

Chapter 2

Reducing regulatory barriers to competition: Progress since 2008 and scope for further reform

This Chapter reviews the stance of regulation affecting competition in product markets of OECD and selected non-OECD countries. Based on the up-dated and revised set of indicators of product market regulation (PMR), it first provides an overview of the nature and extent of regulatory barriers to competition and reviews the areas where most progress has been achieved since 2008 in lowering these barriers. It then identifies areas where the scope for further reforms remains substantial. The PMR update reflects the stance of regulation at the start of 2013 and does not incorporate changes made since then in countries that have implemented reforms.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Reducing regulatory barriers to competition: Progress made since 2008 and scope for further reform

Main findings

- The 2013 up-date of the OECD indicators of Product Market Regulation (PMR) point to a further slowdown in the pace of product market liberalisation over the past five years. On average across countries, the overall PMR stringency indicator score fell by 0.10 between 2008 and 2013, which is notably less than the declines observed during earlier periods (0.42 between 1998 and 2003 and 0.16 between 2003 and 2008).
- Even though there was little progress on average in the OECD, several countries implemented important reforms over the past five years, often in an attempt to boost economic growth in the wake of the economic crisis. The country with the largest improvement overall is Greece, followed by Poland, Portugal and the Slovak Republic.
- On average across the OECD, countries have made particular progress in removing restrictions to the sale of government stakes in firms or special voting rights, abolishing price controls or making them more competition-friendly, streamlining administrative procedures for start-ups, simplifying rules and procedures or improving access to information about regulations and phasing out practices that discriminate against foreign suppliers.
- Even though regulatory barriers to product market competition have been lifted to a substantial extent since the mid-1990s, room for further reform remains. The policy domains with largest scope for improvement both in OECD and non-OECD countries include public ownership and the governance of state-owned enterprises, as well as regulatory barriers to entry in network industries and professional services.

Introduction

Pro-competition regulation in product markets can help boost living standards. Many empirical studies have shown that competition can overall raise output per capita by increasing investment and employment as well as by encouraging companies to be more innovative and efficient, thereby lifting productivity (e.g. Bouis and Duval, 2011; Bourlès et al. 2010; Conway et al., 2006; Nicoletti and Scarpetta, 2005). In light of these economic gains, countries have, step by step, removed obsolete or badly-designed regulations in product markets over the past decades, reducing state involvement in business sectors, making it easier for entrepreneurs to create firms and to expand them, and facilitating the entry of foreign products and firms. While in some cases regulation was largely removed, in others it was replaced by better-designed legislation that can even help to enhance competition.

To measure a country's regulatory stance and track reform progress over time the OECD developed an economy-wide indicator set of product market regulations (PMR) in 1998 (Nicoletti et al., 1999), which was then updated in 2003 (Conway et al., 2005) and 2008

(Wöfl et al., 2009). By now, the indicators have become an essential element of the OECD policy surveillance as they enhance the knowledge of regulatory practices in OECD countries and the potential for investigating their link with economic performance. They are an integral part of the *Going for Growth* exercise and *OECD Economic Surveys* where they are used to formulate recommendations for policy reforms. The PMR indicators are also widely used by national governments, other international organisations, academia and international fora such as the G20.

This Chapter presents the 2013 update of the PMR indicator set and how it has changed since 2008.¹ The update covers most OECD countries and a large number of non-OECD countries, many of which are included for the first time.² Based on the results, it first provides an overview of the stance of regulation in early 2013, and then discusses the main areas of reforms since 2008 and the potential for further reforms in the future.

The current stance of regulation in OECD and selected non-OECD countries

The set of PMR indicators aims at measuring the degree to which policy settings promote or inhibit competition in areas of the product market where competition is viable (see Box 2.1). More specifically, it measures the incidence of regulatory barriers to competition via state control of business operations and the protection of incumbents, as well as through various legal and administrative barriers to start-ups or to foreign trade and investment.³ The indicator is constructed based on detailed information on regulatory practices across a large number of sectors, with a strong emphasis on network industries, but also professional services and retail distribution (see Annex 2.A1 for more details on the structure, coverage and construction of the indicator set and Figures 3.14 to 3.20 from Chapter 3 for the results along this structure). The basic information on specific aspects of regulation is regrouped into broader regulatory areas, which are in turn combined in one overall indicator, following the structure shown in Figure 2.A1 of the Annex. The numerical

Box 2.1. General principles behind the design of PMR indicators

Product market regulation is essential for the well-functioning of market-based economies, notably to ensure market integrity and thereby preserve the general trust of consumers and investors in the conduct of private transactions. It is also necessary to achieve *inter alia* health and safety, as well as environmental objectives. The challenge for policymakers is to design regulations so that these objectives can be pursued in a way that minimises compliance costs for businesses. The purpose of the PMR indicators is not to provide a quantitative assessment of these compliance costs. Such quantification of regulatory burdens through various methodologies has been the object of numerous studies covering different aspects of regulation and providing frameworks for impact assessment (see OECD, 2009 for an overview). The focus of PMR indicators is rather on those aspects of regulation which are seen as creating barriers to entry and competition while not necessarily being helpful to the pursuit of other objectives. More specifically, the indicators aim at capturing aspects of regulation which:

- *Limit the number of suppliers of a particular product or services:* This limitation can take place through various impediments such as the granting of exclusive rights for a supplier; the establishment of a lengthy (and/or costly) process to obtain a license, permit or authorisation required for operation; limits on the ability of some types of suppliers to provide a good or a service; start-up procedures (beyond the permit) which significantly raise the cost of entry.

Box 2.1. General principles behind the design of PMR indicators (cont.)

- *Limit the ability of suppliers to compete:* This can be the case if regulation limits sellers' ability to set the prices for goods and services; limits the freedom of suppliers to advertise or market their products or services; significantly raise the costs of production for some suppliers relative to others (especially by treating incumbents differently from new entrants).
- *Reduce the incentives of suppliers to compete:* This can be the case if regulation creates self-regulatory or co-regulatory regimes; requires or encourages information on supplier outputs, prices, sales or costs to be published; exempts the activity of a particular industry or group of suppliers from the operation of general competition law.
- *Limit the choices and information available to customers:* This may be the case if the regulation limits the ability of consumers to decide from whom they purchase, reduces mobility of customers between suppliers of goods or services by increasing the explicit or implicit costs of changing suppliers or fundamentally changes information required by buyers to shop effectively.

While the coverage of PMR extends to the entire business sector, there is a strong emphasis on regulation in non-manufacturing sectors and in particular network industries in energy, telecommunications (including post) and transport sectors. One reason is that the presence of a network component at the heart of these industries means that one segment of the production chain is a natural monopoly and hence not amenable to competition (e.g. transmission grid in electricity, rail or road infrastructures in transport and fixed-line or mobile networks in telecommunications). As a result, the rules and conditions of third-party access to these network components have a key influence on the intensity of competition within the entire industry, in particular with respect to the ability of new entrants to challenge the dominance of long-established incumbents. Another reason is that the output from these industries often constitutes a major input in the production of firms in downstream sectors. Hence, poorly-designed regulation and weak competition in network industries mean higher prices for energy, telecommunications and transport with significant knock-on effects on the competitiveness of firms producing final goods and services.

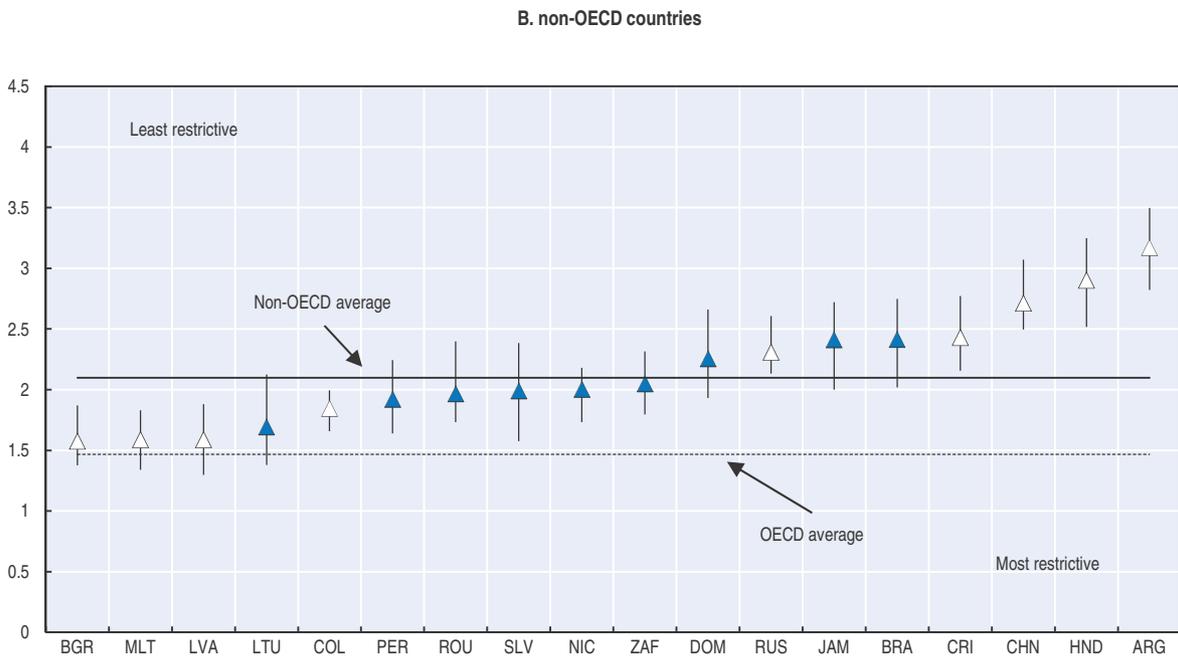
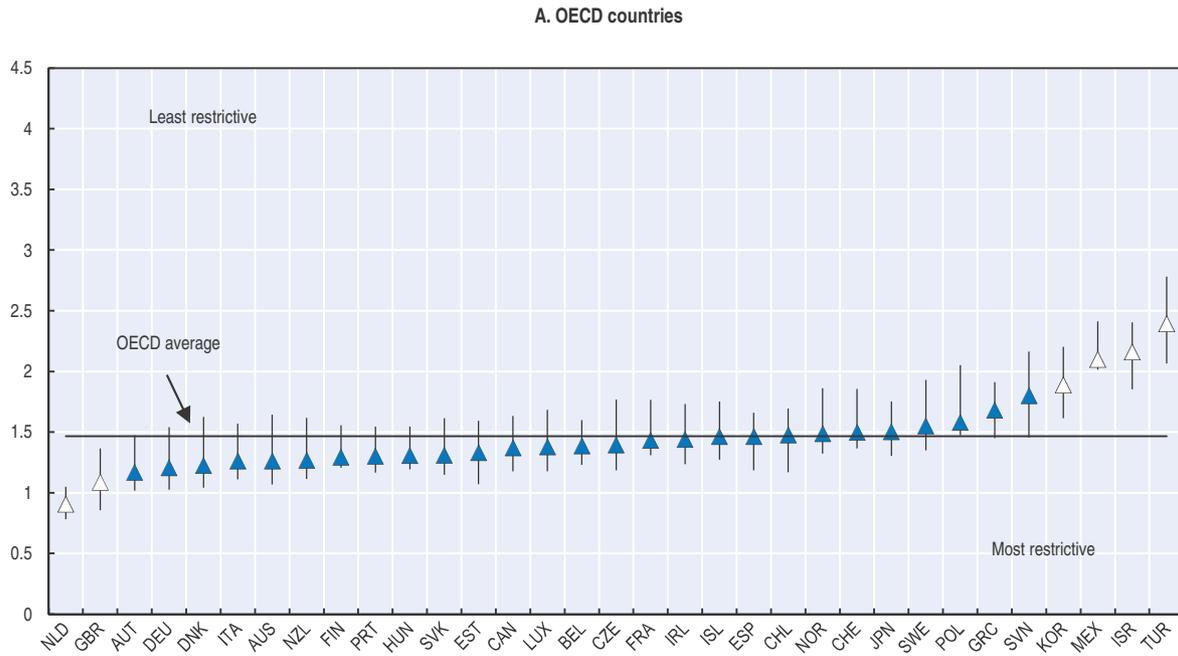
Aside from network industries, specific emphasis is put also on professional services and retail distribution. The strength of competition in the provisions of services in legal, accounting, engineering and architecture professions can also have significant knock-on effects on the performance of firms relying on these services for their own production. Considering also that services sectors are generally less exposed to foreign competition than manufacturing, regulation plays an important role in affecting the quality, variety and price of services through stronger competition.

