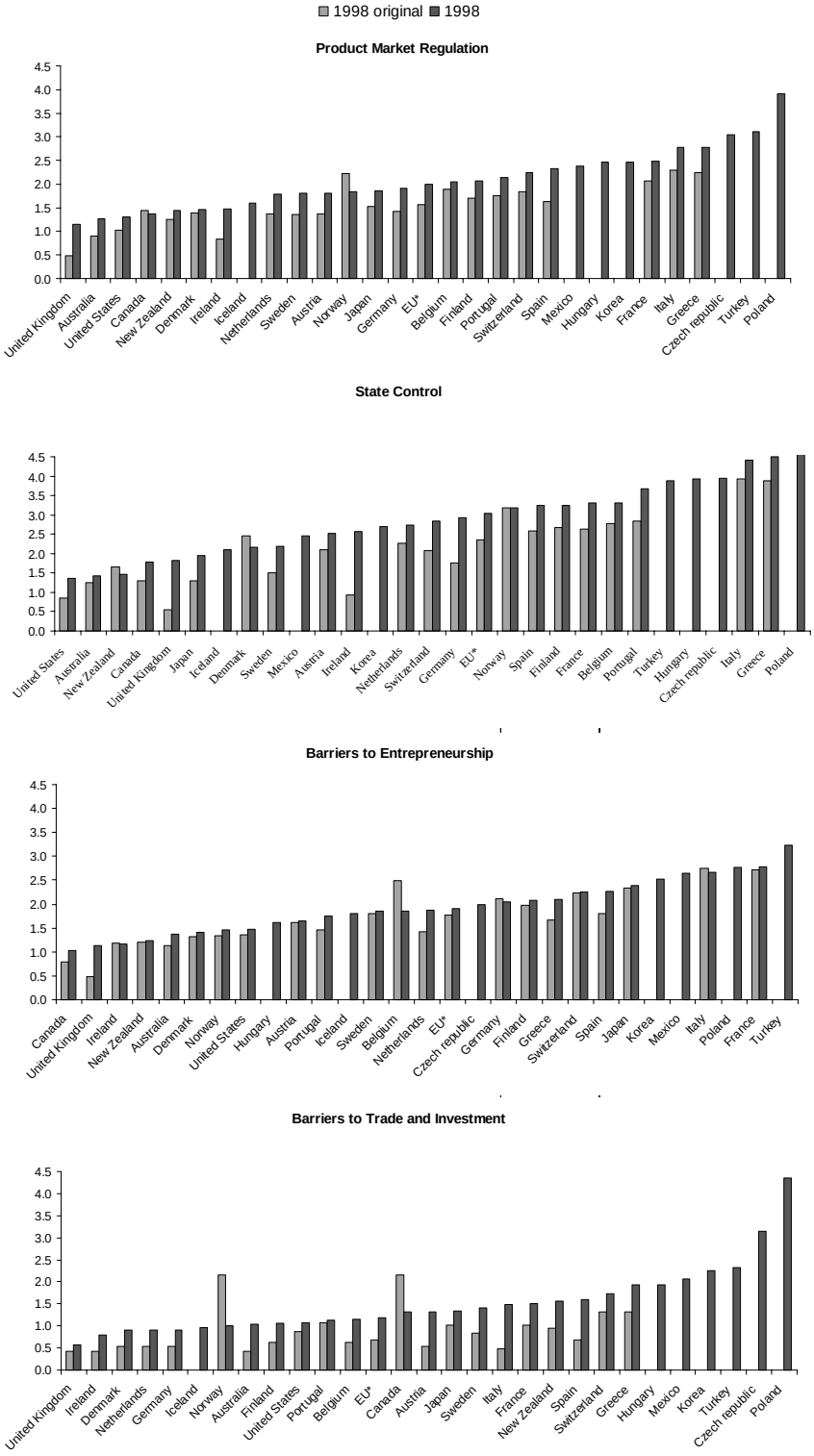
18. Figure 2 graphs the original and revised PMR indicators for OECD countries in 1998, as well as the three constituent indicators of state control, barriers to entrepreneurship, and barriers to foreign trade and investment. For all countries included in the previous exercise, except Canada and Belgium, the revisions have led to an increase in the value of the overall 1998 indicators. This reflects that, on balance, the process of comparing the 1998 and 2003 data sets identified restrictive policies that were not captured in the original analysis. Most of these revisions involved the indicators of state control and barriers to trade and investment.

19. The revisions to the 1998 indicators have not changed the broad observation of important differences in product market regulation across countries. The United Kingdom, Australia, the United States, Canada, New Zealand, Denmark, and Ireland are estimated to have had the least restrictive overall regulatory environment in 1998. Within this group, the United Kingdom was estimated to be relatively liberal in all three of the broad policy domains further down the PMR pyramid. Australia, the United States, Canada, and especially New Zealand, however, are estimated to have had a more restrictive approach to foreign trade and investment relative to the inward-oriented policies of state control and barriers to entrepreneurship. Conversely, Ireland and Denmark were estimated to be highly open to trade and investment in 1998, but were deemed more restrictive in terms of state control.

9 For a comparison of indicators based on subjective and objective data see Nicoletti and Pryor (2005). These authors point out, nonetheless, that country rankings based on both approaches are broadly consistent.

10 These countries are: Iceland, Mexico, Korea, Hungary, the Czech Republic, Turkey, and Poland.

Figure 2. The Situation in 1998[1]



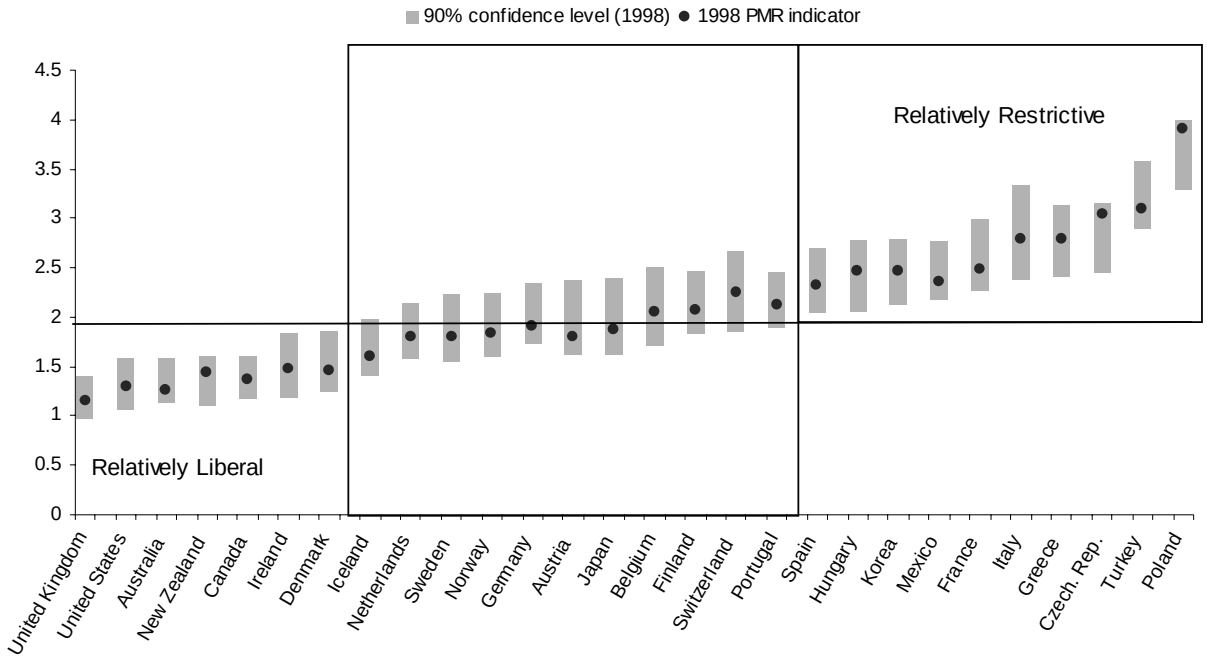
1. The scale of indicators is 0-6 from least to most restrictive.
1998 original refers to the 1998 PMR indicators originally presented in Nicoletti *et al.* (1999).
1998 refers to the revised and updated 1998 PMR indicators.
* EU 15 (simple average)

20. At the other end of the spectrum, Poland, Turkey, the Czech Republic, Greece, and Italy are estimated to have had regulatory environments that were the least conducive to product market competition in the OECD in 1998. A relatively high degree of state control was a feature of product market regulation in all these countries and barriers to entrepreneurship were also high in Turkey, Poland, and Italy. Poland, the Czech Republic, and to a lesser extent, Turkey also stand out as having had particularly restrictive barriers to foreign trade and investment in comparison to the other OECD countries.

21. To assess the statistical significance of the estimated differences in product market regulation, Figure 3 graphs 90% confidence intervals for the 1998 PMR indicators calculated using a 'random weights' technique (Box 3). Across a number of countries the PMR indicators were not statistically different when uncertainty about the weights used to construct them is taken into consideration. However, at this level of confidence, two broad country groupings with clearly distinct regulatory regimes can be identified in 1998: a 'relatively liberal' group of countries -- including the common-law countries and Denmark -- and a 'relatively restrictive' group of countries -- including Poland, Turkey, Czech Republic, Greece, Italy, France, Mexico, Korea, Hungary, and Spain. The rest of the OECD countries -- the 'middle of the road' group -- were not statistically distinguishable from these two groups at the 90% level of confidence.

Figure 3. **Confidence intervals for the PMR indicators, 1998**[1]

(at 90 per cent levels)



1. The confidence intervals are calculated using stochastic weights on the low-level indicators to generate a distribution of overall PMR indicators for each country. The 90 percent confidence intervals are calculated from that distribution. Indicator values for the 'relatively liberal' and 'relatively restrictive' countries are significantly different at the 90 percent level of confidence.

Box 3. **The random weights technique**

Starting with the 16 low-level indicators, this technique uses 10 000 sets of randomly-generated weights to calculate 10 000 overall indicators for each country.[1] The random weights are drawn from a uniform distribution between zero and one and then normalised so as to sum to one. This is equivalent to assuming complete uncertainty about the most appropriate value of each of the individual weights used to construct the PMR indicators. Accordingly, the resulting distribution of indicators for each country reflects the possible range of values given no *a priori* information on the most appropriate value for each of the weights.[2] Confidence intervals and the probability of a given country achieving a given rank are calculated from these distributions.

The confidence intervals are centred on the mean value of each country's 10 000 indicator values. Given that the weights are drawn from a uniform distribution between zero and one, the mean indicator values are asymptotically equivalent to indicators calculated using equal weights on each of the 16 low-level indicators. These differ from the PMR indicators, given that the weights in the PMR system are not equal. In all cases, however, the PMR indicator values fall within the confidence interval.

1. The sensitivity of the indicators to changes in the subjective weights used to construct the low-level indicators (see the annex) has not been tested.
2. Note that this is not equivalent to having no *a priori* information on the most appropriate **set** of weights given that the sum of two or more uniform distributions is not uniform.

3.2 A degree of policy convergence over the past five years

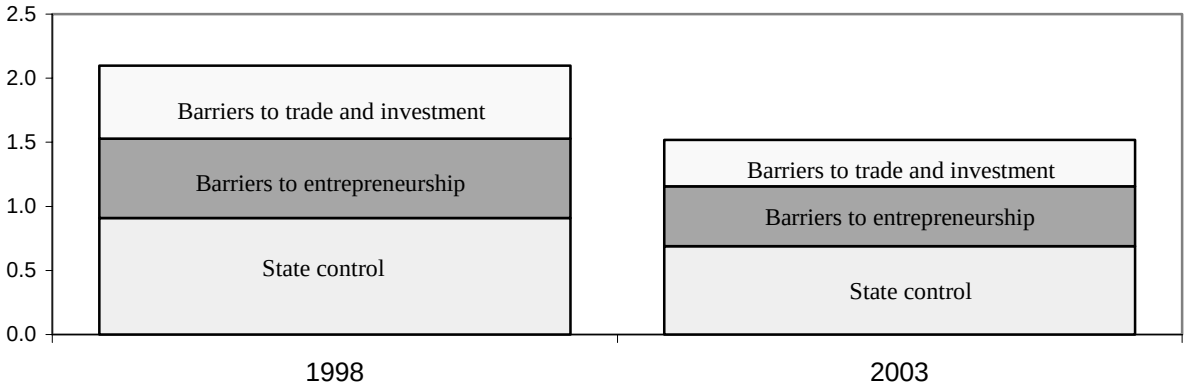
22. On (unweighted) average across OECD countries, product market regulation has become more conducive to competition since 1998 (Figure 4a). Visible progress has been made in reducing barriers to competition in all three of the broad areas of regulation captured in the PMR indicators. Slightly more progress, however, has been made in reducing state control and barriers to trade and investment than in reducing barriers to entrepreneurship (Figure 4b).

23. As is apparent from Figure 5, the reduction in state control in the OECD has, in large part, been due to the easing or elimination of coercive forms of regulation (command-and-control measures, price controls) and less state interference in the choices of public or private business enterprises (direct control over business enterprises). In contrast, on average, there has not been a great deal of privatisation undertaken (as reflected in the indicators of the scope and size of the public enterprise sector).[11] Hence, by and large, reform in this policy domain is successfully moving away from 'command-and-control' to 'incentive-based' regulations, but the extent of the state's commercial interests has not decreased substantially since 1998. As well as being beneficial in its own right, the move away from command-and-control regulation could also be an important prequel to further privatisations. A greater reliance on incentive-based regulation lessens the need for the state to be directly involved in product markets and increases the attractiveness of state-owned assets to the private sector.

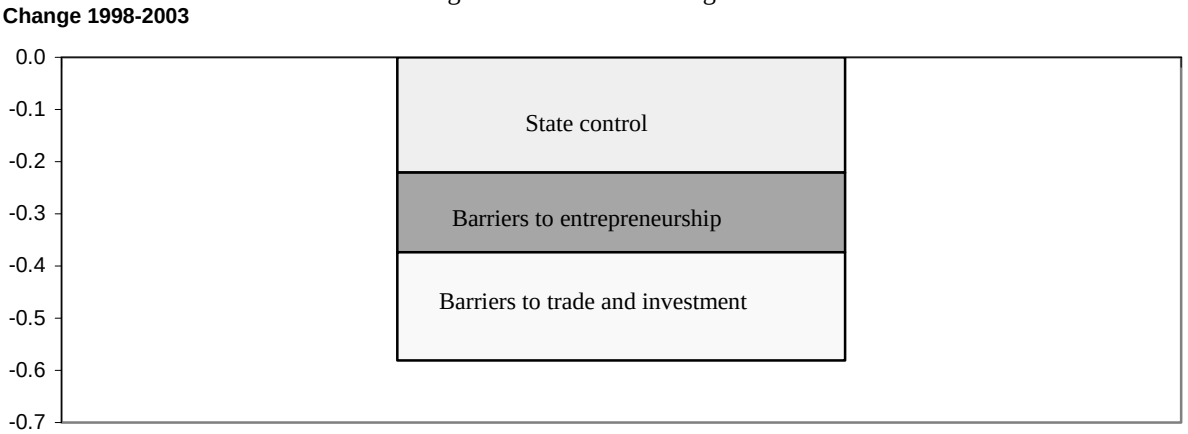
11 This is in comparison to the early and mid-1990s when privatisation was more prevalent. See, for example, Megginson and Netter (2001).

Figure 4. **Progress in regulatory reform, 1998 to 2003**

Panel A. OECD-wide average of PMR indicator levels[1]



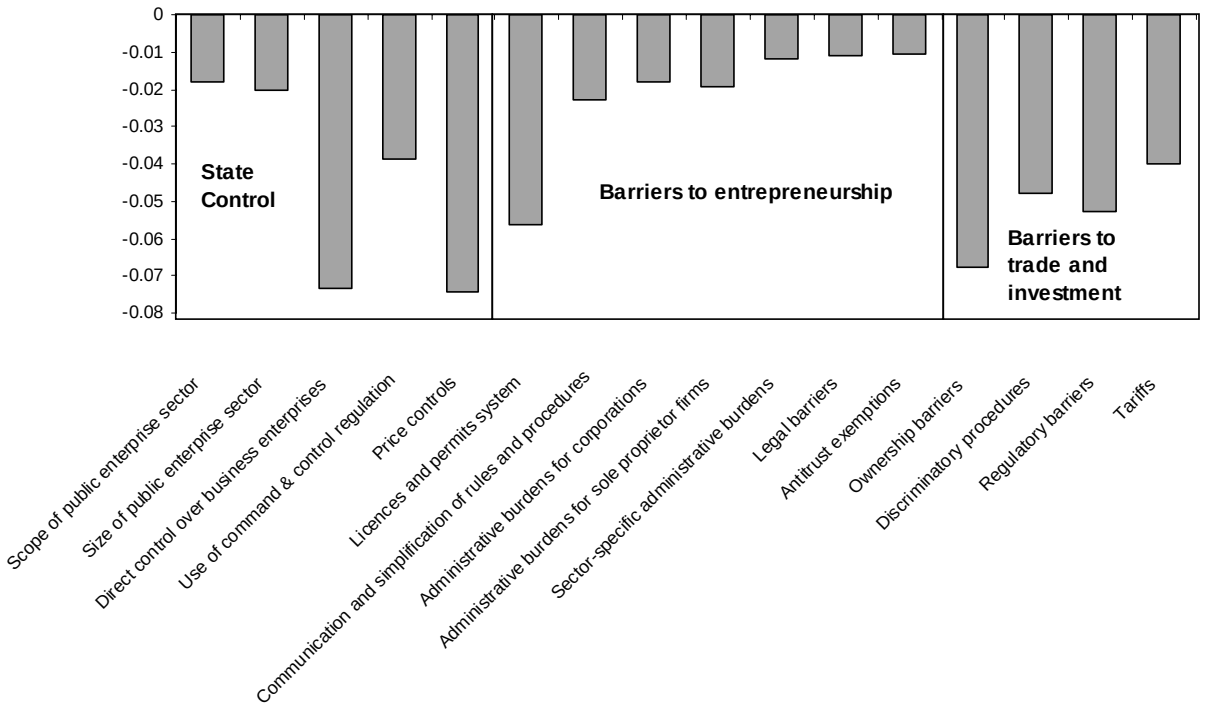
Panel B. Change in OECD-wide average PMR indicator



1. OECD-wide average is a simple average of the overall PMR indicators for 29 OECD countries. The scale of the indicator is 0-6 from least to most restrictive of competition.

24. In the policy domain of barriers to entrepreneurship, progress across the OECD has been particularly limited with respect to removing remaining legal barriers to new entry in product markets that are sheltered from competition, such as several non-manufacturing industries. The simplification of administrative procedures and reduction of burdens on business start-ups has also been limited, except for a marked improvement in licence and permit systems due to more widespread use of one-stop shops and, to a lesser extent, 'silence is consent' rules.

Figure 5. Sources of change in the OECD-average PMR indicator, 1998 to 2003[1]



1. Shows the contribution of each of the 16 low-level (OECD average) PMR indicators to the change of the OECD-average overall PMR indicator.

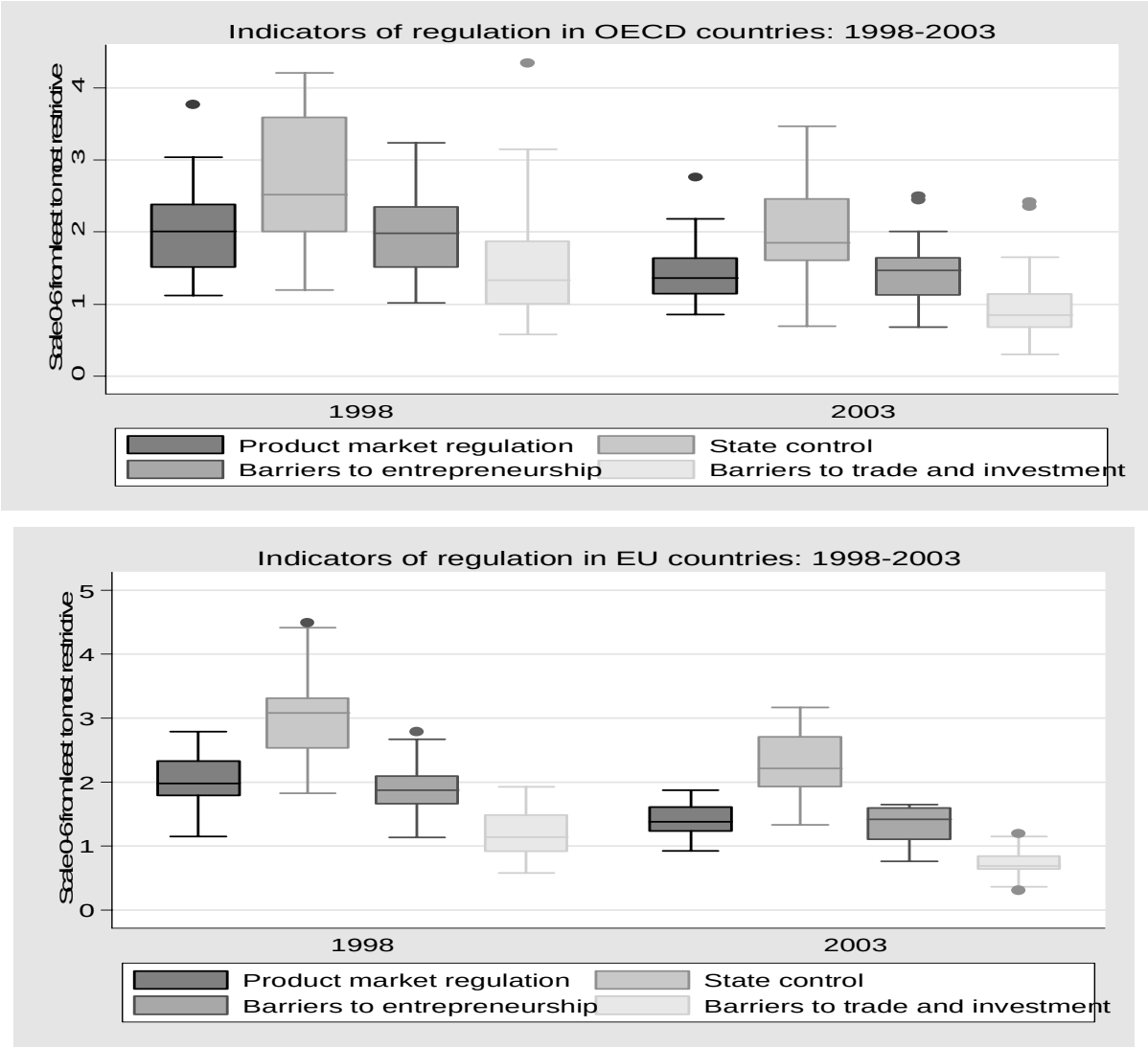
25. In contrast, significant easing was recorded in all types of barriers to foreign trade and investment, further increasing the outward orientation and the trade integration of OECD economies. Average most-favoured-nation tariff rates have declined in most countries and restrictions on foreign direct investment have also softened somewhat over the past five years.[12] In most countries, ceilings on foreign ownership and limitations on management and business choices are the main remaining impediments (Golub, 2003).

26. As a result of regulatory reform since 1998, there is now less variation in overall product market policies across OECD countries (Figure 6). To a significant extent, this reduction in cross-country dispersion is due to convergence towards the regulatory practices of the most liberal OECD economies. In other words, countries that had relatively restrictive product market policies in 1998 have generally made more progress than countries with policies that were already more conducive to product market

12 The most-favoured-nation (MFN) tariff rates used in the PMR system are *ad valorem* and do not account for specific tariffs. The latter are frequently used on agricultural and food products with effects that are both less transparent and often more restrictive than *ad valorem* duties. MFN tariff rates also do not capture preferential tariffs, the trade importance of which has been growing over recent years with the expansion of regional trade agreements. The recent evolution of MFN tariff protection reflects reductions agreed in the Uruguay Round, with some differentiation according to sector, which a simple average may not accurately reflect. The tarification of non-tariff barriers in the agricultural sector is also an important determinant of recent changes in MFN tariffs.

competition, implying a positive relationship between the initial level of regulation and the extent of reform over the past five years (Figure 7a).

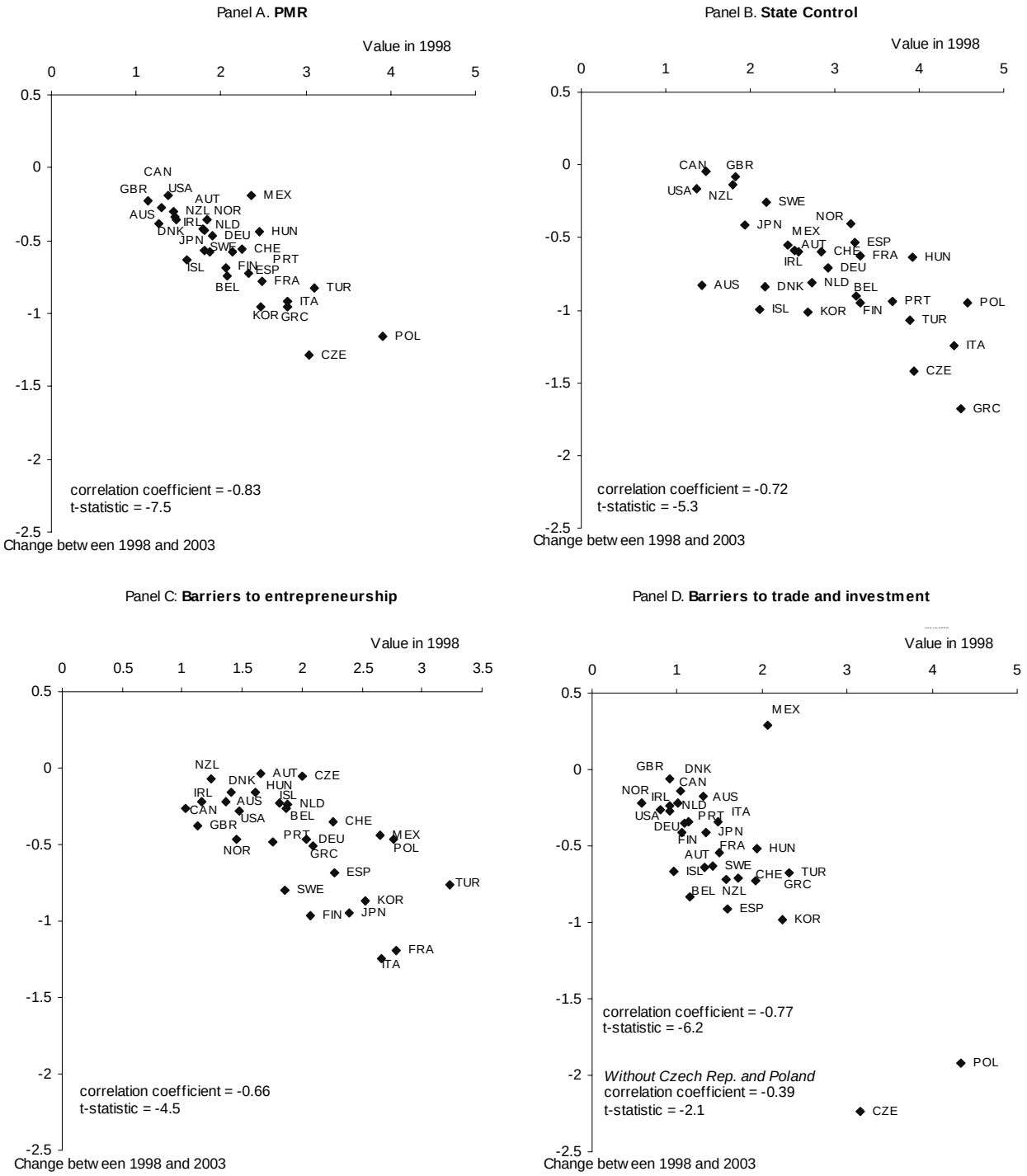
Figure 6. Smaller cross-country variance in regulatory approaches[1]



1. Box plots of the overall PMR indicator and its three components. The horizontal line in the middle of the box is the median value of the indicator across OECD or EU 15 countries. The edges of the box are the 2nd and 3rd quartiles of the cross-country distribution. The two whiskers are the extreme values and the dots represent outliers.

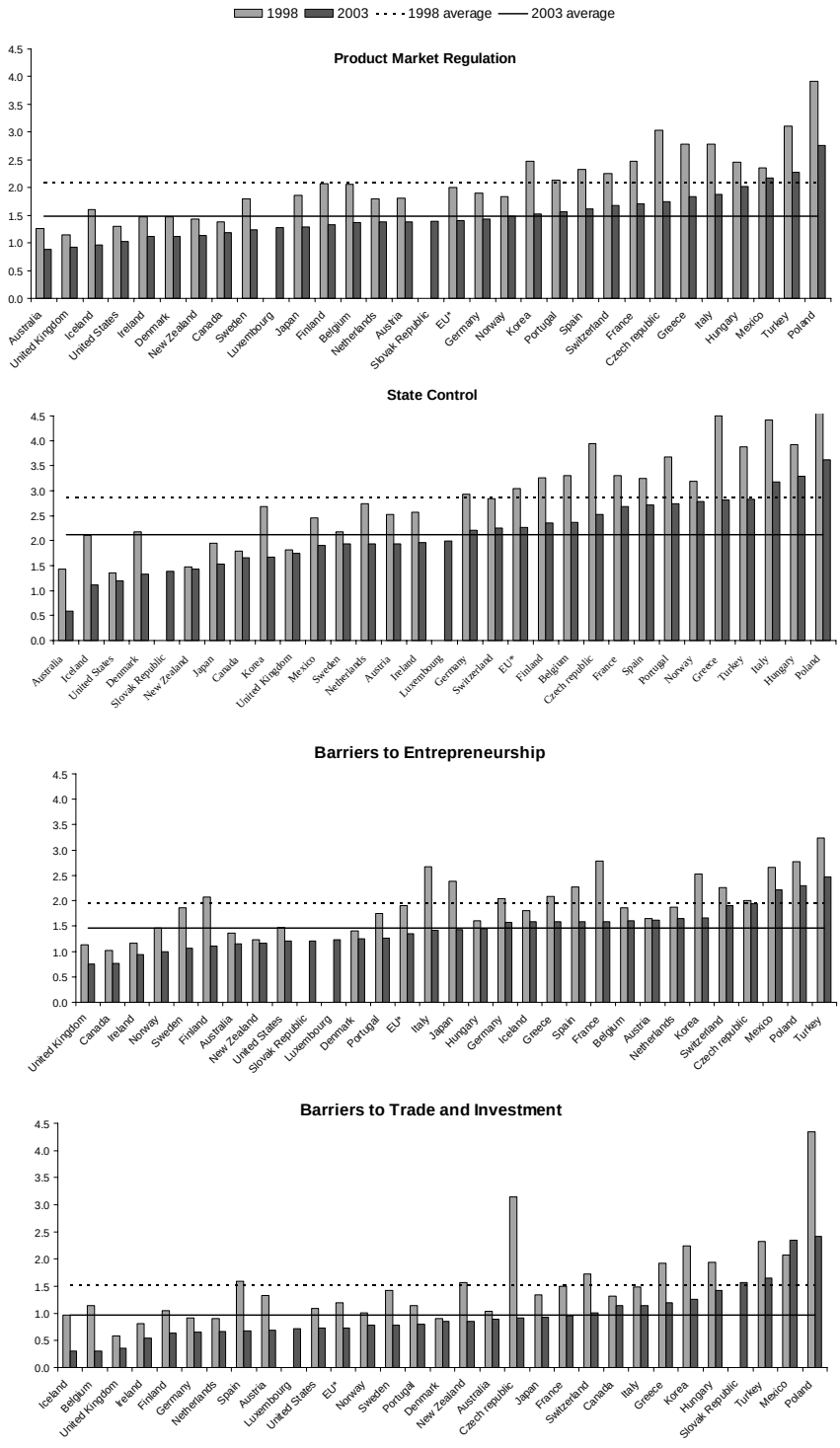
27. Convergence in the overall PMR indicator is due in large part to convergence in policies governing the extent of state involvement in product markets. Countries that had a relatively high degree of state control in 1998 have since made visible progress in this area (Figure 7b). The dispersion of barriers to entrepreneurship has also fallen since 1998 (Figure 6) and there is evidence of convergence (Figure 7c). In 2003, barriers to trade and investment are the most homogenous of the three broad policy domains (Figure 6). This reflects the fact that many of these regulations are determined by multilateral agreements and/or supranational institutions that often impose high standards of openness to trade and investment on their constituent countries. These institutions also tend to spread reform in this area across countries irrespective of their starting level; hence, the evidence of convergence in this sub-indicator is less compelling (Figure 7d).

Figure 7. Examining convergence in regulatory approaches [1,2]



1. The scale of the indicators is 0-6 from least to most restrictive of competition.
2. A negative correlation between the indicator value in 1998 and its change between 1998 and 2003 is indicative of convergence in regulation given that the scale of the indicators is 0 to 6 from least to most restrictive

Figure 8. Regulation in 1998 and 2003[1]



1. Sorted by 2003 values. The scale of indicators is 0-6 from least to most restrictive of competition.
* EU 15 (simple average)

28. For the group of EU member countries in 2003 product market regulation is typically more homogenous than in the rest of the OECD (Figure 6). In addition, convergence towards lower barriers to product market competition has been stronger than in other OECD member countries, given stronger convergence in state control and, to a lesser extent, barriers to entrepreneurship.[13] This relatively strong rate of convergence may reflect efforts to implement the single market programme. If confirmed, this result would constitute a reversal of previous findings based on the analysis of regulatory reforms in non-manufacturing industries that suggested relatively weaker convergence within EU countries over the 1975 to 1998 period (Nicoletti and Scarpetta, 2003).