* These four channels through which regulation can hamper competition serve as basic principles for the *OECD Competition Assessment Toolkit*, which can be consulted at the following website: www.oecd.org/daf/competition/assessment-toolkit.htm.

indicators presented below represent the stringency of regulatory policy in specific areas on a scale of 0 to 6 with a higher number indicating a policy stance that is deemed less conducive to competition.

The results for individual countries from the 2013 vintage are shown for the overall PMR indicator (Figure 2.1) and for the high-level indicators *state control*, *barriers to entrepreneurship* and *barriers to trade and investment* (Figures 2.2 to 2.4). In each case, it characterises the stance of regulation as it stood in early 2013 and does not reflect reforms implemented since then. All four figures show the indicator values obtained when using equal weights at each step of aggregation (point estimate), together with 90% confidence intervals that reflect the sensitivity of indicator values to the application of different sets of weights (see Annex 2.A1).

Figure 2.1. Overall PMR score in 2013
Index scale 0 to 6 from least to most restrictive

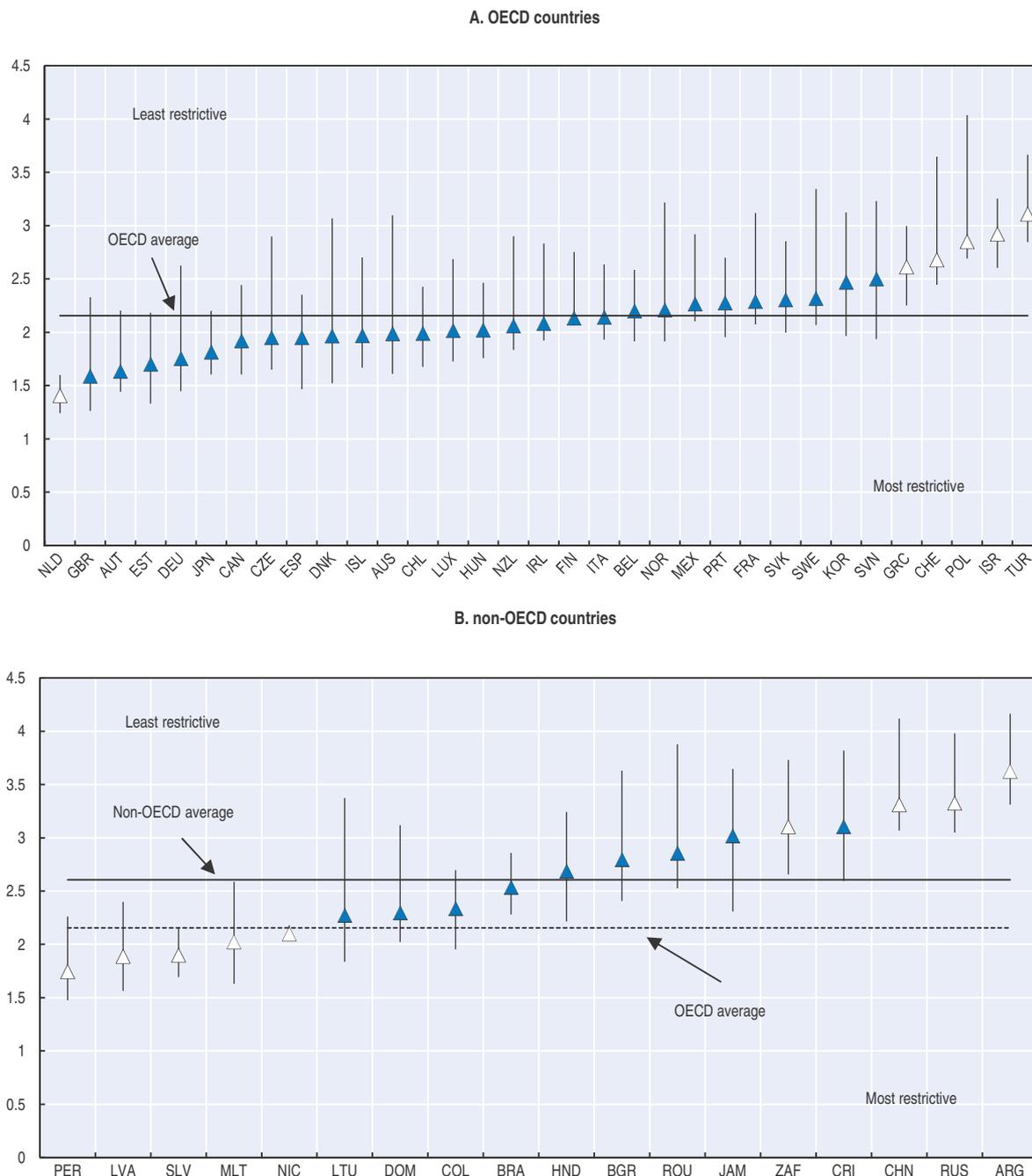


Note: Diamonds represent the indicator scores and vertical lines represent the 90% confidence intervals derived from the random weights analysis (Annex 2.A1). The two groups of countries with white diamonds (one group to the right and the other group to the left of the chart) have indicator values that are significantly different from each other. The horizontal line in panel A represents the average score across all countries shown in the chart.

Source: OECD (2013), Product Market Regulation Database.

StatLink  <http://dx.doi.org/10.1787/888932983946>

Figure 2.2. State control in 2013
Index scale 0 to 6 from least to most restrictive



Note: Diamonds represent the indicator scores and vertical lines represent the 90% confidence intervals derived from the random weights analysis (Annex 2.A1). The two groups of countries with white diamonds (one group to the right and the other group to the left of the chart) have indicator values that are significantly different from each other. The horizontal line in panel A represents the average score across all countries shown in the chart.

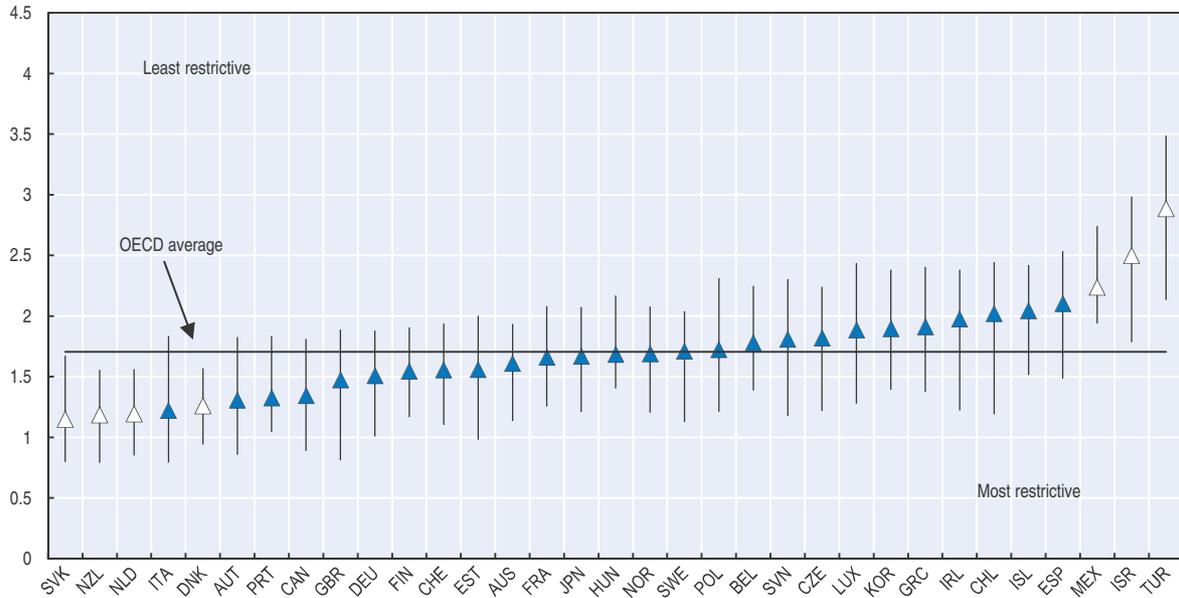
Source: OECD (2013), Product Market Regulation Database.

StatLink  <http://dx.doi.org/10.1787/888932983965>

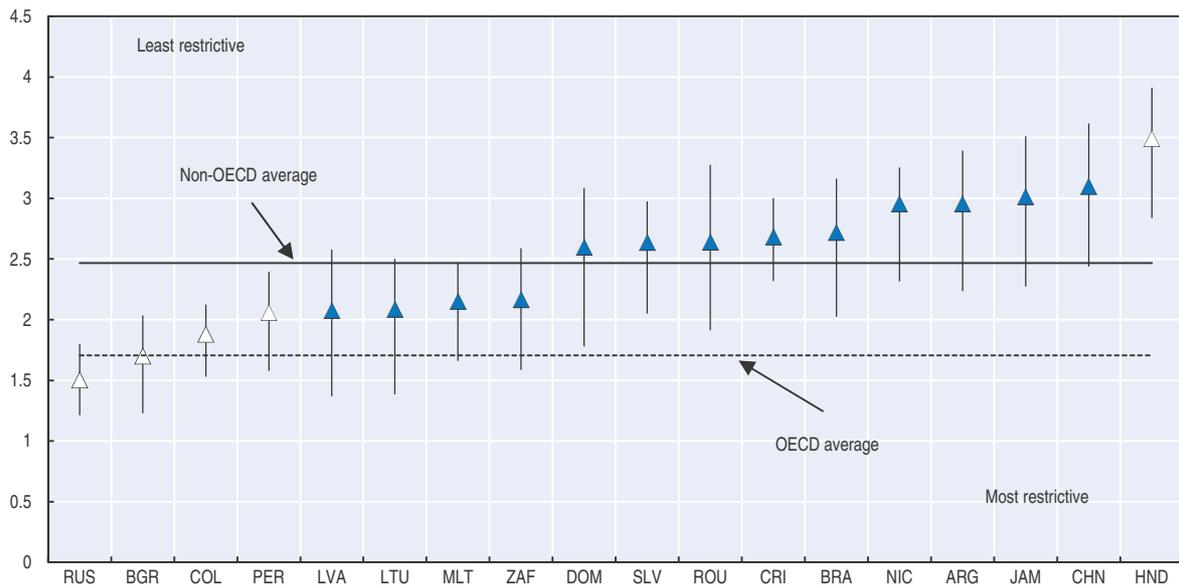
Figure 2.3. **Barriers to entrepreneurship in 2013**