3.3 Product market regulation to 2003

29. The overall PMR indicators and three constituent indicators for each country in 1998 and 2003 are shown in Figure 8. According to the PMR indicators, the regulatory environment has become more conducive to product market competition in all countries for which 1998 data are available. Given the volume of regulatory information contained in the system, only the most apparent policy developments are discussed here on a country-by-country basis. For expositional purposes, countries are split into three groups, as identified above, depending on their estimated degree of product market regulation in 1998.

The 'relatively restrictive' countries

30. Consistent with the pattern of convergence identified earlier, countries that were estimated to have had relatively restrictive product market regulations in 1998 -- Poland, Turkey, Czech Republic, Greece, Italy, France, Mexico, Korea, Hungary, and Spain -- have, in most cases, also recorded a relatively large improvement in overall product market regulation. For most of these countries the reform of product market regulations since 1998 has led to substantial improvements in all three of the broad policy domains captured by the sub-indicators. In particular:

- **State control**, which was generally relatively pervasive in 1998, has been reduced substantially. In all cases this reflects the removal of price controls -- especially in the air transport and telecommunications sectors -- and, except for France and Spain, reductions in the extent of direct government control over firms. For example, legal restrictions on the sale of state-owned equity have been removed in the Czech Republic, Poland, and Italy; 'golden shares' have been redeemed in Korea and Greece; and the legislature no longer controls directly the strategic choices of public firms in the Czech Republic and Greece.

- Progress in reducing **barriers to entrepreneurship** has been more disparate in this group of countries. Italy, France, Korea, Turkey, and Spain, which were estimated as having some of the most restrictive barriers to entrepreneurship in 1998, have since made substantial progress. In Italy, France, and Spain this was driven predominantly by substantial reductions in the administrative burdens on start-up firms. Italy and Turkey also removed legal barriers to entry in some sectors, while Korea improved some aspects of public governance. Poland has made progress in this policy domain by reducing legal barriers to entry in some sectors while Greece and Mexico have improved the system of licences and permits. In the Czech Republic and Hungary progress in this policy domain has been more limited.

13 The correlation coefficient between the 1998 levels of the overall PMR indicator and changes over the 1998-2003 period is -0.95 (t=10.54) in the EU 15 and -0.78 (t=4.16) in non-EU 15 countries. For the indicator of state control the correlation coefficients for the EU 15 and non-EU 15 countries are -0.81 (t=-5.03) and -0.66 (t=2.92) respectively. For barriers to entrepreneurship the corresponding figures are -0.78 (t=-4.56) and -0.70 (t=-3.24).

- In the policy domain of **barriers to international trade and investment** all the countries in this group have become more open as a result of higher ceilings on foreign investment in the airline and telecommunication sectors and, except for Mexico, lower average tariffs. In the Czech Republic and Poland a range of other measures -- such as explicit recognition of the national treatment principle, the use of Mutual Recognition Agreements, and access for foreigners to regulatory appeal procedures -- have also contributed to large improvements in this area. This may reflect reforms implemented in the run up to accession to the European Union.

31. For all countries in this group, except Mexico and Hungary, the improvement in the PMR indicator between 1998 and 2003 is statistically significant at the 90% level of confidence (Figure 9a).[14] At the level of the sub-indicators the improvement in state control is significant in Korea, the Czech Republic, Greece, and Italy (Figure 9b). The improvement in barriers to trade and investment in the Czech Republic, Poland, and Spain is also significant (Figure 9c), as is the improvement in barriers to entrepreneurship in France (Figure 9d).

32. Although regulatory progress in these countries has, in most cases, been substantial, reforms have not always been sufficiently deep to close the gap relative to other OECD countries, which have also implemented reforms over the same period. To varying degrees, countries in this group are still estimated to have some of the most restrictive product market regulations in the OECD. A continuing high level of state control is generally the most significant difference between these countries and the rest of the OECD. In particular, the scope and size of the public enterprise sector is still estimated to be relatively large and policy objectives tend to be achieved by coercive forms of regulation.

The 'relatively liberal' countries

33. In line with the convergence theme, countries that were estimated to be relatively liberal in 1998 -- the United Kingdom, the United States, Australia, New Zealand, Canada, Ireland, and Denmark -- have also tended to record relatively small improvement in product market regulation. With a few exceptions, the pattern of product market reform in these countries has tended to consist of small incremental improvements across the range of PMR indicators. Most notably:

- In the policy domain of **state control**, Australia and Denmark have made progress by lessening recourse to 'command-and-control' regulation. In Australia, regulations on retail trade have been decentralised and universal service requirements for airlines removed, while in Denmark policy alternatives to coercive regulations are being given greater consideration. Ireland has also improved in this policy domain due to marginal reforms in most of the areas covered by the low-level indicators.

- All countries in this group have recorded some improvement in **barriers to entrepreneurship**, predominantly as a result of small reductions in administrative burdens on business start-ups and minor improvements in the communication and simplification of rules and procedures.

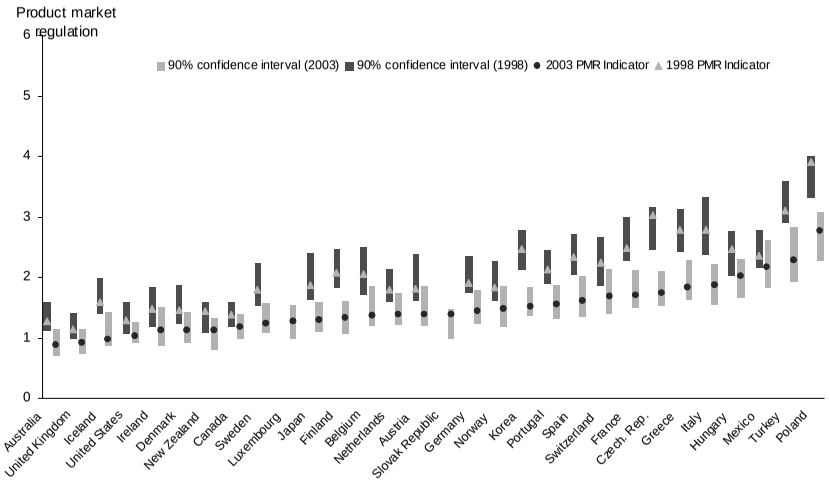
- **Barriers to trade and investment** have also fallen by minor amounts in all these countries. New Zealand recorded a more significant reduction in this policy domain due to lessening policy discrimination against foreign firms.

14 That is, the confidence intervals around the 1998 and 2003 PMR indicators do not overlap implying that the improvement between 1998 and 2003 is robust to the choice of weights used to calculate the indicator.

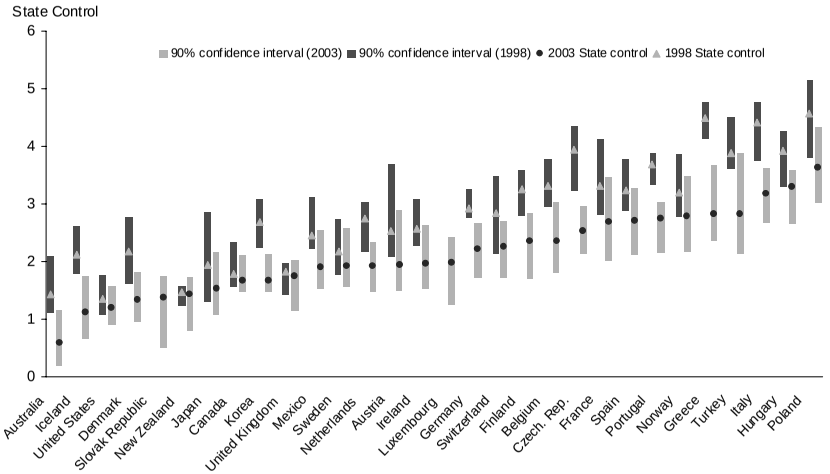
Figure 9. Confidence intervals for the PMR indicators, 1998 and 2003

Panel A. Overall **PMR indicators, 1998 and 2003**[1,2]

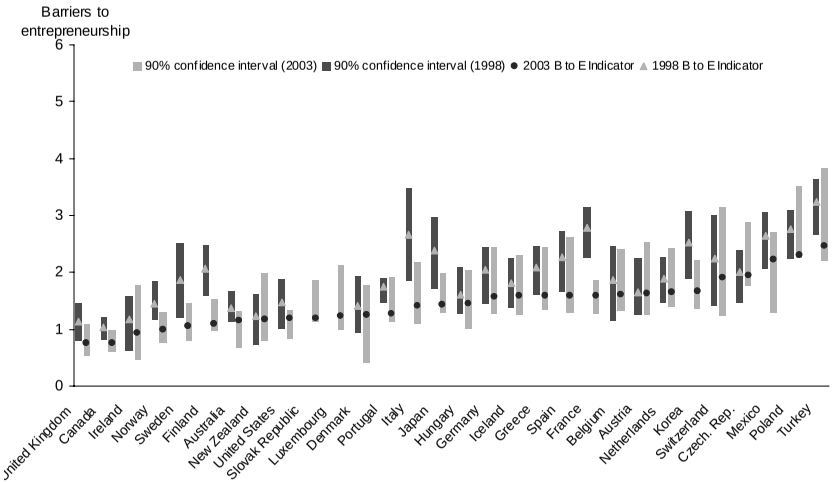
(at 90 per cent levels)



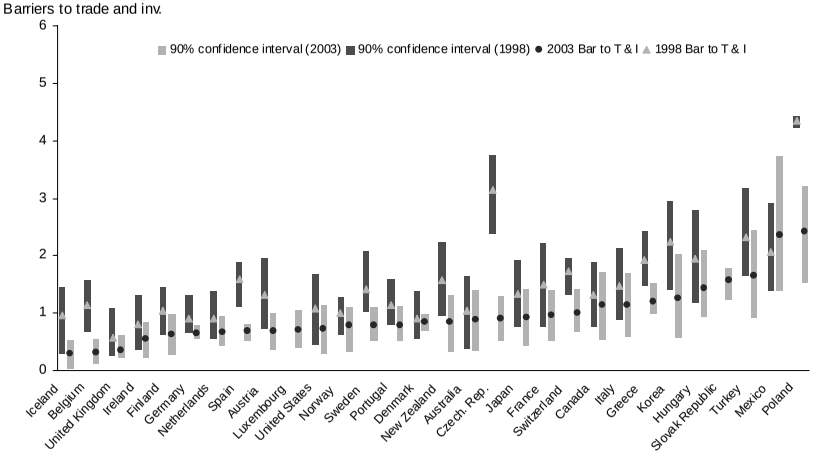
Panel B. **State control, 1998 and 2003**[1,2]



Panel C. **Barriers to entrepreneurship, 1998 and 2003**[1,2]



Panel D. **Barriers to trade and investment, 1998 and 2003**[1,2]



1. The confidence intervals are calculated using stochastic weights on the low-level indicators to generate a distribution of overall PMR indicators for each country. The 90 per cent confidence intervals are calculated from that distribution.
2. The scale of the indicators is 0-6 from least to most restrictive of competition.

34. For all of these countries, the improvement in product market reform is not significant at the 90% level of confidence. This is also the case for the sub-indicators, although the improvement in state control in Australia is almost significant at this level (Figure 9). However, these countries are still estimated to have some of the most liberal product market regimes in the OECD. This generally reflects lower barriers to entrepreneurship and less state control relative to other OECD countries. In contrast, many of these countries do not score well in the (relatively homogenous) sub-indicator of barriers to trade and investment, primarily because of relatively restrictive barriers to foreign ownership.

35. The fact that these countries are estimated to have relatively liberal product market policies does not mean that the scope for increasing competition through regulatory reform has been exhausted. As well as lowering barriers to foreign ownership, these countries could also enhance the role of market forces in other areas. For example, the proportion of sectors in which legal barriers restrict entry or the state owns equity in at least one firm can still be relatively high in some of these countries. Furthermore, in a few cases, aspects of product market regulation have become somewhat less conducive to competition since 1998. For example, in New Zealand the scope of the public enterprise sector has increased, while in the United Kingdom restrictions on the sale of state owned equity in the post office have recently been enacted.

The 'middle of the road' countries

36. Countries estimated to be in the middle of the distribution of PMR indicators in 1998 are Iceland, the Netherlands, Sweden, Norway, Germany, Austria, Japan, Belgium, Finland, Switzerland, and Portugal.

- All of these countries have made progress in reducing the extent of **state control**. This has typically been achieved by removing price controls and relying less on 'command-and-control' regulation to achieve policy objectives. The extent of direct government control over business has also been reduced in some of these countries, but not to the same extent as in the group of countries that were estimated to be 'relatively restrictive' in 1998.

- Reductions in **barriers to entrepreneurship** have been more disparate across these countries. Sweden, Finland, and Japan have all made substantial progress by improving the system of licences and permits and government communication. Norway, Germany and Portugal have also made solid progress in this policy domain as a result of lower administrative burdens. The other countries in this group have virtually maintained the *status quo* in this policy domain since 1998.

- Reductions in **barriers to trade and investment** in this group of countries have been spread across the range of low-level indicators.

37. In Finland, Japan, and Portugal the improvement in product market regulation is significant at the 90% level of confidence (Figure 9). For the sub-indicators, barriers to entrepreneurship have improved significantly in Finland whereas the improvement in state control is significant in Portugal and almost significant in Finland. Notwithstanding this progress, state control is still relatively pervasive in these two countries, while barriers to foreign trade and investment remain in Japan. In the other countries in this group, the improvement in product market reform is not significant at the 90% level of confidence, although it comes close to significance in Iceland and Sweden. In Iceland and Germany the improvement in state control is significant as is the improvement in barriers to trade and investment in Belgium.

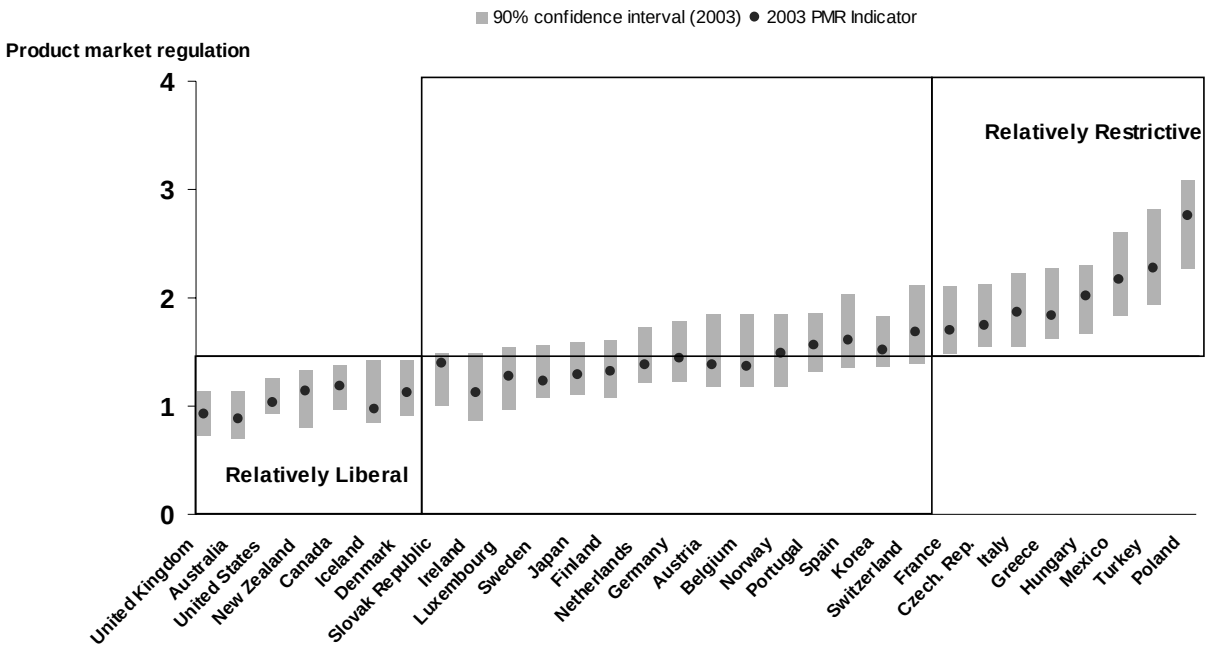
38. Despite progress in some regulatory areas, the relative positions of Norway, the Netherlands, and, to a lesser extent, Switzerland and Austria have slipped somewhat, predominantly as a result of restrictive barriers to entrepreneurship in the Netherlands, Austria, and Switzerland and persisting state control in Norway. On the other hand, Iceland, Finland, Japan, and Belgium have improved their relative position

and, to varying degrees, converged towards the most liberal OECD countries.[15] The remaining countries – Sweden, Germany, and Portugal – have broadly maintained the relative positions they held in 1998.

Summing up

39. As in 1998, the PMR indicators are in many cases not statistically different across countries in 2003 when uncertainty in the choice of weights used to calculate the overall PMR indicator is taken into account (Figure 10). However, once again, two broad groups of countries can be identified at conventional degrees of confidence. The 'relatively liberal' countries have barely changed since 1998 and now include Iceland, in addition to the common-law countries and Denmark. The 'relatively restrictive' countries in 2003 include Poland, Turkey, Mexico, Hungary, Greece, Italy, Czech Republic, and France. Thus, Korea and Spain have moved to the group of 'middle of the road' countries.

Figure 10. **Country groupings based on confidence intervals for the PMR indicators, 2003[1,2]**
(at 90 per cent levels)



1. The confidence intervals are calculated using stochastic weights on the low-level indicators to generate a distribution of overall PMR indicators for each country. The 90 per cent confidence intervals are calculated from that distribution. Indicator values for the 'relatively liberal' and 'relatively restrictive' countries are significantly different at the 90 percent level of confidence.
2. The scale of the indicator is 0-6 from least to most restrictive of competition.

15 Note, however, that this result for Iceland is highly sensitive to the weights used in calculating the indicator. (Figure 10).

4. Consistency across policy domains

40. This section investigates the extent to which the policy approaches adopted by OECD countries in different regulatory areas are linked. It describes the observed empirical relationships between different aspects of product market regulation captured within the PMR indicators system as well as between product market and selected labour market policies. The focus here is predominantly empirical with only limited conjecture on possible explanations and consequences of the observed relationships.

4.1 Consistency across product market policies

41. One straight-forward method of assessing the extent of consistency in the policy areas covered by the 16 low-level indicators in the PMR system is simply to look at their variance within countries. A high variance would signal situations in which countries have relatively marked differences in the extent to which policies in different areas are conducive to competition; lower variances would point to policies that are either uniformly restrictive, or liberal, or somewhere in between, across the different areas of product market regulation.[16]

42. According to this metric, the dispersion of regulatory practice has declined between 1998 and 2003 for most countries, implying increased consistency of product market regulations (Table 2). Countries that have increased consistency most strongly include Italy, Japan, Sweden, and Korea. Given the overall improvement in product market regulation, this may indicate that recent reform efforts in these countries have been directed at regulatory domains that were problem areas in the past. Countries that have moved in the other direction include Turkey, Mexico, Poland, Spain, and New Zealand. For these countries, to the extent that complementarities exist between policy areas, there is a danger that the potential benefits of recent product market reforms may be reduced given ongoing restrictions in other areas.

43. It is also interesting to note that the variability of regulatory approaches tends to increase as the regulatory environment (measured by the overall PMR indicator) becomes more restrictive across countries (Figure 11). Put differently, countries with relatively liberal product market policies also tend to have a more uniform approach across regulatory domains, and *vice versa*.[17] In countries with restrictive product market policies, the relatively diverse mix of policies could be open to two conflicting interpretations: it could be indicative of either inconsistent policy setting, or, more optimistically, an ongoing reform process.

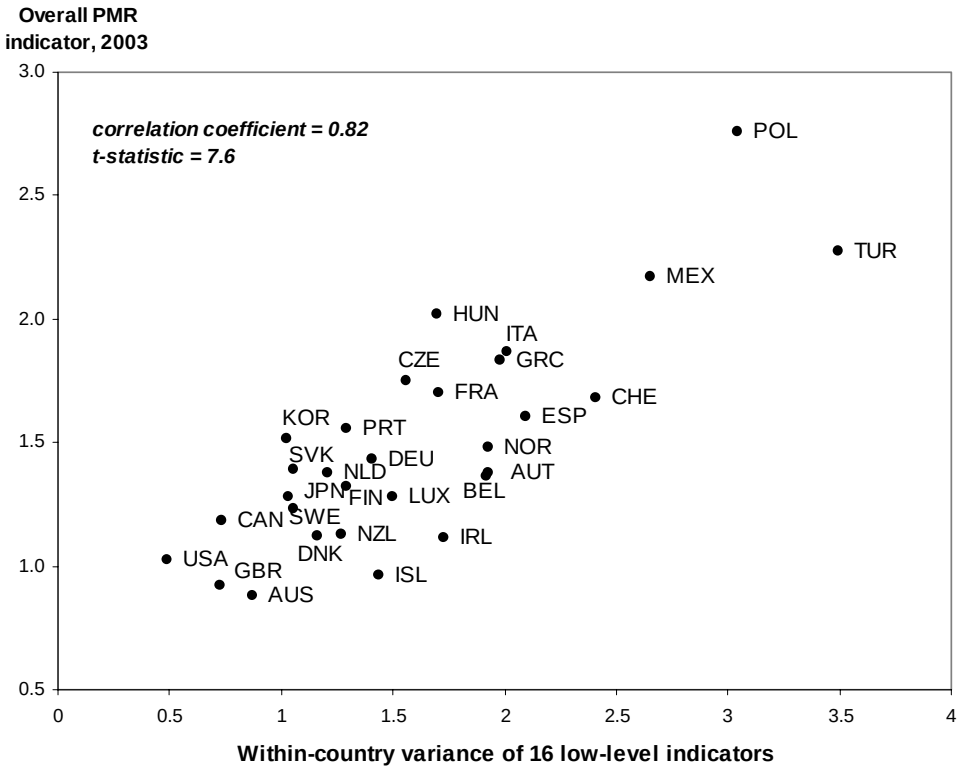
16 The width of the confidence intervals calculated using the random weights technique is also a measure of variance in the 16 low-level indicators. Countries that have relatively similar scores for all of the low-level indicator values will score a relatively similar overall PMR indicator value irrespective of the weights used in the aggregation process. This will translate into a relatively narrow 90% confidence interval. However, for countries with a larger variance across the low-level indicators the overall PMR indicator will vary considerably depending on the weights used in its construction and the confidence interval will be relatively wide. Hence, the width of the confidence interval also provides a graphical measure of policy consistency within each country at this level.

17 To some extent this is to be expected given that the variance of the low-level indicators in a perfectly liberal and perfectly restrictive country would be zero in both cases.

Table 2. **Within-country variance of low-level PMR indicators, 1998 and 2003**

	Australia	*Austria*	*Belgium*	*Canada*	*Czech republic*	*Denmark*	*Finland*	*France*	*Germany*	*Greece*
1998	1.0	2.5	2.7	0.8	2.3	1.7	1.7	2.3	1.6	2.3
2003	0.9	1.9	1.9	0.7	1.6	1.2	1.3	1.7	1.4	2.0
	Hungary	*Iceland*	*Ireland*	*Italy*	*Japan*	*Korea*	*Luxembourg*	*Mexico*	*Netherlands*	*New Zealand*
1998	2.4	1.5	1.9	4.0	2.6	2.0		1.7	1.3	1.1
2003	1.7	1.4	1.7	2.0	1.0	1.0	1.5	2.7	1.2	1.3
	Norway	*Poland*	*Portugal*	*Slovak Republic*	*Spain*	*Sweden*	*Switzerland*	*Turkey*	*United Kingdom*	*United States*
1998	1.9	2.1	1.5		1.9	2.1	2.9	2.1	0.8	1.2
2003	1.9	3.0	1.3	1.1	2.1	1.1	2.4	3.5	0.7	0.5

Figure 11. **The relationship between the level of overall regulation and policy consistency in OECD countries** [1]



1. The scale of the indicator is 0-6 from least to most restrictive of competition.

44. Across broader regulatory domains the consistency of product market regulations can be assessed by investigating relationships between pairs of PMR indicators at higher levels of the hierarchy. Three possible relationships are considered here: inward and outward-oriented policies;[18] economic and administrative regulations;[19] and, at a more detailed level, the scope of public enterprises and legal barriers to competition.

45. As mentioned above, supranational institutions and agreements tend to engender liberalisation in outward-oriented policies across all participant countries irrespective of their domestic policy settings. Notwithstanding this, there is a significant correlation between barriers to trade and investment in OECD countries and domestic barriers to competition (Figure 12).[20] In other words, relatively open economies also tend to have relatively liberal domestic policy settings. This may reflect a 'political economy effect' whereby openness to trade and international investment generates pressures for domestic policy reform.

46. In 1998, countries that had restrictive economic regulations also tended to impose burdensome administrative procedures on business enterprises. Although subsequent reform has, in general, been somewhat asymmetric in favour of reducing economic regulations (especially state control), the positive correlation between these two regulatory areas has persisted into 2003 (Figure 13). There are at least two potential reasons to expect a degree of consistency between economic and administrative regulations. On the one hand, reforms that liberalise market access and enhance the role of market-based mechanisms may also bring about a reduction in administrative procedures and burdens, thus enhancing the positive effects on competition. On the other hand, a less burdensome administrative environment may make it easier to reform economic regulations that must be endorsed and implemented by national and/or local administrations. In this case, administrative simplification may constitute a pre-condition for reforms in other areas (OECD, 2003; Koromzay, 2004; Nicoletti, 2004).

47. Finally, as was the case in 1998, market access is frequently restricted by laws and regulations in industries in which the state often has ownership involvement (Figure 14). Although the correlation between these two indicators remains high, the difference between network and other sectors has become less distinct as reform in a number of countries has liberalised access to network industries that are still dominated by public (or semi-public) enterprises. At the same time, the frequency of restrictions and state ownership in industries that are inherently competitive (*e.g.* tobacco, air transport, communications) has fallen in some cases.

4.2 The relationship between product market regulation and labour market policies

48. Looking beyond the product market, empirical evidence suggests a positive relationship between product and labour market reforms in the OECD countries with the former often preceding the latter (Brandt, *et al.* 2005). The evidence also continues to suggest a positive relationship between employment protection legislation (EPL) and product market regulation across OECD countries (Figure 15). Thus, as

18 Inward-oriented policies include state control and barriers to entrepreneurship whereas outward-oriented policy indicators include barriers to trade and investment.

19 Administrative regulation includes reporting, information and application procedures, and the burdens on business start-ups, implied by both economy-wide and sector-level requirements. Economic regulation includes all other domestic regulatory provisions affecting private governance and product market competition (such as state control and legal barriers to entry in competitive markets).

20 Note that in the 1998 version of the PMR indicators no evidence of a relationship between outward and inward-oriented policies was found (OECD, 1999). However, the correlation between inward and outward-oriented policies remains significant in the subset of OECD countries that were covered in the 1998 analysis implying that this result has changed given revisions to the 1998 regulatory data.

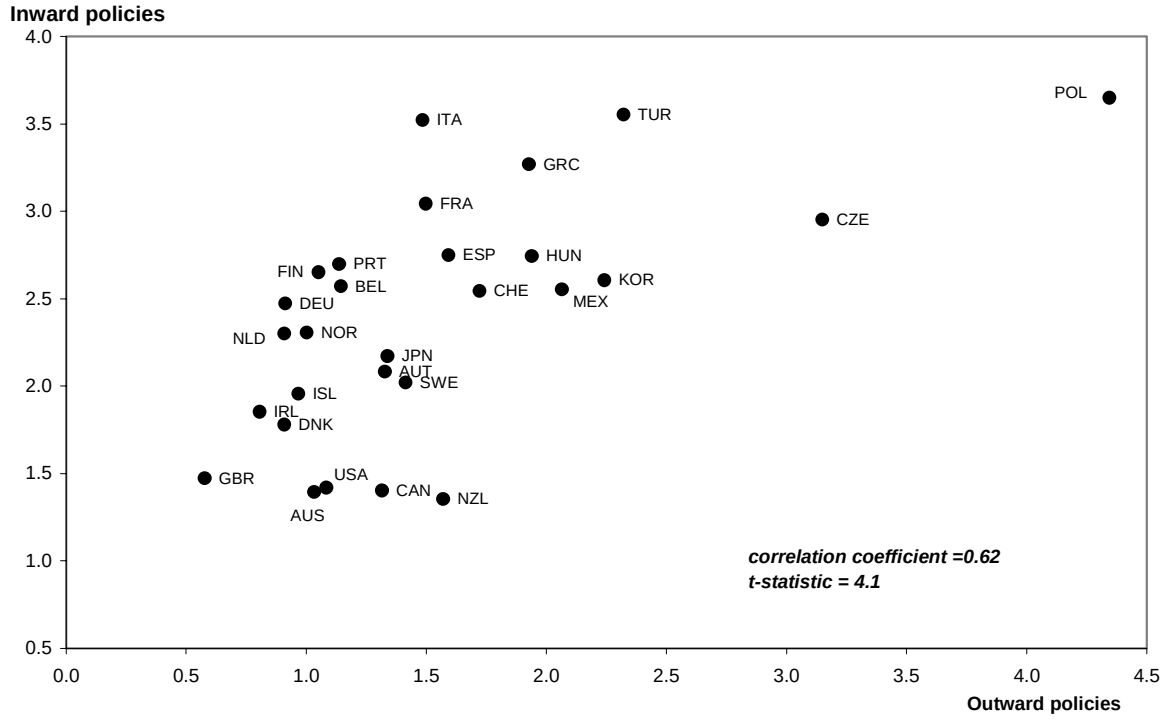
already observed in 1998, restrictive product market regulation tends to be matched by analogous EPL restrictions.

49. There are several potential reasons why some aspects of labour and product market policies might be positively correlated. For instance, because product market liberalisation reduces the rents accruing to firms, it may also reduce the incentive for labour to maintain or increase bargaining power aimed at capturing part of these rents (Blanchard and Giavazzi, 2003), or protecting 'insiders' by means of restrictive EPL (Saint Paul, 1996). Firms in competitive markets may also find it less easy to bear the cost of restrictive EPL, while workers may have less incentive to protect their jobs if alternative employment opportunities are enhanced by the positive effect of easier product market regulation on overall employment (Koeniger and Vindigni, 2003).[21] As shown elsewhere (OECD, 2004), EPL has not changed a great deal over the past five years, especially for workers with permanent contracts. Thus, since the late 1990s, many OECD countries have made more progress in reforming product market regulation than EPL. If these policies are indeed political complements, this could suggest that better conditions for future labour market reforms may have been established.

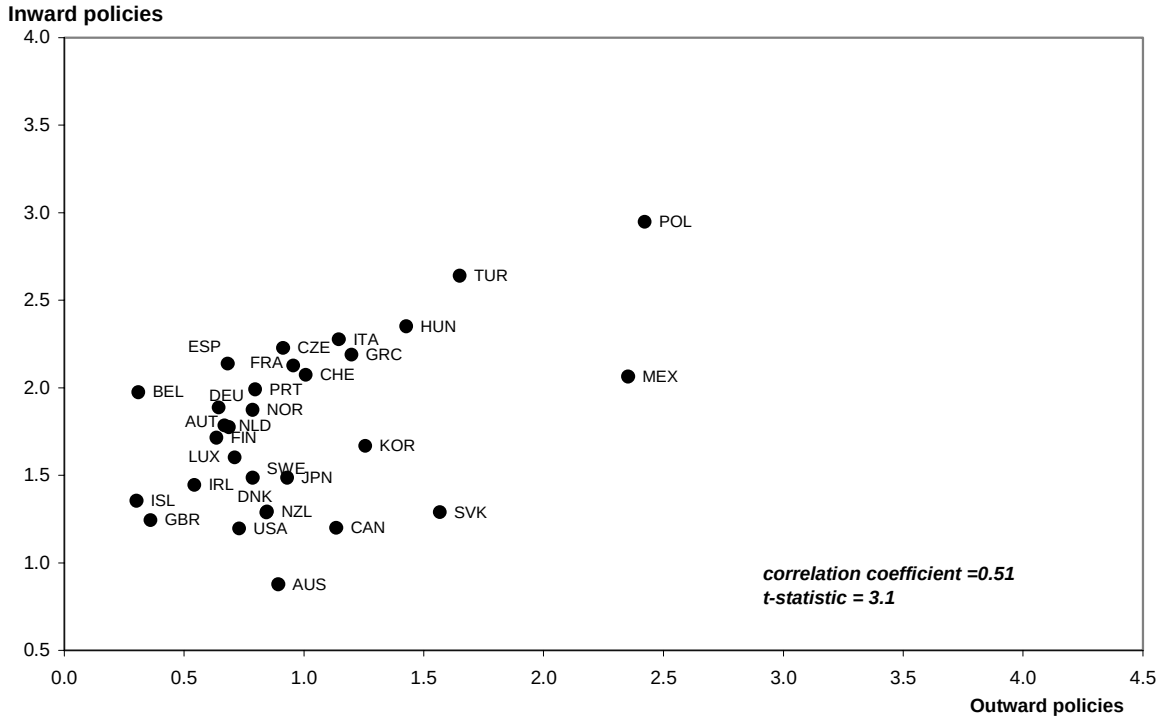
21 There is an increasing amount of research pointing to positive effects of product market competition on employment, both in theory (Blanchard and Giavazzi, 2003; Pissarides, 2001; Haefke and Ebell, 2004) and with reference to the experience of OECD countries (Boeri *et al*, 2000; Nicoletti *et al*., 2001; Kugler and Pica, 2003; Nicoletti and Scarpetta, 2004).