Index scale 0 to 6 from least to most restrictive

A. OECD countries



B. non-OECD countries



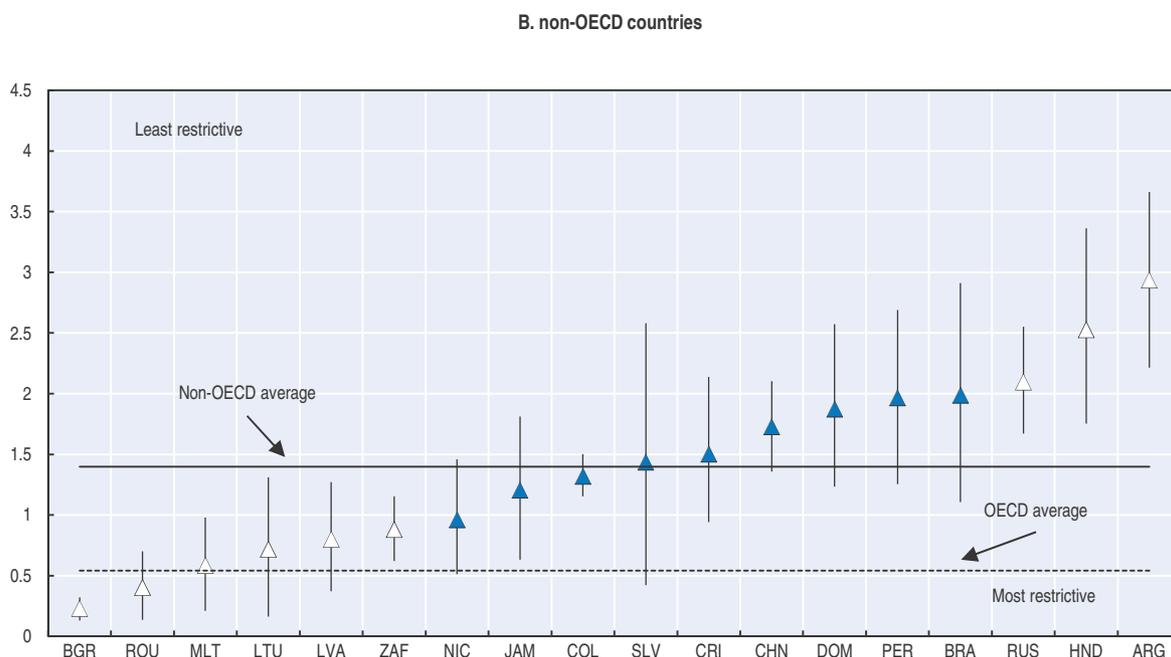
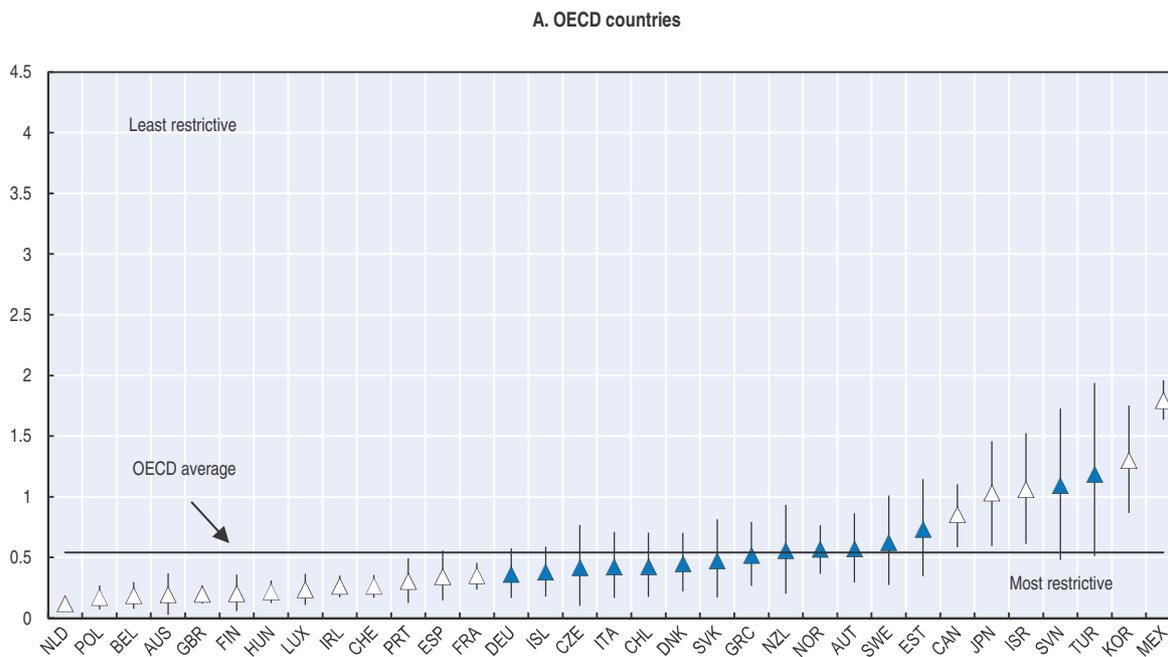
Note: Diamonds represent the indicator scores and vertical lines represent the 90% confidence intervals derived from the random weights analysis (Annex 2.A1). The two groups of countries with white diamonds (one group to the right and the other group to the left of the chart) have indicator values that are significantly different from each other. The horizontal line in panel A represents the average score across all countries shown in the chart.

Source: OECD (2013), Product Market Regulation Database.

StatLink  <http://dx.doi.org/10.1787/888932983984>

Figure 2.4. **Barriers to trade and investment in 2013**

Index scale 0 to 6 from least to most restrictive



Note: Diamonds represent the indicator scores and vertical lines represent the 90% confidence intervals derived from the random weights analysis (Annex 2.A1). The two groups of countries with white diamonds (one group to the right and the other group to the left of the chart) have indicator values that are significantly different from each other. The horizontal line in panel A represents the average score across all countries shown in the chart.

Source: OECD (2013), Product Market Regulation Database.

StatLink  <http://dx.doi.org/10.1787/888932984003>

Taking into account the extent to which the measured indicators can vary according to the relative importance or weight put on each specific aspect of legislation in their construction, the results indicate a similar stance of overall regulation across a majority of OECD countries. Nonetheless, based on the indicator values, countries can be separated into three broad groups – those with an indicator value below the cross-country average, those that cannot be significantly distinguished from the average, and those with a value above the average (Figure 2.1). Product market regulations are significantly more competition-friendly in the Netherlands and the United Kingdom than in the average OECD country while countries where they are significantly less competition-friendly include Mexico, Israel and Turkey.

The remaining group of OECD countries has a regulatory stance that is close to the OECD average, although to varying degrees according to the point estimates. The countries in this group have regulatory practices in the areas measured by PMR that are also overall close to each other. Hence, the ranking among countries in this group has no real significance. Non-OECD countries tend to have a stricter regulatory stance than OECD countries. Among non-OECD countries three groups of countries can again be identified. The stance of overall regulation is less strict than the non-OECD average and comparable to the OECD average in Bulgaria, Malta, Latvia and Colombia.

The decomposition of the overall PMR indicator into the three high-level components suggests that competition-unfriendly regulations are higher in the areas of *state control and barriers to entrepreneurship* than in the area of *barriers to trade and investment* (Figures 2.2 to 2.4).⁴ The OECD average is equal to respectively 2.1 and 1.7 for the former two components, while it is equal to 0.6 for the latter component (the corresponding averages for non-OECD countries are 2.6, 2.5 and 1.3, respectively). Within the *state control* component high scores are primarily driven by public ownership of firms in business sectors (in particular in network sectors) and the poor governance of these firms. High scores on the *barriers to entrepreneurship* component are typically driven by a strong protection of incumbents in network sectors and high administrative burdens on specific firms such as retail shops and road freight companies.

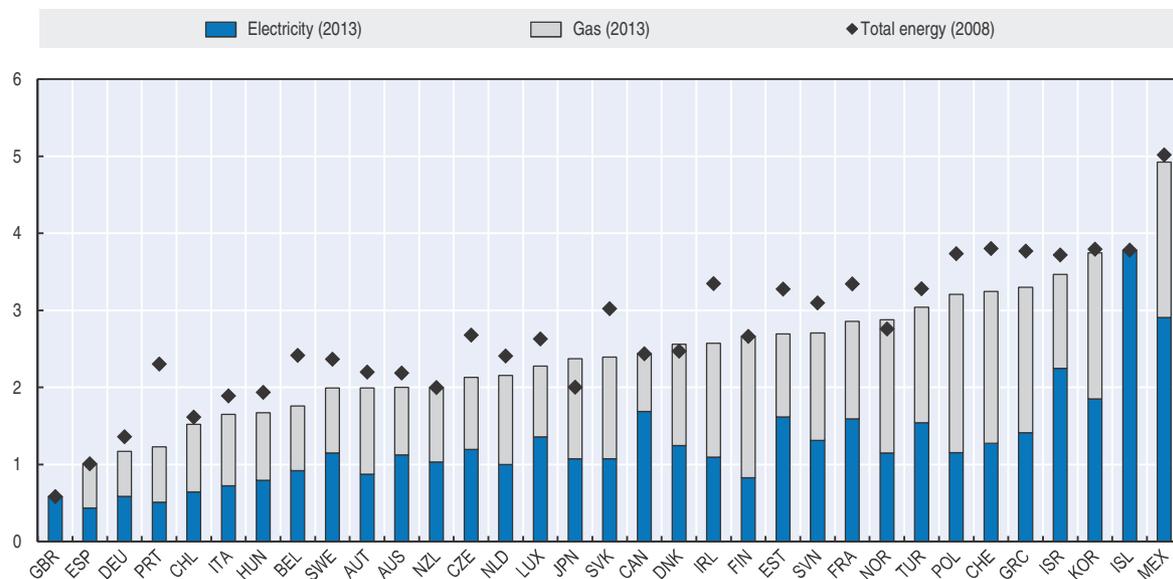
The relative position of countries varies somewhat across the three high-level indicators. For instance, the Netherlands have a lower level of state control than other OECD countries, while the lowest barriers to entrepreneurship are found in Slovak Republic, New Zealand, the Netherlands and Denmark. Barriers to foreign trade and investment are low in many European countries and Australia. Among non-OECD countries, state control is the lowest in Peru, Latvia, El Salvador, Malta and Nicaragua while Russia, Bulgaria, Colombia and South Africa, have lower barriers to entrepreneurship than the other non-OECD countries covered in this report. As regards foreign trade and investment, Bulgaria, Romania, Malta, Lithuania, Latvia, South Africa and Nicaragua are among the most open countries, although only the first two are more open than the average OECD country. Despite these differences, there is a tendency for OECD and non-OECD countries with a competition-friendly regulatory stance in one of the three areas, to also have competition-friendly regulations in the other two areas.⁵

The PMR indicators are complemented by a set of indicators that summarise information not by regulatory domain, but by sector. These indicators are presented in Figures 2.5 to 2.9 and cover seven network sectors (electricity, gas, rail transport, air transport, road transport, post and telecom) and two services sectors (professional services