Figure 12. **Outward and inward-oriented policies[1], 1998 and 2003**

Panel A. 1998



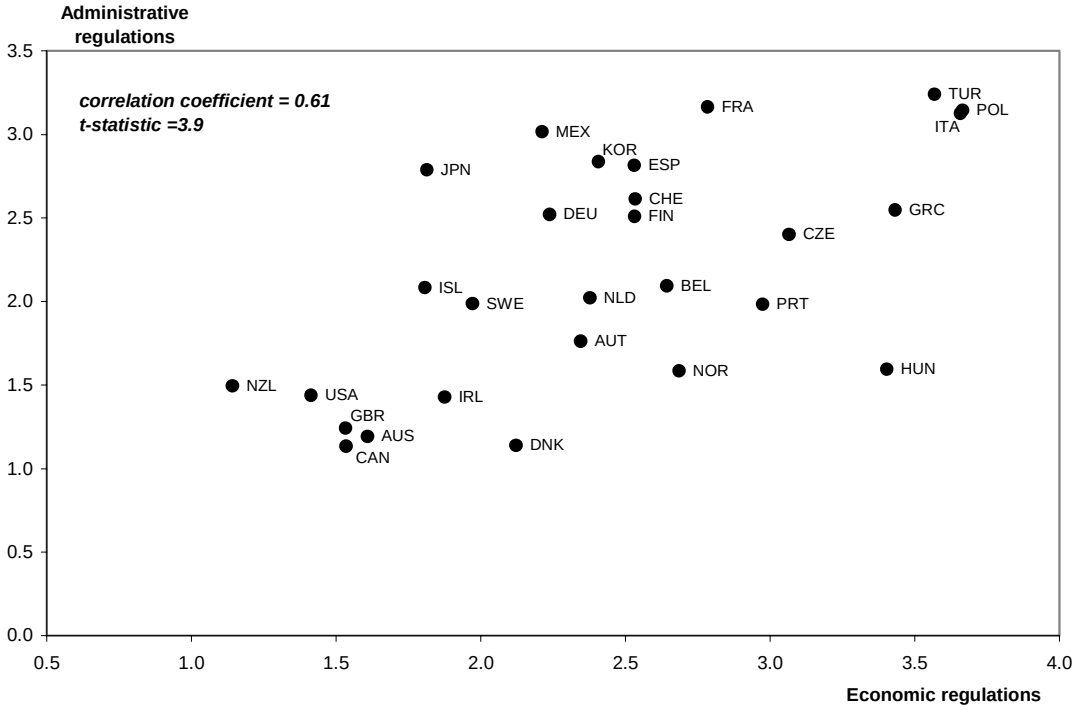
Panel B. 2003



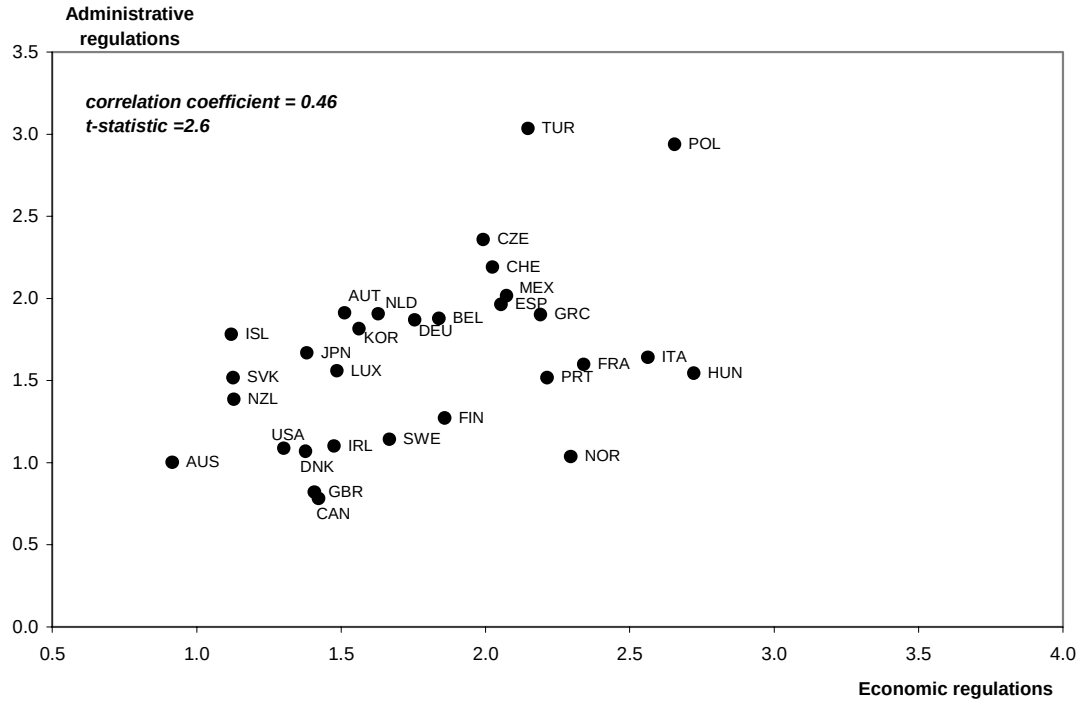
1. Inward-oriented policies include state control and barriers to entrepreneurship whereas outward-oriented policy indicators include barriers to trade and investment.

Figure 13. **Administrative and economic regulations[1], 1998 and 2003**

Panel A. 1998



Panel B. 2003



1.Administrative regulation includes reporting, information and application procedures, and the burdens on business start-ups, implied by both economy-wide and sector-level requirements. Economic regulation includes all other domestic regulatory provisions affecting private governance and product market competition (such as state control and legal barriers to entry in competitive markets). The scale of the indicators is 0-6 from least to most restrictive of competition.

Figure 14. **Public enterprises and legal barriers to competition, 1998 and 2003**

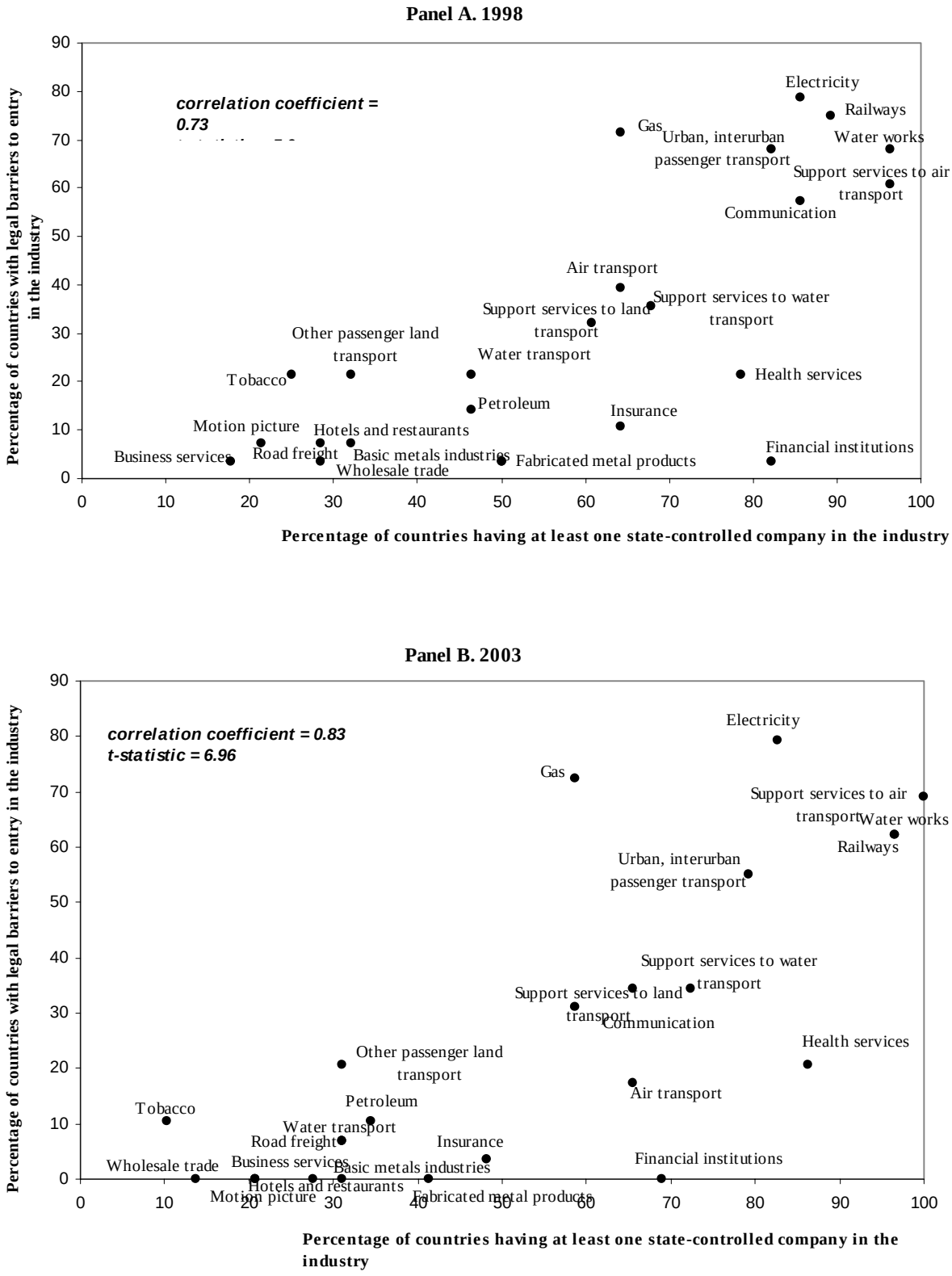
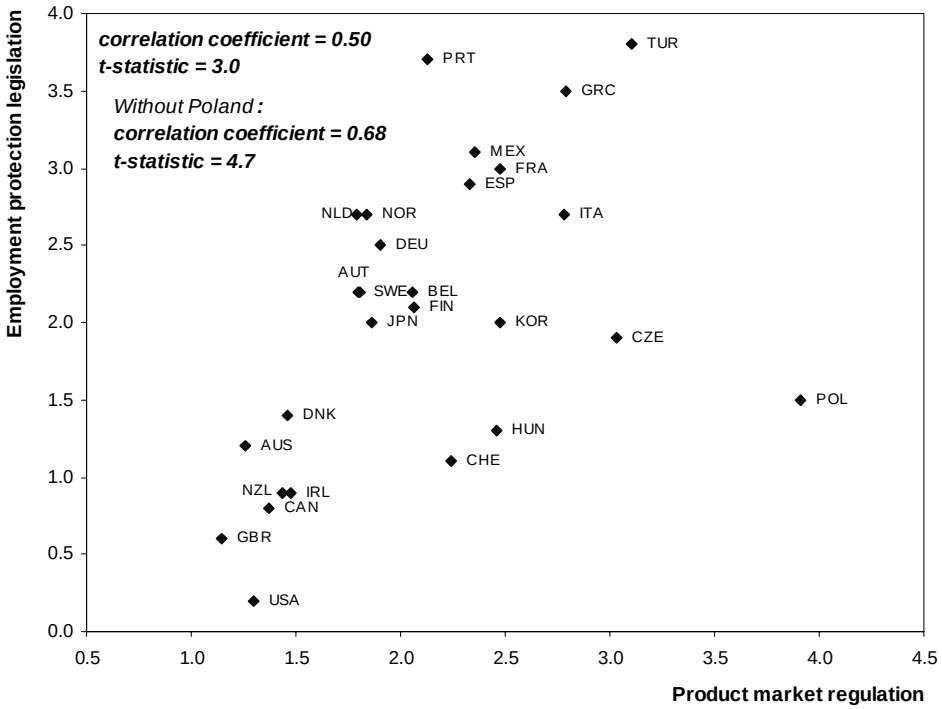
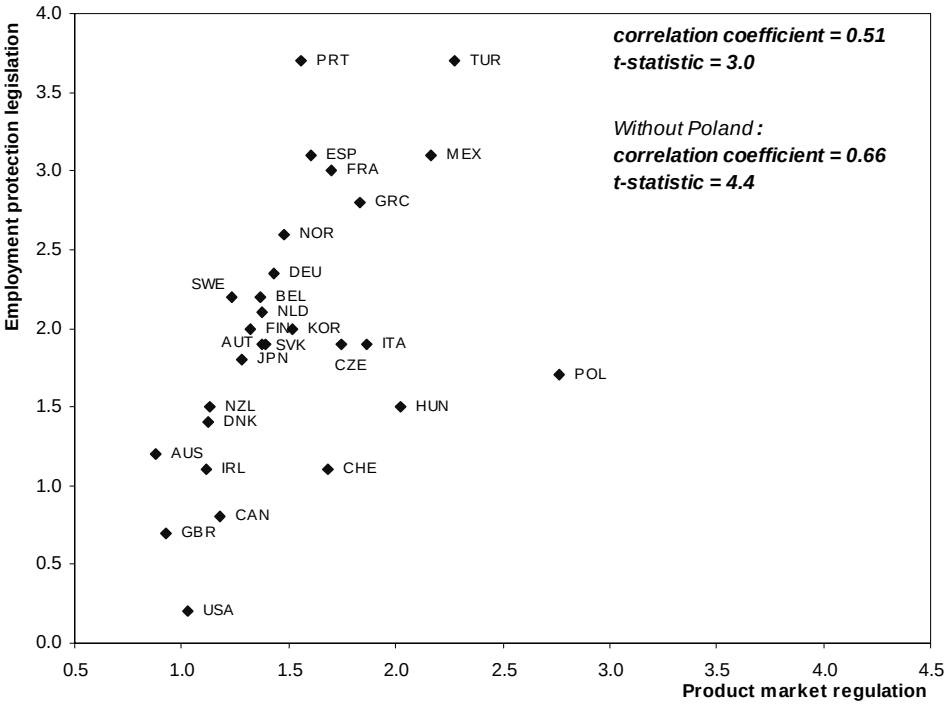


Figure 15. **Product market regulation and employment protection legislation, 1998 and 2003**

Panel A, 1998



Panel B, 2003



5. Conclusions and future developments

50. A number of conclusions about the recent evolution of product market policies in OECD countries can be drawn from the update of the PMR indicators:

- Regulatory impediments to product market competition have declined in the OECD area in recent years. The extent of government involvement in product markets and barriers to international flows of capital and trade have fallen considerably. The fall in barriers to entrepreneurship has been slightly less significant. Notwithstanding recent progress in product market reform, across virtually all countries a 'hard core' of regulations that impede competition still persists in some areas, such as barriers to entry in non-manufacturing industries.

- In some respects, product market regulation has become more homogenous across the OECD in the past five years, as countries with relatively restrictive product market policies have moved towards the regulatory environment of the more liberalised countries. This convergence pattern has been most apparent in policies governing the extent of the state's involvement in product markets. There is also evidence of convergence in policy-induced barriers to entrepreneurship, whereas policies governing barriers to international trade and investment have tended to be relatively homogenous. However, despite a degree of convergence in product market regulation, differences between broad groups of countries that have 'relatively liberal' and 'relatively restrictive' regulatory environments are still significant.

- The overall approach to product market regulation has also become more consistent across regulatory domains *within* many OECD countries, suggesting that recent reform efforts may have been focused on areas where regulation was previously particularly heavy. Also, countries with restrictive overall product market regulations tend to have a more heterogeneous approach to competition across different policy areas, which may imply additional efficiency losses.

- Finally, as was the case in 1998, cross-country correlations between different aspects of product market regulation are also apparent in the 2003 indicators. Domestic impediments to competition tend to be lower in countries that have lower barriers to foreign trade and investment suggesting a link between a country's degree of openness and domestic policy reform. In addition, restrictive economic regulations still tend to be associated with burdensome administrative environments, and legal barriers frequently block new entry into sectors in which publicly-controlled companies operate. Product market regulation also appears to be linked to employment protection legislation, raising the question of whether policies in the two regulatory areas are 'political complements'.

51. Given the general tendency for convergence in the broad features of product market regulation, differences in the regulatory regimes of OECD countries that have potentially important consequences for product market competition are becoming more subtle. In this environment the ability of the PMR system to capture country-specific nuances in regulation, while at the same time remaining comparable across countries, becomes increasingly important, especially for countries with relatively liberal product market policies. There are a number of ways in which the PMR indicators could be improved in the future so as to better differentiate across countries by capturing policies that are relevant for competition.

52. First, the existing indicators could be expanded to incorporate a range of additional economic information that is available from the responses to the *OECD Regulatory Questionnaire* and other sources, but not currently included in the system. For example, the sectoral coverage of the indicators could be increased by expanding the number of sectors over which indicators such as the 'scope of public enterprise' and 'legal barriers to entry' are calculated. The number of sectors used in the calculation of the

indicators of barriers to foreign ownership and sector-specific administrative burdens could also be increased. As well as expanding the coverage of existing indicators new data could be used to refine some of the low-level indicators currently used in the system. For example, data on the number of hours that retail outlets are typically able to trade could be used to determine the extent to which retail trade is regulated (if at all) or additional information on effective trade protection – such as producer support for agriculture – could be incorporated into the indicator of barriers to trade.

53. Second, additional sectoral information could also be used to construct new indicators that would be incorporated into the PMR framework. Although the current version of the PMR indicators incorporates data on network industries, this could be expanded and developed into comprehensive low-level indicators of barriers to entry and public ownership in network industries for each country. These low-level indicators would be modelled on existing OECD indicators, which reflect the regulation of network industries since 1975 (see, for instance, Nicoletti and Scarpetta, 2003), making the two sets of indicators more compatible. Existing data on the regulation of professional services in OECD countries could also be included in the system. More ambitiously, the PMR system could be expanded to cover other policy domains, such as antitrust policy and financial market regulation.

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ANNEX

54. This annex provides a detailed description of how the low-level PMR indicators are constructed from the basic regulatory data (Section 1.1). It also describes and documents the weights used to combine the low-level indicators into the summary indicators (Section 1.2) and provides the PMR indicator values (Section 1.3).

1.1 The low-level indicators

55. Tables 1 to 16 show the basic data that enter each of the low-level indicators (either replies to the OECD questionnaire or data from other sources), the subjective weights assigned to each of these data, and the scores attached to each of the regulatory provisions (shaded in grey).

56. Note that in the process of updating the PMR indicators some minor changes have been made to the design of the low-level indicators as described in Nicoletti, *et al* (1999). In particular:

- Two low-level indicators that were calculated separately in the 1998 work – 'special voting rights' and 'control of public enterprise by legislative bodies' – have been combined into the indicator of 'direct control over business enterprises'. This was done because of significant complementarity in the aspects of regulation captured by the two 1998 indicators. In addition, the 1998 indicator of 'control of public enterprise by legislative bodies' was calculated using only one data point.
- In the 1998 work, replies to two questions from the *OECD regulatory indicators questionnaire* were used twice in the construction of two separate indicators. This duplication has been removed.
- In a few of the low-level indicators regulatory information is normalised across countries. The method for doing this normalisation has been standardised across indicators.
- The indicator of 'licenses and permits' has been removed from the system of weights used in the indicator of 'communication and simplification of rules and procedures'.
- Data on whether regulation sets conditions for driving and resting periods has been removed from the indicator of 'command and control regulation'.
- The 'human health' and 'other urban, suburban, and inter-urban passenger transport' sectors have been removed from the indicator of legal barriers given evidence of inconsistent interpretation across countries.

These design revisions have been applied to the 1998 and 2003 indicators and have had only a very minor impact on the indicator values.

57. The technique used to deal with any missing data depends on the severity of the problem. If a sufficiently small amount of data is missing from the calculation of a given indicator then the indicator is calculated on the basis of the available data. The precise formulae for doing this differ slightly across indicators and are described in detail in footnotes to Tables 1 to 16.

58. When there is no or very little data available to calculate a given low-level indicator it is estimated on the basis of other information. In the 2003 PMR indicators, if the missing data were available in 1998, then the 1998 indicator value is used as the estimate for 2003. Otherwise, and in the case of missing indicators in 1998, the estimate is based on the values of other indicators in the same economic

domain as the missing indicator. For estimating missing indicator values in this case the low-level indicators are divided into the following four economic domains:

- ***State control*:** (Scope of public enterprise sector, Size of public enterprise sector, Direct control over business enterprise, Use of command & control regulation, Price controls).
- ***Regulatory and administrative opacity and Administrative burdens on startups*:** (License and permits system, Communication and simplification of rules and procedures, Administrative burdens for corporation, Administrative burdens for sole proprietor firms, Sector-specific administrative burdens).
- ***Barriers to competition*: (**Legal barriers, Antitrust exemptions**).**
- ***Barrier to trade and investment*:** (Ownership barriers, Discriminatory procedures, Regulatory barriers, Tariffs).

59. The estimation technique effectively calculates the missing indicator value as the average of the (normalised) indicator values in the same regulatory domain. That is, the estimate of indicator i for country j (denoted E_{ij}^{est}) is calculated as:

$$E_{ij}^{est} = \frac{\sum_{\substack{\tau \in \delta \\ \tau \neq i}} \frac{E_{\tau j} - E_{\tau}^{\min}}{E_{\tau}^{\max} - E_{\tau}^{\min}}}{\sum_{\substack{\tau \in \delta \\ \tau \neq i}} \Omega_{\tau j}} \times \left(E_{\tau}^{\max} - E_{\tau}^{\min}\right) + E_{\tau}^{\min}, \qquad \textit{where} \quad \Omega_{\tau j} = \begin{cases} 1 \text{ if } E_{\tau j} \text{ exists} \\ 0 \text{ if } E_{\tau j} \text{ is missing} \end{cases}$$

where δ is the set of indicators in the same economic domain as E_j and at least one E_{ij} is available in the domain. Given the very high response rate to the OECD regulatory indicators questionnaire the overall indicator values for each country in 2003 are likely to be relatively robust to different techniques for estimating missing data.

Table 1. **Low-level indicators: scope of public enterprise sector**

National, state or provincial government controls at least one firm in:			Coding of answers	
ISIC (Rev. 3.1) code	**Sector**	**Weight (a_i)**	**Yes**	**No**
16	Manufacture of tobacco products	1	6	0
232	Manufacture of refined petroleum products	1	6	0
27	Manufacture of basic metals	1	6	0
28, 29	Manufacture of fabricated metal products, machinery and equipment	1	6	0
4010	Electricity: electricity generation/import or electricity transmission or electricity distribution or electricity supply	1	6	0
4020	Gas: gas production/import or gas transmission or gas distribution or gas supply	1	6	0
4100	Collection, purification and distribution of water	1	6	0
50, 51	Wholesale trade, incl. motor vehicles	1	6	0
55	Restaurant and hotels	1	6	0
601, 6303	Railways: Passenger transport via railways, Freight transport via railways, Operation of railroad infrastructure	1	6	0
6021	Other urban, suburban and interurban passenger transport	1	6	0
6021	Other scheduled passenger land transport	1	6	0
6023	Freight transport by road	1	6	0
6303	Operation of road infrastructure	1	6	0
61	Water transport	1	6	0
6303	Operation of water transport infrastructure	1	6	0
62	Air transport	1	6	0
6303	Operation of air transport infrastructure	1	6	0
642	Telecommunication: fixed line services, mobile services, internet services.	1	6	0
6519, 659, 671	Financial institutions	1	6	0
66, 672	Insurance	1	6	0
74	Other business activity	1	6	0
851	Human health activities	1	6	0
9211, 9212	Motion picture distribution and projection	1	6	0
Country score (0-6)		**$(\Sigma_i a_i$ answer$_i)/ \Sigma_i a_i$**		

Note: The indicator is computed only if at least 20 data points are available.

Network industries:

Electricity: a YES is recorded if national, state or provincial government controls at least one firm in any of the following sectors: electricity generation/import, electricity transmission, electricity distribution/supply.

Gas: a YES is recorded if national, state or provincial government controls at least one firm in any of the following sectors: gas production/import, gas transmission, gas distribution/supply

Railways: a YES is recorded if national, state or provincial government controls at least one firm in any of the following sectors: passenger transport via railways, freight transport via railways, operation of railroad infrastructure

Telecommunication: a YES is recorded if national, state or provincial government controls at least one firm in any of the following sectors: fixed line services, mobile services, and internet services.

Table 2. **Low-level indicators: size of public enterprise sector**

	Size in 1995			**Retrenchment 1995-2003**	**Size in 1998 and 2003**
	A	B	C	D	E
Source	CEEP (1997)	Gwartney and Lawson (1997)	OECD estimate based on A and B	Privatization Barometer, Fondazione Eni Enrico Mattei and Fondazione IRI	OECD estimate based on C and D
Definition of indicator	State ownership in the non-agricultural business sector (overall and by sector)	Size of government enterprises as a share of economy	Size of public enterprise sector	Privatisation proceeds	Size of public enterprise sector
Units	% of 1995 non-agricultural business GDP	Index: scale 0-10 from largest to smallest size	Index: scale 0-10 from largest to smallest size	% of GDP	Index: 0-6 scale from smallest to largest size
Coverage	15 European countries	115 OECD and non-OECD countries	29 OECD countries	All OECD countries	29 OECD countries
Criterion for scale		10 = less than 1% 8 = only natural monopolies 6 = less than 10% 4 = more than 10% less than 20% 2 = more than 20% less than 30% 0 = more than 30%	Gwartney and Lawson index revised and updated with CEEP data		(C-0.2*D)

Table 3. **Low-level indicators: direct control over business enterprises**

	Question weight b_i	Sub-question weight a_i	Coding of answers Yes	No
General constraints				
There are any legal or constitutional constraints to the sale of the stakes held by government in these firms	$0.3*s_i$		6	0
Strategic choices of any publicly-controlled firms have to be reviewed and/or cleared in advance by national, state, or provincial legislatures	$0.2*s_i$		6	0
Golden shares				
National, state or provincial governments have special voting rights (e.g. golden shares) in any firms within the business sector	.25		6	0
Extent of the special voting rights	.25			
These special rights can be exercised in:				
- merger with or acquisition by another company		1/4	6	0
- change in controlling coalition		1/4	6	0
- choice of management		1/4	6	0
- strategic management decisions		1/4	6	0
Country scores (0-6)	$\sum_{i=1}^{3} b_i \cdot answer_i + b_4 \cdot \sum_i a_i \cdot answer_i$			

Note: s_i = % of business sectors in which the state controls at least one firm

Missing data point rules:

- if the circumstances under which a special voting right can be exercised are not known, only the existence of the special voting right is taken into account to compute the golden share element.

- if no data are available concerning the strategic choices element, only the data concerning the legal and constitutional constraints are taken into account with a weight of 50%

Table 4. **Low-level indicators: use of command and control regulation**

	General vs. industry-specific weights (a_i)	Industry weights (b_j)	Question weights (c_k)	Coding of answers	
				Yes	No
General information	1/2				
Regulators are required to assess alternative policy instruments (regulatory and non-regulatory) before adopting new regulation			1/2	0	6
Guidance has been issued on using alternatives to traditional regulation			1/2	0	6
Sector-specific information	1/2				
Road freight		1/4			
Regulations prevent or constrain backhauling (picking up freight on the return leg)			1/4	6	0
Regulations prevent or constrain private carriage (transport only for own account)			1/4	6	0
Regulations prevent or constrain contract carriage (contractual relation between an otherwise independent hauler and one shipper)			1/4	6	0
Regulations prevent or constrain intermodal operations (operating or ownership links between firms in different transportation sectors)			1/4	6	0
Retail distribution		1/4			
Shop opening hours are regulated			2/3	6	0
Government regulations on shop opening hours apply at national level			1/3	6	0
The regulation of opening hours became more flexible in the last 5 years				-0.5[1]	0
Air travel		1/4			
Carriers operating on domestic routes are subject to universal service requirements (e.g. obligation to serve specified customers or areas)			1	6	0
Railways		1/4			
Companies operating the infrastructure or providing railway services are subject to universal service requirements (e.g. obligation to serve specified customers or areas)			1	6	0
Country scores (0-6)	$\Sigma_i a_i \Sigma_j b_j \Sigma_k c_k \text{answer}_{ijk}$				

Note: In case of missing data points the sector-specific element is a simple average of the available sectoral sub-elements.

1. If answer is "yes", 0.5 is subtracted from the industry-specific score.

Table 5. **Low-level indicators: price controls**

	Industry Weights (b_j)	*Question weights (c_k)*	**Coding of answers**	
			Yes	***No***
Air travel	1/4			
Prices of domestic air fares are regulated		1/2	6	0
Number of 5 or 4 busiest international routes subject to price regulation (n)		1/2	(n/5)*6 or (n/4)*6	
Road freight	1/4			
Retail prices of road freight services are regulated in any way by the government		1/3	6	0
Government provides pricing guidelines to road freight companies		1/3	6	0
Professional bodies or representatives of trade and commercial interests are involved in specifying or enforcing pricing guidelines or regulations		1/3	6	0
Retail distribution	1/4			
Retail prices of the following products are subject to price controls:				
- Retail prices of certain staples (e.g. milk and bread)		1/6	6	0
- Retail prices of gasoline		1/6	6	0
- Retail prices of tobacco		1/6	6	0
- Retail prices of alcohol		1/6	6	0
- Retail prices of pharmaceuticals		1/6	6	0
- Retail prices of other product		1/6	6	0
Telecommunication				
Retail prices of digital mobile service in telecommunications are regulated	1/4	1	6	0
Country scores (0-6)			$\Sigma_j b_j \Sigma_k c_k \text{answer}_{jk}$	

Note: Missing data point:
- in the case of missing data in the sub-element of air travel or road freight, a simple average of the available data points is used.
- in the case of missing data in the types of retail price controls, a simple average of the available data points is used.
- the overall indicator is a simple average of the available sub-elements (air travel, road freight, retail distribution telecommunication)

Table 6. **Low-level indicators: licenses and permits system**

	Question Weights (c_k)	**Coding of answers**	
		Yes	***No***
The 'silence is consent' rule (i.e. that licenses are issued automatically if the competent licensing office has not acted by the end of the statutory response period) is used at all	1/3	0	6
There are single contact points ("one-stop shops") for getting information on notifications and licenses	1/3	0	6
There are single contact points ("one-stop shops") for issuing or accepting on notifications and licenses	1/3	0	6
Country scores (0-6)		$\Sigma_k c_k$ answer$_{jk}$	

Note: Missing data points: if at least two of the three data points are available, the indicator is calculated as a simple average of the available data points.

Table 7. **Low-level indicators: communication and simplification of rules and procedures**

	Weights by theme (b_j)	***Question Weights (c_k)***	**Coding of answers**		
			Yes		***No***
Communication[1]	1/2				
There are systematic procedures for making regulations known and accessible to affected parties		2/12	0		6
There is a general policy requiring "plain language" drafting of regulation		1/12	0		6
There are inquiry points where affected or interested foreign parties can get information on the operation and enforcement of regulations		3/12	0		6
Affected parties have the right to appeal against adverse enforcement decisions in individual cases		4/12	Yes or in all cases	In some cases	No
			0	3	6
Government policy imposes specific requirements in relation to transparency/freedom of information government wide		2/12	Government Wide	For some sectors	No
			0	3	6
Simplification(2)	1/2*W_i / Max W_{98}				
National government (all ministries and agencies) keeps a complete count of the number of permits and licenses required		1/3	0		6
There is an explicit program to reduce the administrative burdens imposed by government on enterprises and/or citizens		1/3	0		6
There is a program underway to review and reduce the number of licenses and permits required by the national government		1/3	0		6
Country scores (0-6)		$\Sigma_j b_j \Sigma_k c_k$ answer$_{jk}$			

Note: 1. Compared to 1998, the design of this indicator has been changed: the question concerning the publications of regulation at international level, which was also used elsewhere, has been removed.

Note: 2. In the weight on the simplification element Wi is a simple average of the indicators of: Administrative burdens on corporations, administrative burdens on sole proprietor firms, sector-specific administrative burdens, and communication.

Missing data point:
- for the simplification element if at least two of the three data points are available, a simple average of the available data is used
- for the communication element, if at least four data points are available, a weighted average of the available data is used.

Table 8. **Low-level indicators: administrative burdens for corporations**

	Weight (c_k)	Coding of answers						
		0	**1**	**2**	**3**	**4**	**5**	**6**
Number of mandatory procedures required to register a public limited company (pre-registration+registration)	1/4	<=4.8	<=8	<=12.8	<=19.2	<=25.6	<=32	>32
Number of public and private bodies to contact to register a public limited company (pre-registration+registration)	1/4	<=1	<=3	<=5	<=7	<=9	<=11	>11
Number of working days required to complete all mandatory procedures for registering a public limited company (pre-registration+registration)	1/4	<=16.4	<=32.8	<=49.2	<=65.6	<=82	<=98.4	>98.4
Total cost (euros) of registering a public limited company (pre-registration+registration)	1/4	<=500	<=1000	<=1500	<=2500	<=5000	<=7500	>7500
Country scores (0-6)		$\Sigma_k c_k$ answer$_k$						

Note: The thresholds used to classify data on the number of procedures required and the number of bodies involved in registering a firm has been changed to reflect the scaling of the 1998 data (discussed in annex 2). The net effect of both these changes leaves the value of the 1998 indicators unchanged.

Missing data: If no more than 1 element is missing the indicator is calculated as a simple average of the available data.

Table 9. **Low-level indicators: administrative burdens for sole proprietor firms**

	Weight (c_k)	Coding of answers						
		0	**1**	**2**	**3**	**4**	**5**	**6**
Number of mandatory procedures required to register a public limited company (pre-registration+registration)	1/4	<=1.6	<=3.2	<=4.8	<=8	<=11.2	<=14.4	>14.4
Number of public and private bodies to contact to register a public limited company (pre-registration+registration)	1/4	<=1	<=3	<=5	<=8	<=10	<=12	<12
Number of working days required to complete all mandatory procedures for registering a public limited company (pre-registration+registration)	1/4	<=7.2	<=14.4	<=28.8	<=43.2	<=57.6	<=72	>72
Total cost (euros) of registering a public limited company (pre-registration+registration)	1/4	0	<100	<300	<500	<750	<1000	<=1000
Country score (0-6)		$\Sigma_k c_k$ (answer)$_k$						

Note: The thresholds used to classify data on the number of procedures required and the number of bodies involved in registering a firm has been changed to reflect the scaling of the 1998 data (discussed in annex 2). The net effect of both these changes leaves the value of the 1998 indicators unchanged.