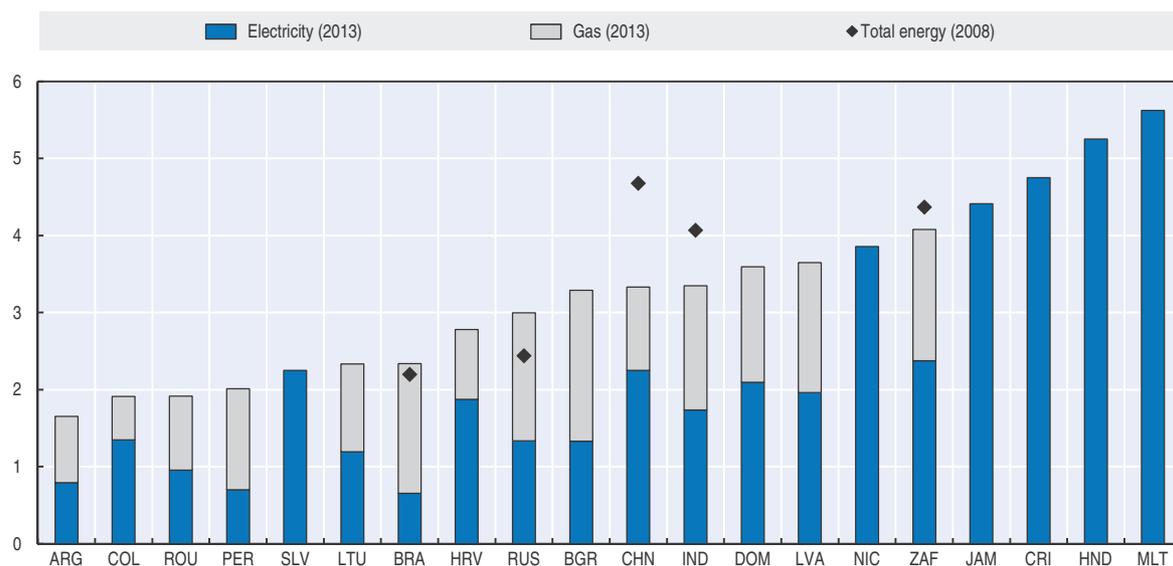
Figure 2.5. Regulation of energy sectors

Index scale 0 to 6 from least to most restrictive

A. OECD countries



B. Non-OECD countries



Source: OECD (2013), Product Market Regulation Database.

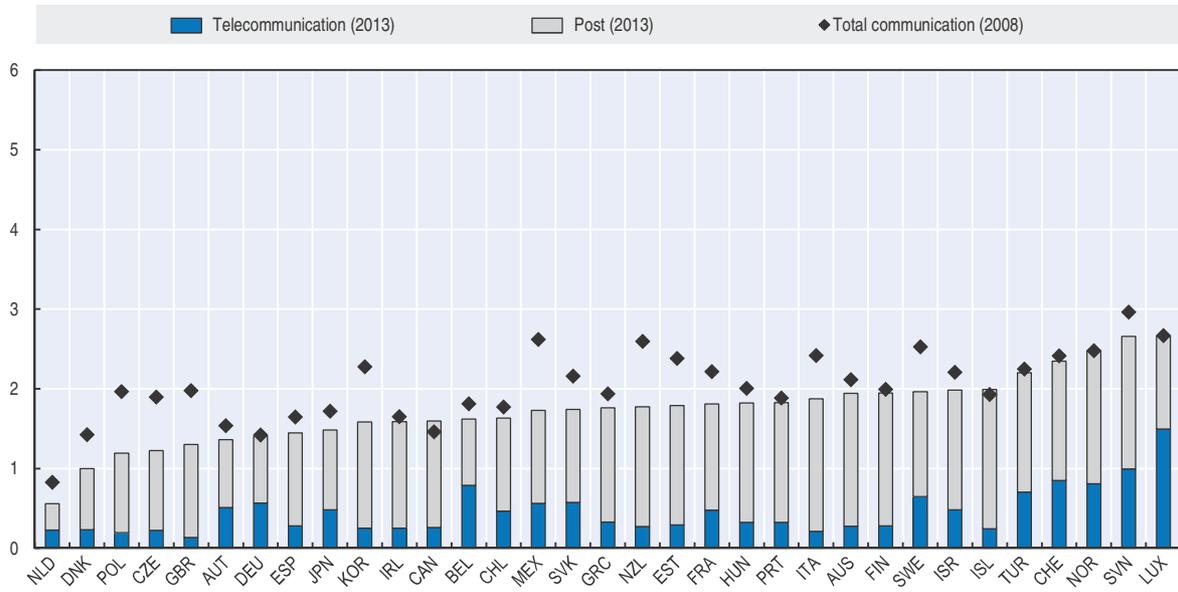
StatLink <http://dx.doi.org/10.1787/888932984022>

and retail trade).⁶ Among network sectors, regulation tends to be particularly strict in electricity, gas and rail transport (Figures 2.5 and 2.7), with the average score across countries ranging from 2.5 (electricity) to 2.4 (gas) and 3.5 (rail) in OECD countries. In telecom, road and air transport sectors, by contrast, regulation is more conducive to competition. For these three sectors, the cross-country average is below 2 for both OECD and non-OECD countries. The OECD countries with the lowest average score across the

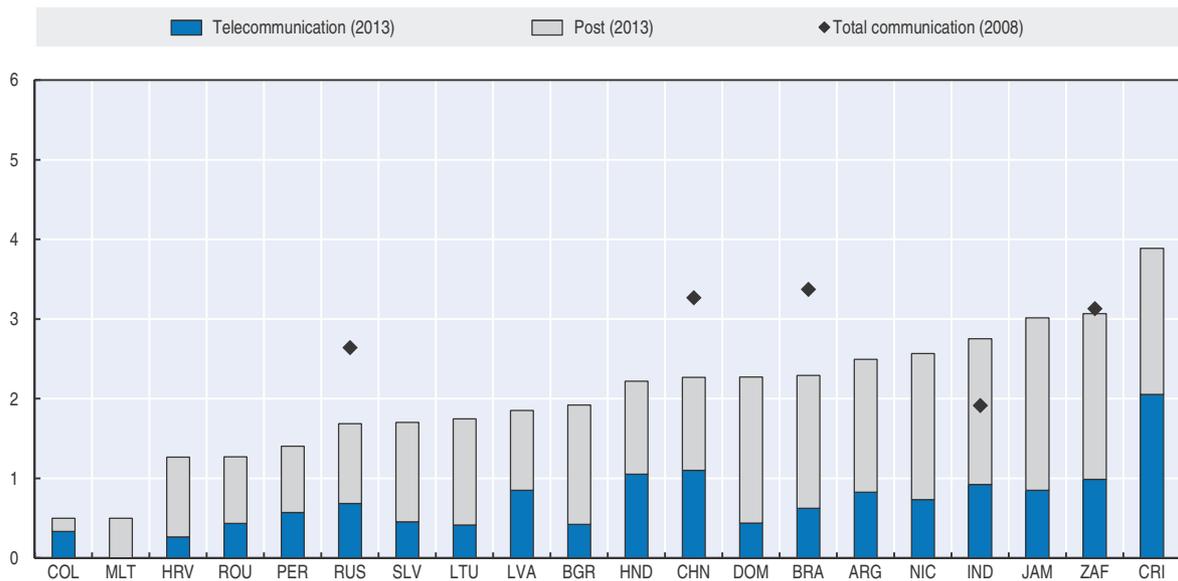
Figure 2.6. **Regulation of communication sectors**

Index scale 0 to 6 from least to most restrictive

A. OECD countries



B. Non-OECD countries



Source: OECD (2013), Product Market Regulation Database.

StatLink  <http://dx.doi.org/10.1787/888932984041>

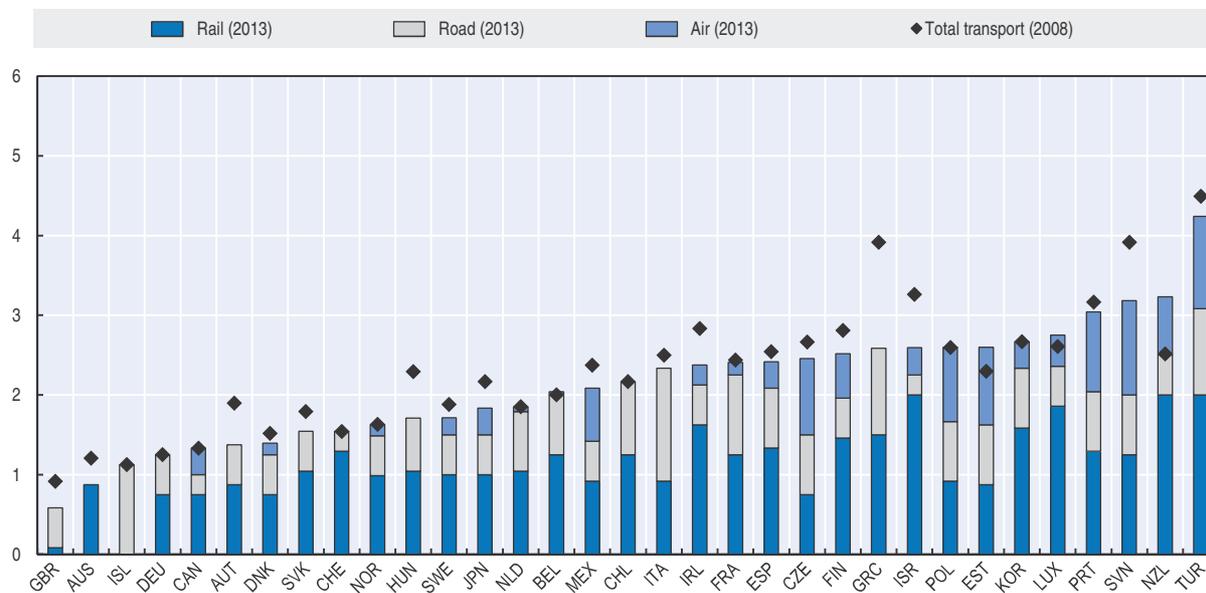
seven network sectors are the United Kingdom, Germany, Australia and Austria, while Mexico, Slovenia and Turkey have the highest score. Among non-OECD countries, the most competition-friendly regulations can be found in Peru, Colombia and El Salvador and the least competition-friendly ones in Costa Rica and South Africa.

The indicators on professional services cover four professions, accounting, legal services, engineering and architecture (Figure 2.8). Among these four professions, the

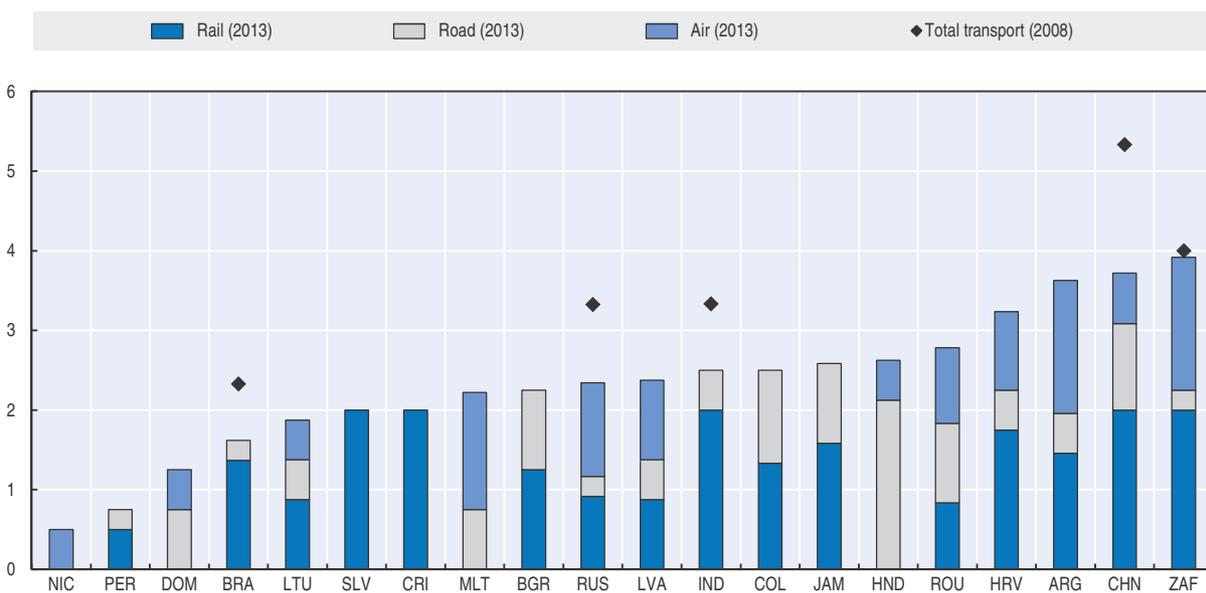
Figure 2.7. Regulation of transport sectors

Index scale 0 to 6 from least to most restrictive

A. OECD countries



B. Non-OECD countries



Source: OECD (2013), Product Market Regulation Database.

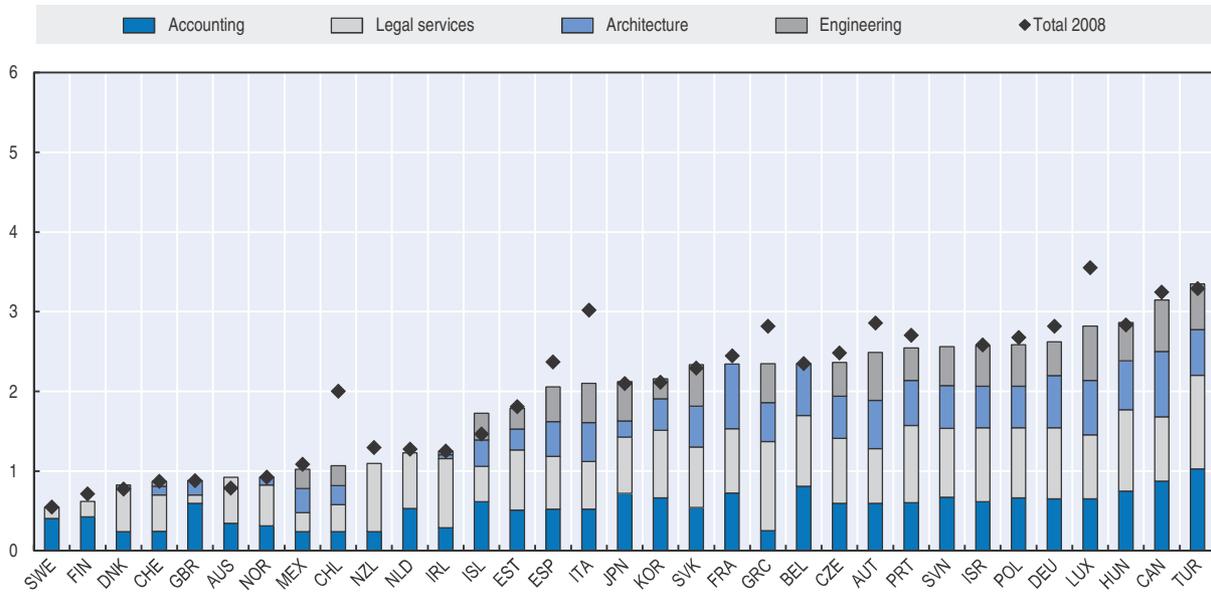
StatLink <http://dx.doi.org/10.1787/888932984060>

accounting and legal professions are the most heavily regulated in OECD countries.. The average scores amount to respectively 2.1 and 2.8, compared with 1.2 and 1.5 for engineering and architecture. Non-OECD countries tend to regulate the four professions more heavily than OECD countries, with the legal profession facing somewhat stricter rules than the three other professions. For retail trade, by contrast, non-OECD countries seem to take a more liberal stance than OECD countries: The average score across countries amounts to 1.6 for the non-OECD group and to 2.0 for the OECD group (Figure 2.9).

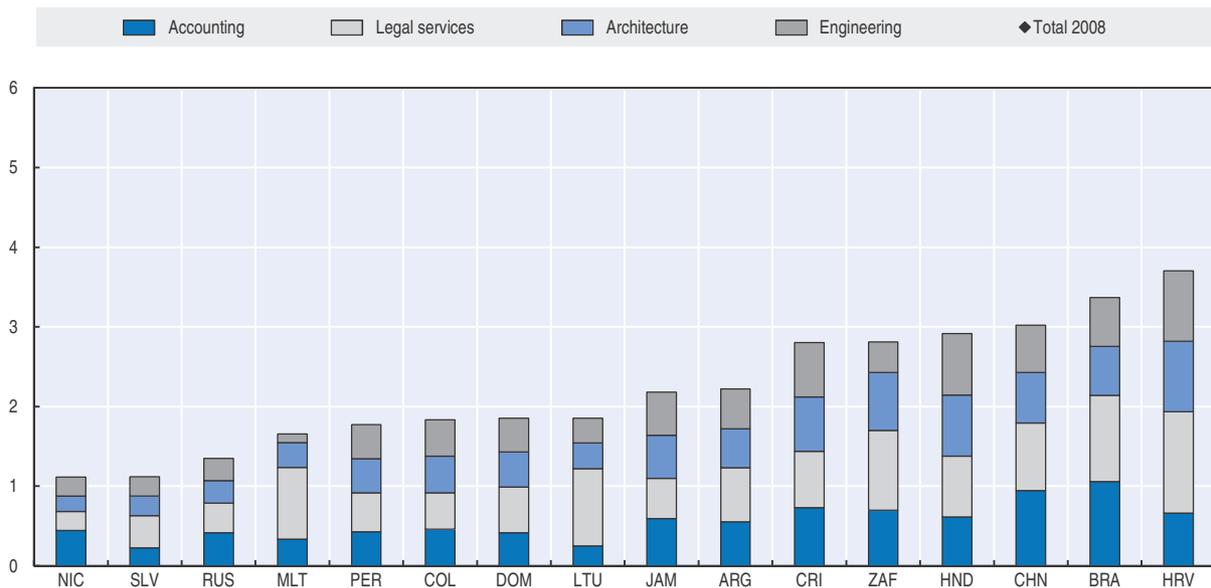
Figure 2.8. Regulation of professional services

Index scale 0 to 6 from least to most restrictive

A. OECD countries



B. Non-OECD countries



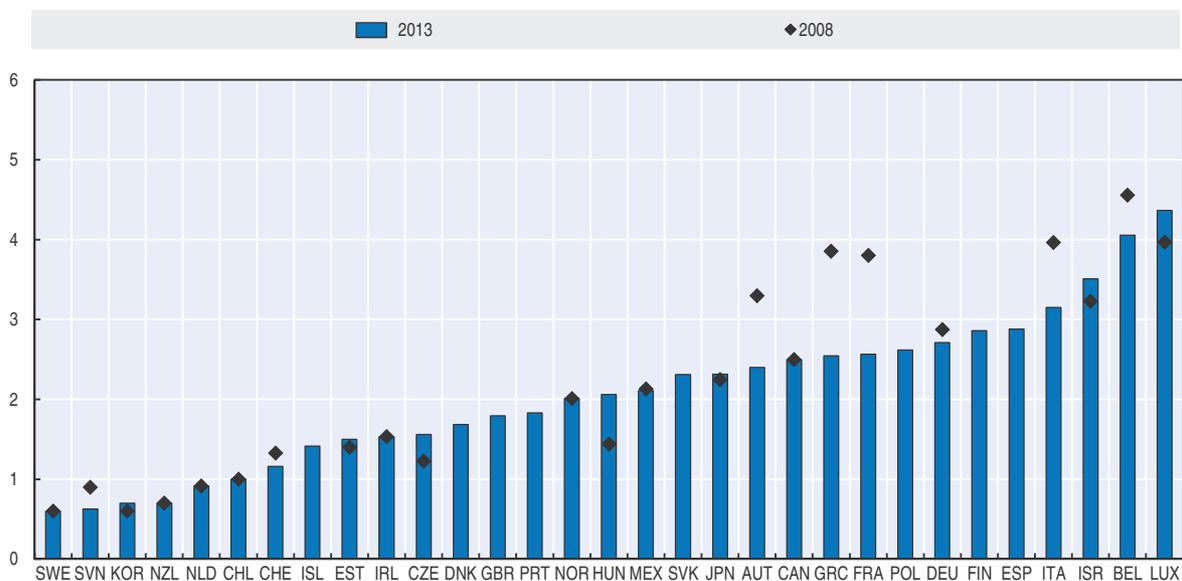
Source: OECD (2013), Product Market Regulation Database.

StatLink  <http://dx.doi.org/10.1787/888932984079>

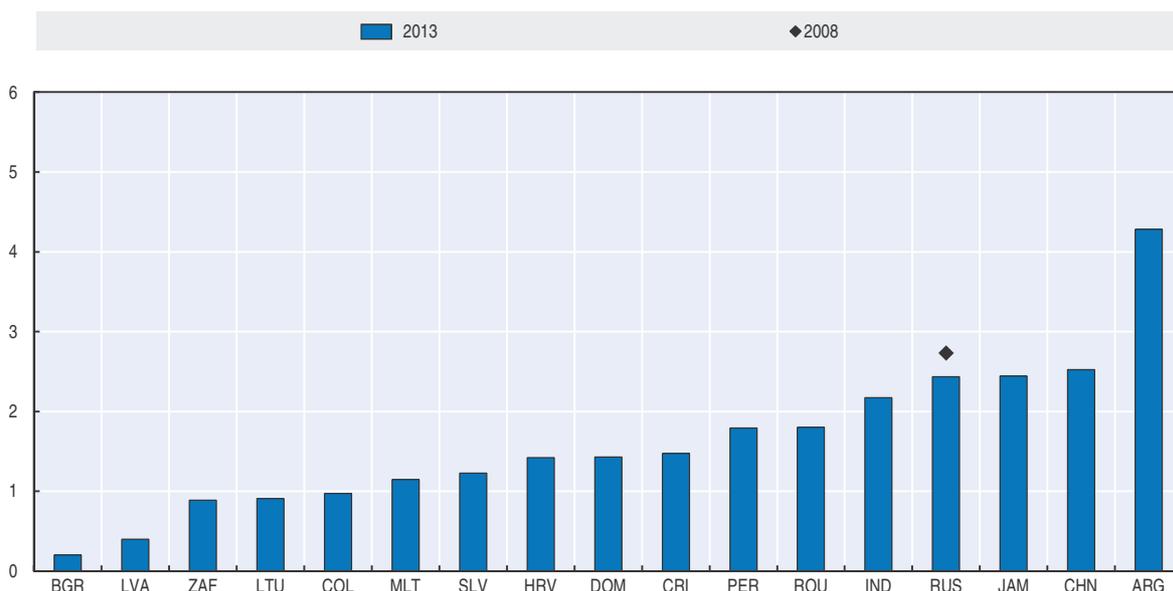
Figure 2.9. **Regulation of retail trade**