Missing data: If no more than 1 element is missing the indicator is calculated as a simple average of the available data.

Table 10. **Low-level indicators: sector-specific administrative burdens**

	Industry weights (b_j)	***Question weights (c_k)***	**Coding of answers**				
Road freight	$1/2*W_i$ (1)						
			Scale for the first element of road freight				
In order to establish a national road freight business, operators need to obtain a license (other than a driving license) or permit from the government or a regulatory agency			Yes	No	No	No	No
In order to establish a national road freight business, operators need to notify any level of government or a regulatory agency and wait for approval before they can start operation		1/3	No	Yes	No	No	No
Registration in transport register is required in order to establish a new business in the road freight sector			No	No	Yes	No	No
In order to operate a national road freight business, operators need to notify any level of government or a regulatory agency			No	No	No	Yes	No
			4	3	2	1	0
			Yes			**No**	
There are criteria other than technical and financial fitness and compliance with public safety requirements considered in decisions on entry of new operators		1/3	1			0	
These entry regulations apply also if a firm wants to transport only for its own account		1/3	1			0	
Retail distribution	$1/2*W_i$ (1)		**Always required**	**Depends on type of good sold or size of outlets**		**No**	
Registration in commercial register is needed to start up a commercial activity for selling food products		1/8	6	3		0	
Registration in commercial register is needed to start up a commercial activity for selling clothing products		1/8	6	3		0	
Notification to authorities is needed to start up a commercial activity for selling food products		1/8	6	3		0	
Notification to authorities is needed to start up a commercial activity for selling clothing products		1/8	6	3		0	
Licenses or permits are needed to engage in commercial activity (not related to outlet sitting) for selling food products		1/8	6	3		0	
Licenses or permits are needed to engage in commercial activity (not related to outlet sitting) for selling clothing products		1/8	6	3		0	
Licenses or permits are needed for outlet sitting (in addition to compliance with general urban planning provisions) for selling food products		1/8	6	3		0	
Licenses or permits are needed for outlet siting (in addition to compliance with general urban planning provisions) for selling clothing products		1/8	6	3		0	
Country scores (0-6)			$\Sigma_j b_j \Sigma_k c_k$ answer$_{jk}$				

Note: (1) Normalized value of the indicator of general administrative burdens on startups $W_i = wi / Max\ w98$

Missing data point: - for the retail distribution sub-element, a simple average of the available data points is used

- if only one of the two sub-element (road freight, retail distribution) is available the overall indicator is still computed with the only available sub-element

Table 11. **Low-level indicators: legal barriers to entry**

National, state or provincial laws or other regulations restrict the number of competitors allowed to operate a business in at least some markets in:			**Coding of answers**	
ISIC (rev. 3.1) code	**Sector**	**Weight (a_i)**	**Yes**	**No**
16	Manufacture of tobacco products	1	6	0
232	Manufacture of refined petroleum products	1	6	0
27	Manufacture of basic metals	1	6	0
28, 29	Manufacture of fabricated metal products, machinery and equipment	1	6	0
4010	Electricity: electricity generation/import or electricity transmission or electricity supply	1	6	0
4020	Gas: gas production/import or gas transmission or gas supply	1	6	0
4100	Collection, purification and distribution of water	1	6	0
50, 51	Wholesale trade, incl. motor vehicles	1	6	0
55	Restaurant and hotels	1	6	0
601, 6303	Railways: Passenger transport via railways, Freight transport via railways, Operation of railroad infrastructure	1	6	0
6021	Other scheduled passenger land transport	1	6	0
6023	Freight transport by road	1	6	0
6303	Operation of road infrastructure	1	6	0
61	Water transport	1	6	0
6303	Operation of water transport infrastructure	1	6	0
62	Air transport	1	6	0
6303	Operation of air transport infrastructure	1	6	0
642	Telecommunication: fixed-line network, fixed-line services, mobile services, internet services	1	6	0
6519, 659, 671	Financial institutions	1	6	0
66, 672	Insurance	1	6	0
74	Other business activity	1	6	0
9211, 9212	Motion picture distribution and projection	1	6	0
Country scores (0-6)				$(\Sigma_i a_i \text{ answer}_i)/\Sigma_i a_i$

Note: The indicator is calculated if at least 20 data points are available.

Network industries:

Electricity: a YES is recorded if legal barriers restrict entry in any of the following sectors: electricity generation/import, electricity transmission, electricity distribution/supply.

Gas: a YES is recorded if legal barriers restrict entry in any of the following sectors: gas production/import, gas transmission, gas distribution/supply

Railways: a YES is recorded if legal barriers restrict entry in any of the following sectors: passenger transport via railways, freight transport via railways, operation of railroad infrastructure

Telecommunication: a YES is recorded if legal barriers restrict entry in any of the following sectors: fixed line services, mobile services, internet services.

Table 12. **Low-level indicators: antitrust exemptions for public enterprises or state-mandated actions**

	Question Weights (c_k)	**Coding of answers**	
		Yes	***No***
Is there rule or principle providing for exclusion or exemption from liability under the general competition law for conduct that is required or authorized by other government authority (in addition to exclusions that might apply to complete sectors)?	¼*W	6	0
Publicly-controlled firms or undertakings are subject to an exclusion or exemption from competition law (horizontal cartels)	¼*W	6	0
Publicly-controlled firms or undertakings are subject to an exclusion or exemption from competition law (vertical restraints or to abuse of dominance)	¼*W	6	0
Publicly-controlled firms or undertakings are subject to an exclusion or exemption from competition law (mergers)	¼*W	6	0
Country scores (0-6)	$w*\Sigma_k c_k \text{ answer}_{k\,/\,w_{98}}^{max}$		

Note: W_i = (Scope of public enterprise sector + Size of public enterprise sector)/2

Missing data point: - in case of missing data points, a simple average of the available data points is used

Table 13. **Low-level indicators: discriminatory procedures**

	Weights by theme (b_j)	*Question weights (c_k)*	**Coding of answers**															
			Yes										***No***					
General discrimination	2/3																	
Country has any specific provisions which require or encourage explicit recognition of the national treatment principle when applying regulations, so as to guarantee non-discrimination between foreign and domestic firms, goods or services		1/2	0										6					
When appeal procedures relating to regulatory decisions are available in domestic regulatory systems, they are open to affected or interested foreign parties as well		1/3	0										6					
There are specific provisions which require that regulations, prior to entry into force, be published or otherwise communicated to the public in a manner accessible at the international level		1/6	0										6					
Competition discrimination	1/3		**0-6 Scale for competition discrimination**															
When business practices are perceived to restrict competition, foreign firms can have redress **through competition agencies**			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	No	No	No	No
When business practices are perceived to restrict competition, foreign firms can have redress **through trade policy bodies**			Yes	Yes	No	No	Yes	Yes	No	Yes	No	Yes	No	No	Yes	No	Yes	No
When business practices are perceived to restrict competition and hence prevent effective access of foreign firms (foreign owned or controlled) to such markets, foreign firms can have redress t**hrough regulatory authorities involved**			Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes	No
When business practices are perceived to restrict competition, foreign firms can have redress **through private rights of action**			Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	No	Yes	No	No	No	No
			0	**0.75**	**0.75**	**1.5**	**2.625**	**2.625**	**3.375**	**3.375**	**3.375**	**3.375**	**4.125**	**4.125**	**5.25**	**5.25**	**5.25**	**6**
Country scores (0-6)			$\Sigma_j b_j \Sigma_k c_k \text{ answer}_{jk}$															

Table 14. **Low-level indicators: foreign ownership barriers**

	Weights by theme (b_j)	Question Weights (c_k)	Coding of answers						
			Yes				*No*		
General barriers	1/2								
There are statutory or other legal limits to the number or proportion of shares that can be acquired by foreign investors in publicly-controlled firms		$2/3*W_i$	6				0		
Special government rights can be exercised in the case of acquisition of equity by foreign investors		1/3	6				0		
Sector-specific barriers	1/2		*Scale on ceilings to equity shares*						
			100	***76 to 99%***	***50 to 75%***	***36 to 50%***	***21 to 35%***	***1 to 20%***	***0***
Ceiling on foreign-owned equity share in telecommunications		1/2	0	1	2	3	4	5	6
Ceiling on foreign-owned equity share in an airline company		1/2	0	1	2	3	4	5	6
Country scores (0-6)			$\Sigma_j b_j \Sigma_k c_k \text{ answer}_{jk}$						

Notes: W_i: % of business sectors in which the state controls at least one firm

Table 15. **Low-level indicators: regulatory barriers**

	Question weights (c_k)	Coding of answers	
		Yes	**No**
The country has engaged in Mutual Recognition Agreements (MRAs) in at least a sector with any other country	2/5	0	6
There are specific provisions which require or encourage regulators to consider recognizing the equivalence of regulatory measures or the result of conformity assessment performed in other countries, wherever possible and appropriate	4/15	0	6
There are specific provisions which require or encourage regulators to use internationally harmonized standards and certification procedures wherever possible and appropriate	2/9	0	6
There are any specific provisions which require or encourage regulatory administrative procedures to avoid unnecessary trade restrictiveness	1/9	0	6
Country scores (0-6)	$\Sigma_k c_k \text{ answer}_{jk}$		

Table 16. **Low-level indicators: tariff trade barriers**

	Coding of answers						
Simple average of MFN tariffs	<=3%	<=6%	<=9%	<=12%	<=15%	<=18%	>18%
Country scores (0-6)	0	1	2	3	4	5	6

1.2 The summary indicators: aggregation methodology

60. To ensure consistency across time the revised 1998 and 2003 low-level indicators are aggregated into summary indicators using the same set of weights that were calculated as part of the original 1998 work. The only difference is that the weights applied to the old 1998 indicators of 'special voting rights' and 'control of public enterprise by legislative bodies' have been added together and applied to the new indicator of 'direct control over business enterprises', which combines the two previous indicators. The weights used in the PMR system are shown Table 17 (and Figure 1 in the main text).

61. Maintaining consistent weights in the different estimation periods is an important pre-requisite for making meaningful comparisons of indicator values in different years. At some point, however, the weights used to calculate the PMR indicators may be rebased using the updated indicator values. In any case, the results of the 'random weights technique' discussed in the paper imply that the main conclusions are reasonably robust to the choice of weights used in the PMR indicator system.

Table 17. **Weights assigned to low-level indicators in selected summary indicators of regulation**

First-level indicators	*Product Market regulation*	*Inward-oriented policies*	*State control*	*Barriers to entrepreneuship*	*Barriers to trade and investment*	*Economic regulation*	*Administrative regulation*
Scope of public enterprise sector	0.056	0.088	0.179	-	-	0.147	-
Size of public enterprise sector	0.053	0.083	0.169	-	-	0.095	-
Direct control over business enterprises	0.092	0.143	0.291	-	-	0.210	-
Use of command & control regulation	0.062	0.097	0.197	-	-	0.125	-
Price controls	0.052	0.081	0.164	-	-	0.138	-
Licence and permits system	0.051	0.081	-	0.160	-	-	0.201
Communication and simplification of rules and procedures	0.044	0.070	-	0.138	-	-	0.187
Administrative burdens for corporation	0.052	0.083	-	0.163	-	-	0.211
Administrative burdens for sole proprietor firms	0.047	0.075	-	0.147	-	-	0.193
Sector-specific administrative burdens	0.049	0.079	-	0.156	-	-	0.208
Legal barriers	0.028	0.045	-	0.089	-	0.151	-
Antitrust Exemptions	0.047	0.075	-	0.148	-	0.133	-
Ownership barriers	0.103	-	-	-	0.280	-	-
Discriminatory procedures	0.076	-	-	-	0.205	-	-
Regulatory barriers	0.110	-	-	-	0.298	-	-
Tariffs	0.080	-	-	-	0.217	-	-
Total	1.0	1.0	1.0	1.0	1.0	1.0	1.0

1.3 The PMR indicator values

62. The value of the revised 1998 and 2003 low-level, summary, and overall PMR indicators are given in Tables 18 to 24.

Table 18. **State control: values of the low-level indicators**

	State Control									
	Scope of public enterprise sector		Size of public enterprise sector		Direct control over business enterprise		Use of command & control regulation		Price controls	
	1998	2003	1998	2003	1998	2003	1998	2003	1998	2003
Australia	2.8	2.8	0.8	0.1	0.0	0.0	1.9	0.4	2.5	0.0
Austria	5.0	3.5	4.3	4.0	0.0	0.0	2.4	2.2	2.7	1.3
Belgium	2.3	1.8	3.3	3.3	2.6	1.5	4.7	4.5	4.0	1.0
Canada	2.8	2.8	2.1	2.1	0.8	0.8	1.2	1.3	2.9	2.0
Czech Republic	4.5	3.8	4.5	3.2	5.3	2.3	2.3	2.3	2.5	1.3
Denmark	3.0	2.5	2.3	2.3	1.5	0.8	3.9	1.4	0.3	0.0
Finland	3.5	3.5	4.2	3.2	3.6	2.9	2.9	1.4	1.8	0.3
France	5.0	4.5	4.3	4.1	1.9	1.9	4.4	3.0	1.7	0.3
Germany	3.5	3.3	3.4	3.2	2.3	2.3	3.3	1.8	2.5	0.5
Greece	3.3	3.0	4.4	3.8	4.6	0.9	5.3	5.1	4.7	2.3
Hungary	4.5	3.5	3.4	3.0	5.3	4.8	2.3	2.3	3.5	2.0
Iceland	2.8	2.3	3.3	2.8	1.4	0.7	**2.5**	0.0	1.0	0.3
Ireland	3.0	2.5	3.3	2.6	1.5	0.8	3.8	3.8	1.8	0.8
Italy	5.3	4.5	4.2	3.7	5.6	3.5	3.4	1.9	2.8	2.0
Japan	2.0	2.0	0.0	0.0	0.6	0.6	3.9	3.0	3.9	2.5
Korea	2.3	2.0	3.4	2.8	3.4	1.0	1.0	1.1	3.3	2.0
Luxembourg	**1.9**	3.5	1.2	1.2	**1.3**	2.9	**2.0**	1.5	**1.2**	0.0
Mexico	3.5	3.0	3.7	3.6	1.1	0.9	2.1	1.7	3.0	1.0
Netherlands	3.0	2.8	3.2	2.8	3.8	2.0	1.8	1.7	1.3	0.3
New Zealand	1.5	2.3	1.0	0.8	2.0	2.6	1.5	0.8	1.0	0.0
Norway	4.8	4.8	4.6	4.0	2.4	2.4	2.2	2.2	2.7	0.8
Poland	6.0	5.8	5.4	4.6	4.9	3.0	**4.5**	3.5	1.8	1.6
Portugal	3.9	3.8	2.5	1.7	4.2	3.8	3.5	2.0	4.0	1.8
Slovak Republic	-	1.6	-	0.0	-	3.5	-	0.0	-	0.4
Spain	4.5	3.5	2.7	2.5	2.3	2.3	4.5	4.4	2.7	0.8
Sweden	3.7	3.7	3.2	2.7	1.8	0.7	1.5	2.3	1.0	1.0
Switzerland	3.8	3.8	0.9	0.9	3.4	2.6	1.4	1.2	4.7	2.6
Turkey	4.8	4.8	4.5	4.3	2.4	1.0	5.1	4.4	3.5	0.6
United Kingdom	0.8	0.8	1.7	1.6	2.6	2.9	1.9	2.3	1.6	0.4
United States	2.8	2.5	0.6	0.6	0.8	0.8	1.5	1.5	1.4	0.8