Index scale 0 to 6 from least to most restrictive

A. OECD countries



B. Non-OECD countries



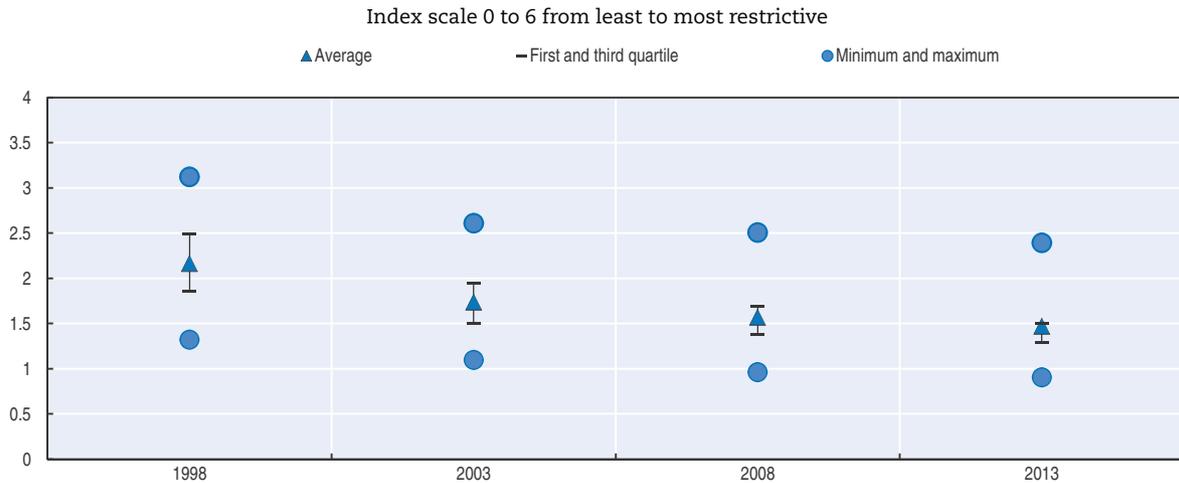
Source: OECD (2013), Product Market Regulation Database.

StatLink  <http://dx.doi.org/10.1787/888932984098>

Recent reforms in product market regulations

OECD countries have considerably liberalised their product markets over the past 15 years (Figure 2.10). Reforms were typically larger at the beginning of this period. Between 1998 and 2003 the average PMR score fell by 0.42, compared with 0.16 between 2003 and 2008 and a mere 0.10 between 2008 and 2013. The deceleration in the pace of

Figure 2.10. **The dispersion of the overall PMR indicator in the OECD has declined over time**



Note: The average score, the first and third quartiles and the minimum and maximum scores are computed across all OECD countries for which data are available in a given year.

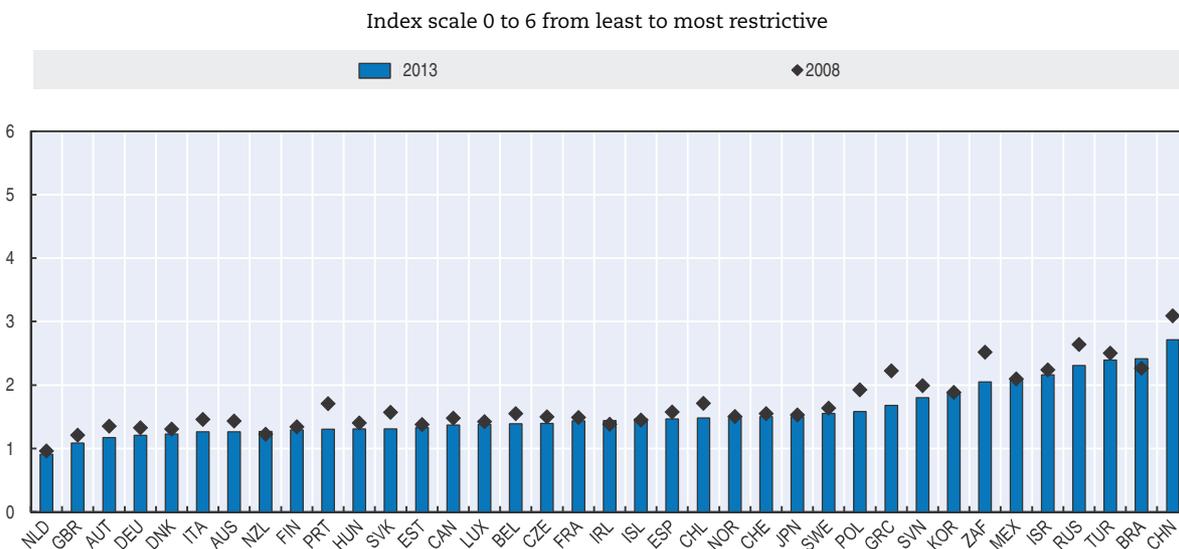
Source: OECD (2013), Product Market Regulation Database.

StatLink <http://dx.doi.org/10.1787/888932984117>

reforms might reflect the fact in the process of convergence towards best practice, the lowest hanging fruits have already been reaped and further liberalisation has become harder over time.. However, it might also be a sign of countries having moved away from market-friendly legislation and practices in certain areas, thus offsetting progress achieved in others.

Looking at the detailed country results sheds some light on this issue. In fact, the average changes hide important cross-country differences (Figure 2.11). Several OECD countries have implemented important reforms over the past 5 years, often triggered by the economic crisis. The country with the largest improvement in the overall PMR score is

Figure 2.11. **Countries displayed different extents of regulatory reform over the period 2008 to 2013**



Source: OECD (2013), Product Market Regulation Database.

StatLink <http://dx.doi.org/10.1787/888932984136>

Greece (-0.54), followed by Poland (-0.34), Portugal (-0.40) and the Slovak Republic (-0.26). While Greece is still among the OECD countries with relatively strict product market regulations, it has made a substantial leap forward. There has also been some progress in Italy (-0.20) which has also faced market pressures for structural reforms since 2011.⁷ Among non-OECD countries, the sizable improvement in China is noteworthy, with the PMR score falling by 0.38.

At the same time, a sizable number of countries have seen no significant improvement over the recent past, often reflecting changes in sub-domains going in opposite directions.

Reforms over the past five years have not been concentrated in particular fields of regulation, but have been spread out quite evenly across the three major regulatory domains covered by the indicators (Figure 2.12). 22 OECD countries have eased restrictions on trade and investments (notably by phasing out differential treatments of foreign suppliers), 30 OECD countries have lowered barriers to entrepreneurship (in particular by streamlining administrative procedures for start-ups, simplifying rules and procedures and improving access to information about regulation) and 24 countries have reduced the level of state control (in particular by removing special voting rights and legal or constitutional restrictions to the sale of government stakes and or by abolishing price controls or improving their design). In terms of sectors, progress has continued to slow in air and road transport as well as in the energy and retail sectors (Figure 2.13). In electricity, post and road transport, the pace of reform over the past five years was similar to that over the 2003-08 period and in professional services it has accelerated somewhat.

Figure 2.10 also shows that the trend decline in the dispersion of PMR scores has continued as the difference between the first and third quartiles has diminished, albeit by a small margin. This convergence of countries over time is further illustrated in Figure 2.14 which plots the change in a country's PMR score over a certain sub-period against the level of the PMR score at the beginning of that sub-period. The trend lines are downward sloping in all three panels, suggesting that countries with the strictest regulations have implemented the biggest reforms. However, the trend lines have flattened over time, while the noise around the trend has increased. Over the most recent sub-period, Greece, Poland, Portugal and the Slovak Republic have made comparatively large reforms given their regulatory stance in 2008.

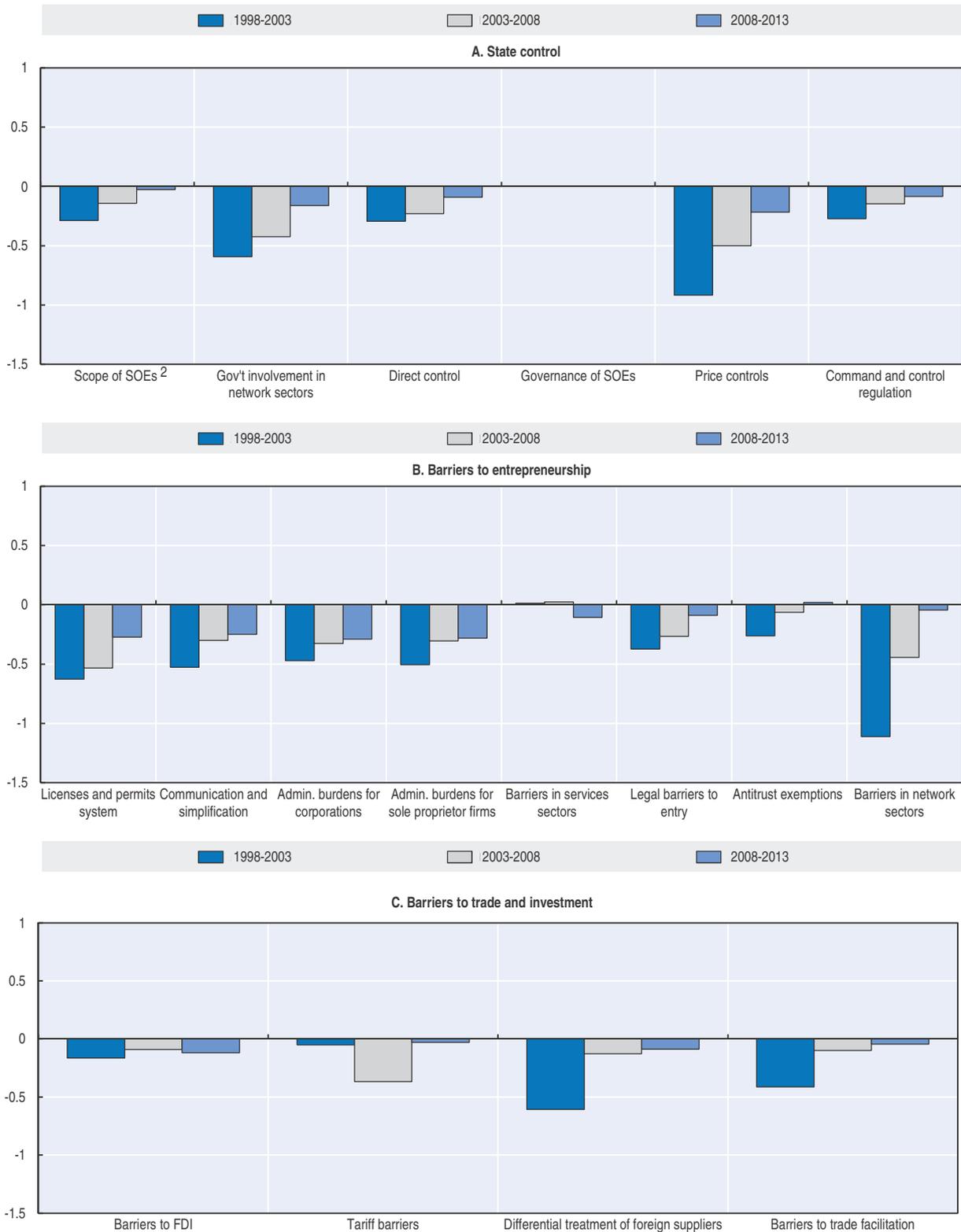
Potential for future reforms

Even though OECD countries have made product market regulations considerably more conducive to competition over the past 15 years, there remains room for improvement, in particular with respect to *state control* and *barriers to entrepreneurship*. Looking at low-level indicators and more detailed PMR data allows for identifying the regulatory domains in which reforms are the most pressing. Interestingly those domains with the greatest need for further reform are the same for both OECD and non-OECD countries:

- In the area of *state control*, the average scores across OECD and non-OECD countries is still relatively high for the components *scope of SOEs*, *government involvement in network sectors* and *governance of SOEs* (Figure 2.15). The first two components capture public ownership, either in terms of the number of sectors in which governments control at least one firm or the share of the government in the largest firm in the sector. While it might be sensible for the government to retain a certain level of participation in specific

Figure 2.12. **Changes in the overall PMR scores can be traced back to specific reform areas¹**

Average change in score across OECD countries



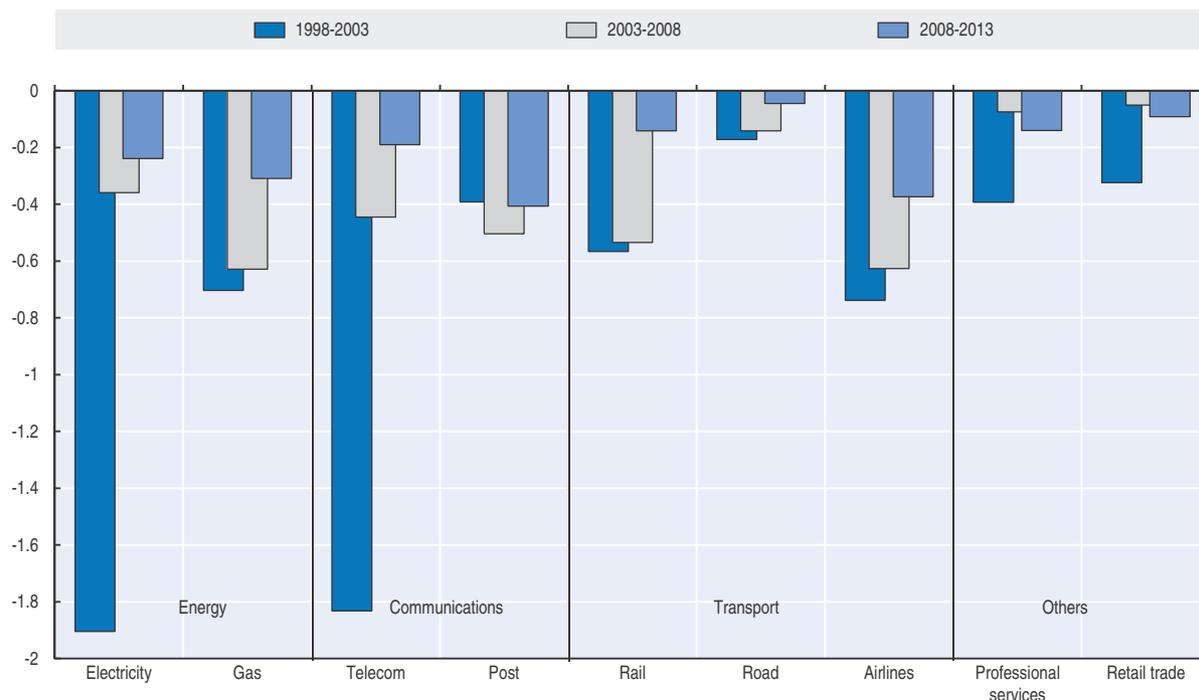
1. The individual items shown on this chart correspond to the low-level components of the indicator set as reported in Annex Figure 2.A1.

2. SOEs is an abbreviation for state-owned enterprise.

Source: OECD (2013), *Product Market Regulation Database*.

Figure 2.13. **The sector composition of reforms**

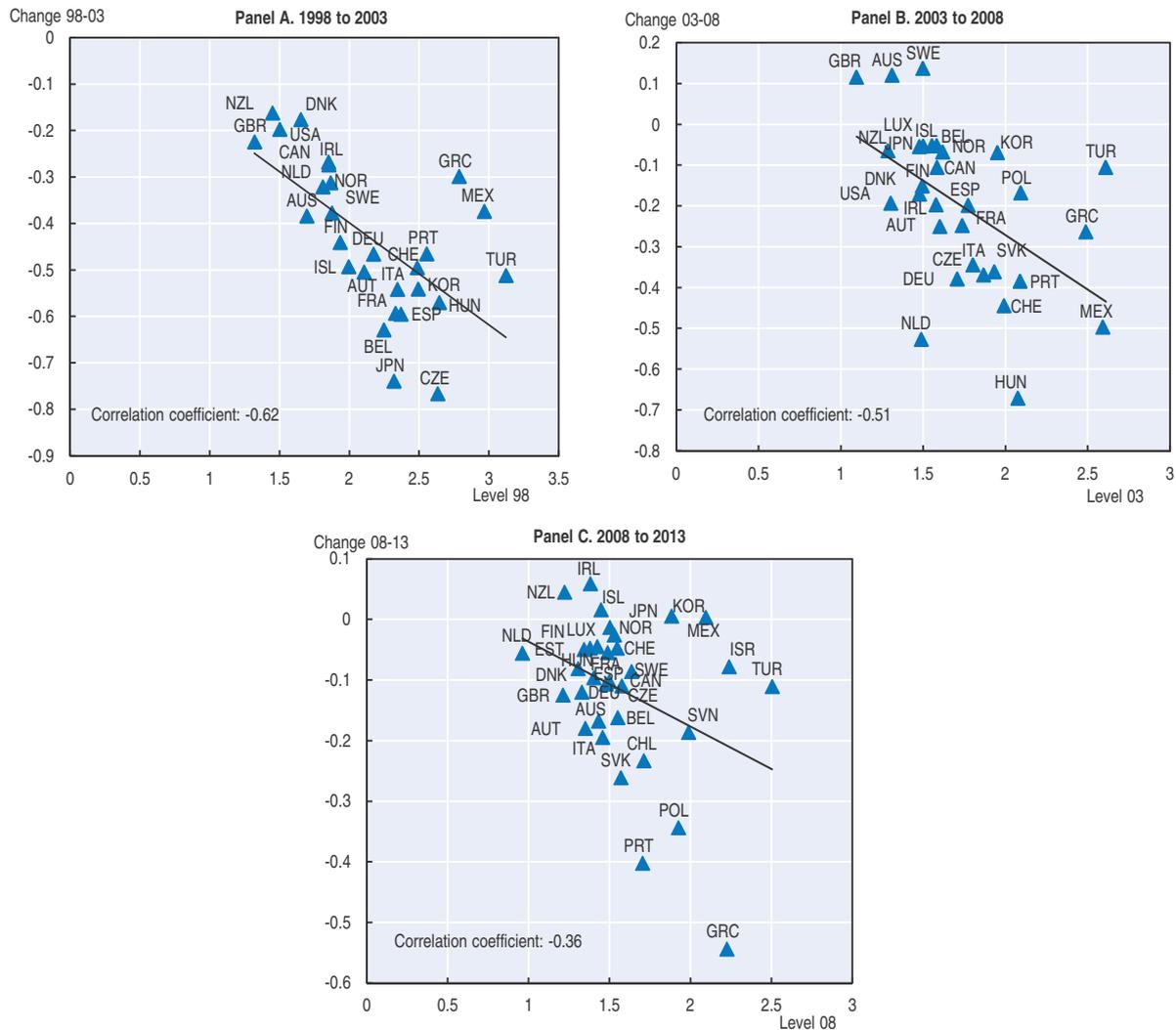
Average change in score across OECD countries

Source: OECD (2013), *Product Market Regulation Database*.StatLink  <http://dx.doi.org/10.1787/888932984174>

sectors, there is room to further reduce public ownership in sectors such as wholesale and retail trade or the manufacturing of petroleum products. In addition, the governance of state-owned firms could be further improved in many countries, for instance by incorporating them into joint-stock companies and by reducing government involvement in their strategic decisions.

- As for *barriers to entrepreneurship*, scores are still relatively high for the components *barriers in services sectors* and *barriers in network sectors* (Figure 2.15). To ease administrative burdens and facilitate firm entry in network and services sectors, countries could for instance lower the licensing requirements in road freight transport and retail distribution sectors, regulate third party access to gas grids (for electricity grids this is already the norm), make water abstraction rights tradable or at least give them away through a competitive process, allow for more competition in rail transport (in particular passenger transport), abolish chamber membership requirements in professional services and reduce the number of exclusive rights of professions (in particular in the legal and accounting professions).

Figure 2.14. **Product market regulation has converged across countries**



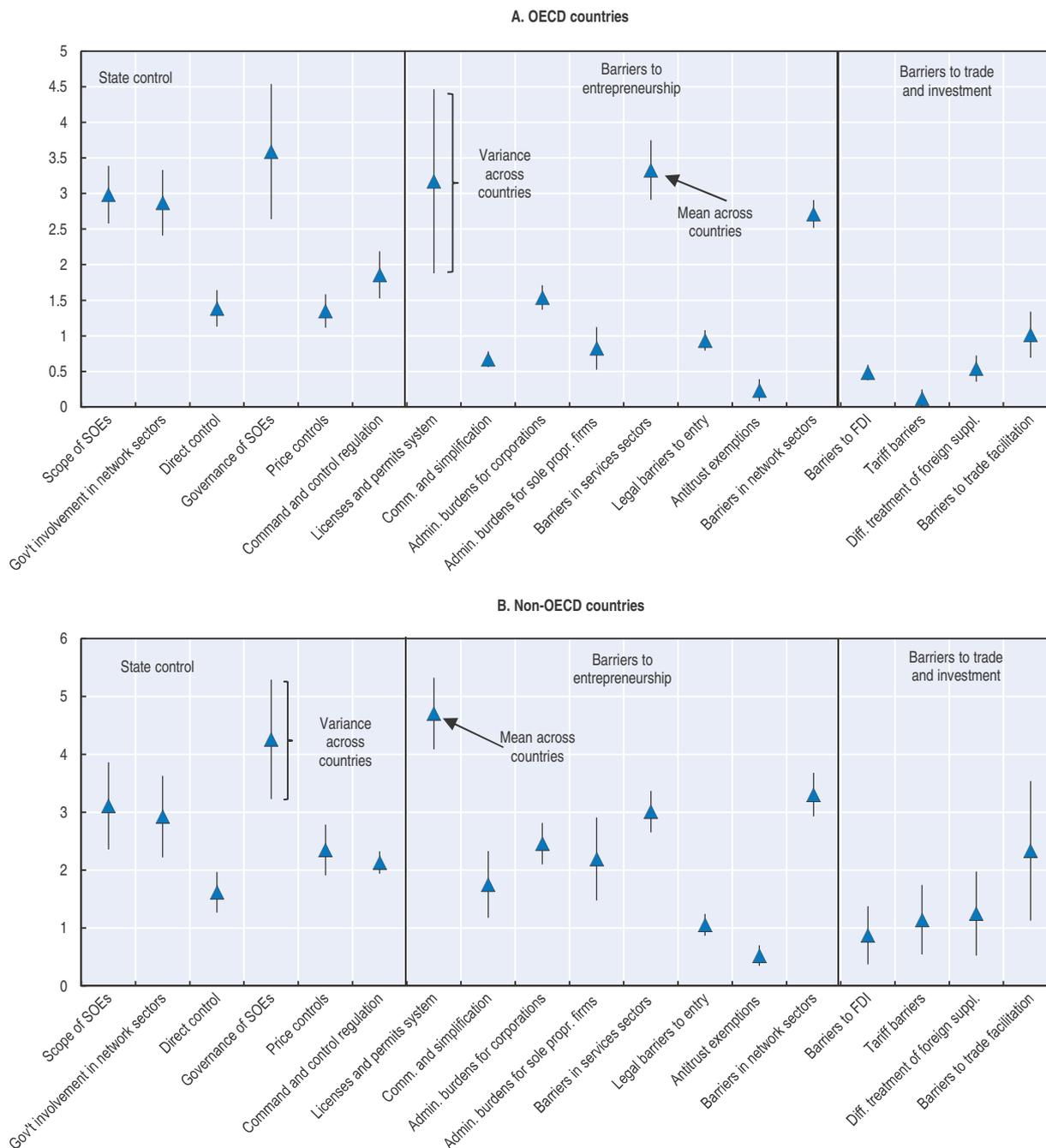
Note: Each panel shows the change in value of the overall PMR index between two vintages (vertical axis) against the level measured in the initial year. The regression line and correlation coefficient are added in each panel as an indication of the degree convergence in the stance of regulation, i.e. the extent to which most progress tends to be achieved in countries where regulation tends to be most stringent at the start of the period.