Bold= estimated indicator due to too many missing data points

Table 19. **Barriers to entrepreneurship: values of the low-level indicators**

	Barriers to entrepreneurship													
	Licence and permits system		Communication and simplification of rules and procedures		Administrative burdens for corporations		Administrative burdens for sole proprietor firms		Sector-specific administrative burdens		Legal barriers		Antitrust exemptions	
	1998	2003	1998	2003	1998	2003	1998	2003	1998	2003	1998	2003	1998	2003
Australia	2.0	2.0	0.8	0.2	1.0	1.3	2.0	1.3	0.2	0.3	1.9	1.6	1.9	1.5
Austria	0.0	0.0	1.1	0.5	2.8	3.0	2.5	2.5	2.4	3.4	3.5	0.3	0.0	1.0
Belgium	6.0	4.0	0.5	0.3	1.5	1.8	1.0	1.5	1.3	1.7	1.4	1.6	0.7	0.0
Canada	0.0	0.0	1.2	1.0	1.5	0.8	1.5	1.3	1.5	0.9	**0.8**	0.9	0.6	0.6
Czech Republic	4.0	4.0	1.2	0.5	3.0	3.0	2.0	2.0	1.7	2.2	1.6	1.4	0.0	0.0
Denmark	4.0	4.0	0.7	0.0	0.5	1.0	0.3	0.0	0.2	0.3	2.3	1.4	2.1	1.9
Finland	4.0	2.0	2.6	0.3	1.5	1.3	2.8	1.8	1.8	1.1	1.6	1.4	0.0	0.0
France	4.0	2.0	1.1	0.3	3.3	2.0	3.8	2.0	3.6	1.6	2.0	2.2	1.2	1.1
Germany	4.0	4.0	1.0	0.3	2.3	2.3	3.3	1.3	2.1	1.4	1.1	1.4	0.0	0.0
Greece	2.0	0.0	1.2	1.1	3.0	2.3	3.3	3.3	3.2	2.9	1.6	1.6	0.0	0.0
Hungary	0.0	0.0	0.5	0.5	2.3	2.3	3.0	3.0	2.2	2.0	2.7	1.6	1.0	0.9
Iceland	4.0	4.0	1.3	0.7	1.3	1.3	**1.9**	**1.3**	**1.9**	**1.6**	2.3	2.3	0.0	0.0
Ireland	4.0	4.0	0.3	0.2	1.5	0.8	0.8	0.3	0.5	0.3	0.6	0.9	0.0	0.0
Italy	0.0	0.0	0.9	0.5	5.5	2.8	4.3	2.8	4.7	2.1	3.3	1.9	0.0	0.0
Japan	6.0	2.0	1.5	0.3	2.3	1.5	2.3	**2.3**	1.8	**2.3**	2.2	1.4	0.3	0.3
Korea	6.0	2.0	1.5	0.0	2.7	2.7	2.3	2.3	1.6	1.9	2.5	1.9	0.7	0.6
Luxembourg	**0.2**	2.0	**0.4**	0.0	0.8	2.5	0.3	3.0	**0.1**	**0.3**	-	0.3	-	0.0
Mexico	4.0	0.0	0.5	0.3	3.3	3.3	3.3	3.3	3.9	3.2	2.2	1.9	0.9	3.5
Netherlands	4.0	4.0	0.6	0.9	2.0	2.0	1.8	1.3	1.6	1.3	2.2	1.9	0.8	0.0
New Zealand	4.0	4.0	0.4	0.3	1.0	1.0	1.0	0.8	1.0	0.8	0.3	0.3	0.3	0.4
Norway	2.0	2.0	0.4	0.2	1.9	1.0	1.9	1.0	1.7	0.9	2.7	2.2	0.0	0.0
Poland	2.0	2.0	**1.9**	0.8	4.3	4.3	3.3	3.3	4.1	4.1	**1.6**	0.6	1.5	0.0
Portugal	2.0	0.0	1.5	2.6	2.8	1.5	1.8	1.8	1.8	1.8	1.2	1.4	0.8	0.0
Slovak Republic	-	0.0	-	1.4	-	2.0	-	2.3	-	1.9	-	0.6	-	0.0
Spain	2.0	0.0	1.0	0.6	3.5	2.8	4.0	4.0	3.5	2.4	1.4	1.1	0.0	0.0
Sweden	6.0	2.0	0.9	0.0	1.3	1.0	1.0	1.8	0.8	0.9	2.0	2.0	0.9	0.0
Switzerland	6.0	6.0	0.5	0.0	3.3	2.3	3.3	1.8	0.0	0.8	2.5	2.2	0.0	0.0
Turkey	6.0	6.0	2.1	0.5	2.3	2.3	3.0	3.0	2.9	3.2	2.2	1.4	3.7	0.0
United Kingdom	3.0	2.0	0.4	0.2	0.8	0.8	1.3	0.5	0.8	0.6	1.4	1.4	0.3	0.0
United States	4.0	2.0	0.4	0.4	0.5	0.8	1.5	1.3	0.8	1.0	1.1	1.4	1.8	1.6

Bold= estimated indicator due to too many missing data points

Table 20. **Barriers to trade and investment: values of the low-level indicators**

	Outward-oriented policies							
	Ownership barriers		Discriminatory procedures		Regulatory barriers		Tariffs	
	1998	2003	1998	2003	1998	2003	1998	2003
Australia	2.9	2.4	0.0	0.0	0.0	0.0	1.0	1.0
Austria	2.8	1.5	0.5	0.3	0.0	0.0	2.0	1.0
Belgium	1.8	0.3	0.0	0.0	0.7	0.0	2.0	1.0
Canada	2.9	2.9	1.4	0.5	0.0	0.0	1.0	1.0
Czech Republic	4.3	2.0	4.0	0.7	3.1	0.0	1.0	1.0
Denmark	1.3	1.2	0.5	0.5	0.0	0.7	2.0	1.0
Finland	1.5	1.5	0.0	0.0	0.7	0.0	2.0	1.0
France	3.4	2.3	0.5	0.5	0.0	0.0	2.0	1.0
Germany	0.3	0.3	0.9	0.7	0.7	0.7	2.0	1.0
Greece	3.2	1.3	2.0	2.0	0.7	0.7	2.0	1.0
Hungary	3.8	1.9	1.2	1.2	0.0	0.0	3.0	3.0
Iceland	2.7	1.1	0.0	0.0	0.7	0.0	0.0	0.0
Ireland	1.3	1.2	0.0	0.0	0.0	0.0	2.0	1.0
Italy	3.1	2.8	0.9	0.7	0.0	0.0	2.0	1.0
Japan	3.0	2.4	1.4	0.3	0.0	0.0	1.0	1.0
Korea	2.5	2.2	0.0	0.0	2.3	0.0	4.0	3.0
Luxembourg	**1.4**	1.5	**1.1**	**0.3**	0.0	0.0	2.0	1.0
Mexico	2.9	2.8	1.4	1.4	0.3	0.0	4.0	6.0
Netherlands	1.3	1.2	0.5	0.5	0.0	0.0	2.0	1.0
New Zealand	3.0	2.3	2.5	0.0	0.0	0.0	1.0	1.0
Norway	1.9	1.9	0.3	0.3	0.7	0.7	1.0	0.0
Poland	4.5	3.7	4.4	0.3	4.4	1.6	4.0	4.0
Portugal	1.6	1.6	**1.2**	0.7	0.0	0.0	2.0	1.0
Slovak Republic	-	2.3	-	1.1	-	1.6	-	1.0
Spain	1.8	0.8	0.3	0.3	2.0	0.7	2.0	1.0
Sweden	1.5	1.5	2.7	0.7	0.0	0.0	2.0	1.0
Switzerland	2.0	2.0	1.1	1.1	2.4	0.0	1.0	1.0
Turkey	3.8	3.1	2.9	0.7	0.0	0.0	3.0	3.0
United Kingdom	0.3	0.3	0.3	0.3	0.0	0.0	2.0	1.0
United States	2.9	1.8	0.3	0.0	0.0	0.0	1.0	1.0

Bold= estimated indicator due to too many missing data points

Table 21. **State control: country scores by domain and sub-domain**[1]

	Domain		Sub-Domain			
	State control		Public ownership		Involvement in business operation	
	1998	2003	1998	2003	1998	2003
Australia	1.4	0.6	1.1	0.8	1.9	0.3
Austria	2.5	1.9	2.7	2.2	2.3	1.6
Belgium	3.3	2.4	2.8	2.2	4.0	2.6
Canada	1.8	1.7	1.8	1.7	1.8	1.5
Czech Republic	3.9	2.5	4.8	3.0	2.9	1.9
Denmark	2.2	1.3	2.2	1.7	2.1	0.8
Finland	3.3	2.3	3.7	3.2	2.6	1.3
France	3.3	2.7	3.5	3.3	3.0	1.9
Germany	2.9	2.2	3.0	2.8	2.9	1.5
Greece	4.5	2.8	4.2	2.4	4.9	3.3
Hungary	3.9	3.3	4.5	3.8	3.3	2.6
Iceland	2.1	1.1	2.4	1.8	1.8	0.3
Ireland	2.6	2.0	2.5	1.8	2.7	2.1
Italy	4.4	3.2	5.1	3.8	3.6	2.3
Japan	1.9	1.5	0.9	0.8	3.3	2.4
Korea	2.7	1.7	3.0	1.8	2.2	1.5
Luxembourg	-	2.0	-	2.6	-	1.2
Mexico	2.5	1.9	2.5	2.3	2.3	1.4
Netherlands	2.7	1.9	3.3	2.5	2.0	1.2
New Zealand	1.5	1.4	1.5	1.9	1.4	0.8
Norway	3.2	2.8	3.7	3.5	2.5	1.8
Poland	4.6	3.6	5.3	4.2	3.6	2.8
Portugal	3.7	2.7	3.6	3.1	3.8	2.2
Slovak Republic	-	1.4	-	1.9	-	0.8
Spain	3.2	2.7	3.0	2.7	3.5	2.7
Sweden	2.2	1.9	2.7	2.2	1.5	1.6
Switzerland	2.8	2.2	2.7	2.4	3.0	2.1
Turkey	3.9	2.8	3.7	3.1	4.1	2.5
United Kingdom	1.8	1.7	1.8	1.9	1.8	1.6
United States	1.4	1.2	1.3	1.2	1.4	1.2

1 Sub-domains correspond to principal components found in the 1998 analysis (see Nicoletti et al, 1999).

Table 22. **Barriers to entrepreneurship: country scores by domain and sub-domain[1]**

	Domain		Sub-Domain					
	Barriers to entrepreneurship		Administrative burdens on startups		Regulatory and administrative opacity		Barriers to competition	
	1998	2003	1998	2003	1998	2003	1998	2003
Australia	1.4	1.1	1.1	1.0	1.5	1.2	1.8	1.5
Austria	1.7	1.6	2.6	2.8	0.6	0.4	1.0	0.8
Belgium	1.9	1.6	1.3	1.7	3.3	2.2	1.0	0.6
Canada	1.0	0.8	1.4	0.9	0.6	0.5	0.7	0.7
Czech Republic	2.0	1.9	2.2	2.3	2.7	2.3	0.6	0.5
Denmark	1.4	1.2	0.5	0.5	2.4	2.1	2.1	1.7
Finland	2.1	1.1	2.0	1.3	3.2	1.2	0.7	0.4
France	2.8	1.6	3.4	1.9	2.7	1.3	1.5	1.4
Germany	2.0	1.6	2.4	1.6	2.6	2.2	0.4	0.5
Greece	2.1	1.6	3.0	2.6	1.7	0.6	0.6	0.5
Hungary	1.6	1.4	2.4	2.3	0.4	0.4	1.5	1.1
Iceland	1.8	1.6	1.7	1.4	2.7	2.4	0.8	0.7
Ireland	1.2	0.9	0.9	0.5	2.2	2.1	0.2	0.3
Italy	2.7	1.4	4.6	2.4	0.7	0.4	1.0	0.6
Japan	2.4	1.4	2.1	1.9	3.8	1.2	1.0	0.6
Korea	2.5	1.7	2.2	2.2	3.8	1.2	1.3	1.0
Luxembourg	-	1.2	-	1.8	-	1.1	-	0.1
Mexico	2.7	2.2	3.4	3.1	2.4	0.4	1.4	2.9
Netherlands	1.9	1.6	1.8	1.6	2.4	2.5	1.2	0.6
New Zealand	1.2	1.2	1.0	0.8	2.2	2.2	0.4	0.4
Norway	1.5	1.0	1.8	1.0	1.3	1.2	0.8	0.6
Poland	2.8	2.3	3.8	3.7	2.0	1.5	1.6	0.3
Portugal	1.8	1.3	2.1	1.7	1.8	1.2	1.0	0.5
Slovak Republic	-	1.2	-	1.9	-	0.7	-	0.3
Spain	2.3	1.6	3.5	2.8	1.6	0.4	0.5	0.4
Sweden	1.9	1.1	1.1	1.2	3.5	1.1	1.3	0.6
Switzerland	2.3	1.9	2.2	1.7	3.4	3.1	0.8	0.7
Turkey	3.2	2.5	2.7	2.7	4.1	3.4	3.2	0.5
United Kingdom	1.1	0.8	1.0	0.7	1.7	1.2	0.7	0.4
United States	1.5	1.2	0.9	1.0	2.3	1.3	1.5	1.5

1 Sub-domains correspond to principal components found in the 1998 analysis (see Nicoletti et al, 1999).

Table 23. **Barriers to trade and investment: country scores by domain and sub-domain**[1]

	Domain		Sub-Domain			
	Barriers to trade and investment		Explicit barriers to trade and investment		Other barriers	
	1998	2003	1998	2003	1998	2003
Australia	1.0	0.9	1.6	1.4	0.3	0.2
Austria	1.3	0.7	2.0	1.0	0.4	0.2
Belgium	1.1	0.3	1.4	0.5	0.8	0.1
Canada	1.3	1.1	2.0	1.7	0.5	0.4
Czech Republic	3.1	0.9	3.2	1.4	3.1	0.3
Denmark	0.9	0.8	1.3	1.0	0.4	0.7
Finland	1.1	0.6	1.3	1.0	0.7	0.2
France	1.5	1.0	2.3	1.5	0.5	0.3
Germany	0.9	0.6	1.0	0.6	0.8	0.7
Greece	1.9	1.2	2.5	1.4	1.2	1.0
Hungary	1.9	1.4	2.9	2.1	0.7	0.6
Iceland	1.0	0.3	1.2	0.5	0.6	0.1
Ireland	0.8	0.5	1.2	0.8	0.3	0.2
Italy	1.5	1.1	2.2	1.7	0.5	0.4
Japan	1.3	0.9	2.0	1.4	0.5	0.3
Korea	2.2	1.3	2.4	1.9	2.1	0.4
Luxembourg	-	0.7	-	1.1	-	0.2
Mexico	2.1	2.4	2.9	3.4	1.0	1.0
Netherlands	0.9	0.7	1.3	1.0	0.4	0.3
New Zealand	1.6	0.8	2.3	1.3	0.7	0.2
Norway	1.0	0.8	1.2	0.9	0.7	0.6
Poland	4.3	2.4	4.3	3.0	4.4	1.7
Portugal	1.1	0.8	1.6	1.2	0.5	0.3
Slovak Republic	-	1.6	-	1.6	-	1.5
Spain	1.6	0.7	1.5	0.7	1.7	0.6
Sweden	1.4	0.8	2.0	1.2	0.7	0.3
Switzerland	1.7	1.0	1.5	1.5	2.0	0.4
Turkey	2.3	1.7	3.4	2.5	1.0	0.6
United Kingdom	0.6	0.4	0.8	0.5	0.3	0.2
United States	1.1	0.7	1.7	1.1	0.3	0.2

1 Sub-domains correspond to principal components found in the 1998 analysis (see Nicoletti et al, 1999).

Table 24. **Overall PMR indicator. administrative and economic regulation**[1]

	Product market regulation		Administrative regulation		Economic regulation	
	1998	2003	1998	2003	1998	2003
Australia	1.3	0.9	1.2	1.0	1.6	0.9
Austria	1.8	1.4	1.8	1.9	2.3	1.5
Belgium	2.1	1.4	2.1	1.9	2.6	1.8
Canada	1.4	1.2	1.1	0.8	1.5	1.4
Czech Republic	3.0	1.7	2.4	2.4	3.1	2.0
Denmark	1.5	1.1	1.1	1.1	2.1	1.4
Finland	2.1	1.3	2.5	1.3	2.5	1.9
France	2.5	1.7	3.2	1.6	2.8	2.3
Germany	1.9	1.4	2.5	1.9	2.2	1.8
Greece	2.8	1.8	2.5	1.9	3.4	2.2
Hungary	2.5	2.0	1.6	1.5	3.4	2.7
Iceland	1.6	1.0	2.1	1.8	1.8	1.1
Ireland	1.5	1.1	1.4	1.1	1.9	1.5
Italy	2.8	1.9	3.1	1.6	3.7	2.6
Japan	1.9	1.3	2.8	1.7	1.8	1.4
Korea	2.5	1.5	2.8	1.8	2.4	1.6
Luxembourg	-	1.3	-	1.6	-	1.5
Mexico	2.4	2.2	3.0	2.0	2.2	2.1
Netherlands	1.8	1.4	2.0	1.9	2.4	1.6
New Zealand	1.4	1.1	1.5	1.4	1.1	1.1
Norway	1.8	1.5	1.6	1.0	2.7	2.3
Poland	3.9	2.8	3.1	2.9	3.7	2.7
Portugal	2.1	1.6	2.0	1.5	3.0	2.2
Slovak Republic	-	1.4	-	1.5	-	1.1
Spain	2.3	1.6	2.8	2.0	2.5	2.1
Sweden	1.8	1.2	2.0	1.1	2.0	1.7
Switzerland	2.2	1.7	2.6	2.2	2.5	2.0
Turkey	3.1	2.3	3.2	3.0	3.6	2.1
United Kingdom	1.1	0.9	1.2	0.8	1.5	1.4
United States	1.3	1.0	1.4	1.1	1.4	1.3

1 Sub-domains correspond to principal components found in the 1998 analysis (see Nicoletti et al, 1999).

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