Source: OECD (2013), Product Market Regulation Database.

StatLink  <http://dx.doi.org/10.1787/888932984193>

Figure 2.15. **The scope for improvement remains significant in some areas**

Index scale 0 to 6 from least to most restrictive



Source: OECD (2013), Product Market Regulation Database.

StatLink <http://dx.doi.org/10.1787/888932984212>

Notes

1. The reported indicators for Brazil, China, Croatia, India, Latvia, Lithuania, Malta, Mexico, Poland, Romania, the Russian Federation and Turkey are based on preliminary estimates as some of the underlying data has not been validated with national authorities. Subsequent data validation may lead to revisions to the indicators for these countries.
2. The development of PMR indicators for countries covered for the first time has been done in co-operation with the world Bank for countries from Latin America and the Caribbean and in co-operation with the European Commission for non-OECD EU member countries.
3. More complete information and analysis on the results from the 2013 up-date and revision of the PMR set of indicators can be found in Koske et al. (2014).
4. This comparison assumes that the scales across policy areas are comparable so that a competition-friendly/unfriendly regulatory stance in one area is equally good/bad as a competition-friendly/unfriendly stance in another area. Since this might not be fully the case in practice, some caution is warranted in using these results.
5. The pair-wise correlations between the three high-level indicators are all around 0.5 or above.
6. In Figures 2.5 to 2.8, each bar shows the average score across the sectors represented on the chart (top of the bar) and the contribution of each sector to the average score. In the case of a few OECD countries and many non-OECD countries, information on one or more sectors is missing.
7. In the case of Spain, the indicator does not reflect the reforms implemented more recently.

Bibliography

- Bouis, R. and R. Duval (2011), "Raising Potential Growth After the Crisis: A Quantitative Assessment of the Potential Gains from Various Structural Reforms in the OECD Area and Beyond", *OECD Economics Department Working Papers*, No. 835, OECD Publishing, Paris.
- Bourlès, R., G. Cette, J. Lopez, J. Mairesse and G. Nicoletti (2010), "Do Product Market Regulations in Upstream Sectors Curb Productivity Growth: Panel Data Evidence for OECD Countries", *OECD Economics Department Working Papers*, No. 791, OECD Publishing, Paris.
- Conway, P., D. de Rosa, G. Nicoletti, and F. Steiner (2006), "Regulation, Competition and Productivity Convergence", *OECD Economics Department Working Papers*, No. 509, OECD Publishing, Paris.
- Conway, P., V. Janod and G. Nicoletti (2005), "Product Market Regulation in OECD Countries: 1998 to 2003", *OECD Economics Department Working Papers*, No. 419, OECD Publishing, Paris.
- Koske, I., I. Wanner, R. Bitetti and O. Barbiero (2014), "The 2013 Up-date of the OECD Product Market Regulation Indicators – Policy Insights for OECD and non-OECD countries", *OECD Economics Department Working Paper*, OECD Publishing, Paris, forthcoming.
- Nicoletti, G., S. Scarpetta and O. Boylaud (1999), "Summary Indicators of Product Market Regulation With an Extension to Employment Protection Legislation", *OECD Economics Department Working Papers*, No. 226, OECD Publishing, Paris.
- Nicoletti, G. and S. Scarpetta (2005), "Product Market Reforms and Employment in OECD Countries", *OECD Economics Department Working Papers*, No. 472, OECD Publishing, Paris.
- OECD (2009), *Indicators of Regulatory Management Systems*, Regulatory Policy Committee Report, OECD, Paris, www.oecd.org/gov/regulatory-policy/44294427.pdf.
- OECD (2012a), "Recommendations of the Council on regulatory policy and governance", www.oecd.org/gov/regulatory-policy/49990817.pdf.
- Wölfel, A., I. Wanner, T. Kozluk and G. Nicoletti (2009), "Ten Years of Product Market Reform in OECD Countries: Insights from a Revised PMR Indicator", *OECD Economics Department Working Papers*, No. 695, OECD Publishing, Paris, doi: <http://dx.doi.org/10.1787/224255001640>.

ANNEX 2.A1

This Annex provides further details on the structure, construction and coverage of the PMR indicators and discusses some methodological aspects.

The construction of PMR indicators: A bottom-up approach

The OECD's PMR indicators are based on a large amount of information on regulatory structures and policies that is collected through a questionnaire sent to governments in OECD and non-OECD countries. All of the questions are closed questions that can either be answered with numerical values (e.g. the number of bodies that need to be contacted to start a business) or by selecting an answer from a pre-defined set of menu options (e.g. the question whether a specific regulation exists can be answered with "yes" or "no"). The qualitative information is transformed into quantitative information by assigning a numerical value to each possible response to a given question. The coded information is normalised over a zero to six scale, where a lower value reflects a more competition-friendly regulatory stance.

The overall PMR indicator is constructed through a bottom-up approach (Figure 2.A1). In a first step, the numerical values assigned to each question are aggregated into 18 low-level indicators. These low-level indicators are then aggregated into seven mid-level indicators, which are in turn aggregated into three high-level indicators. At each step of aggregation, the composite indicators are calculated as weighted averages of their components. The aggregate PMR indicator is the simple average across the three high-level indicators *state control*, *barriers to entrepreneurship* and *barriers to trade and investment*. This bottom-up approach allows tracing indicator scores back to individual policies. The 18 low-level indicators cover the following topics:

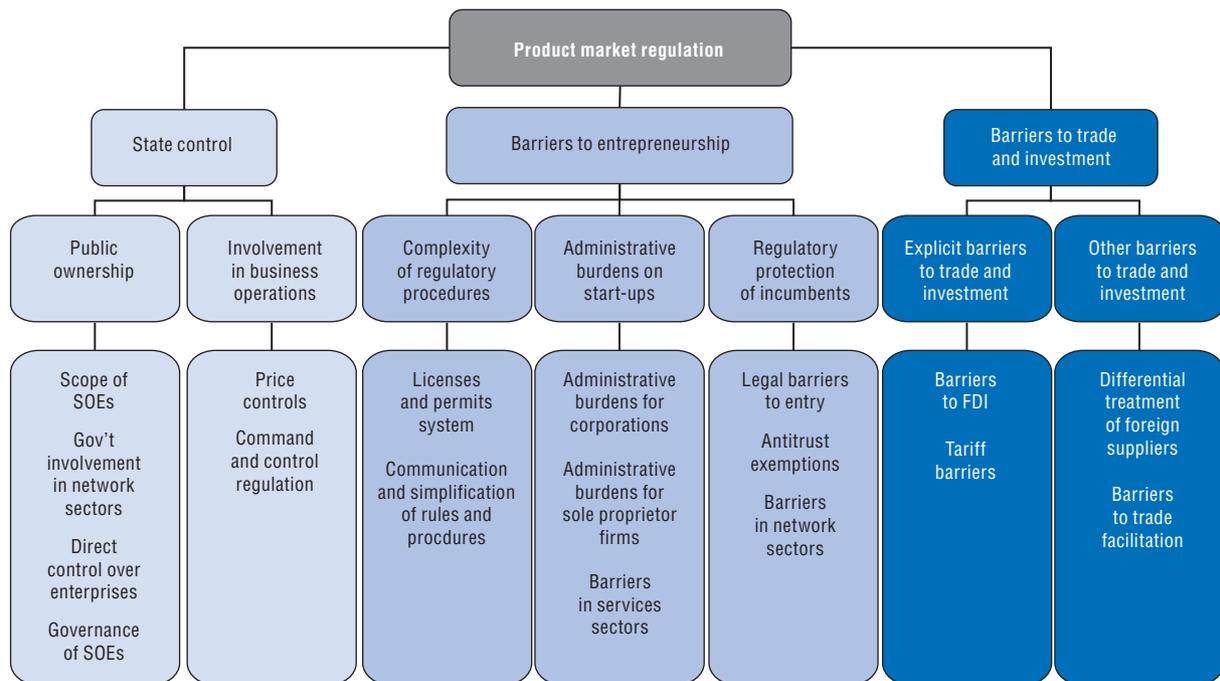
- *Scope of state-owned enterprises (SOEs)*: Pervasiveness of state ownership across 30 business sectors measured as the share of sectors in which the state controls at least one firm.
- *Government involvement in network sectors*: Government stakes in the largest firms in 6 network sectors (electricity, gas, rail transport, air transport, postal services and telecommunication).
- *Direct control over business enterprises*: Existence of special voting rights by the government in privately-owned firms and constraints to the sale of government stakes in publicly-controlled firms (based on 30 business sectors).
- *Governance of state-owned enterprises*: Degree of insulation of state-owned enterprises from market discipline and degree of political interference in the management of state-owned enterprises.

- *Price controls*: Extent and type of price controls in 8 sectors (air transport, road freight transport, retail distribution, telecommunication, electricity, gas, water, professional services).
- *Command and control regulation*: Extent to which the government uses coercive (as opposed to incentive-based) regulation.
- *Licenses and permits system*: Use of “one-stop-shops” and the “silence is consent” rule for issuing licenses and accepting notifications.
- *Communication and simplification of rules and procedures*: The government’s communication strategy and efforts to reduce and simplify the administrative burden of interacting with the government.
- *Administrative burdens for corporations*: Administrative burdens on creating a public limited company.
- *Administrative burdens for sole proprietor firms*: Administrative burdens on creating an individual enterprise.
- *Barriers in services sectors*: Entry barriers in professional services, freight transport services and retail distribution.
- *Legal barriers to entry*: Pervasiveness of barriers to entry in 20 business sectors as a share of sectors in which there are explicit legal limitations on the number of competitors.
- *Antitrust exemptions*: Scope of exemptions from competition law for public enterprises.
- *Barriers in network sectors*: Entry barriers in 8 network sectors (gas, electricity, water, rail transport, air transport, road freight transport, postal services and telecommunication) and degree of vertical separation in 3 network sectors (gas, electricity and rail transport).
- *Barriers to FDI*: Restrictiveness of a country’s FDI rules in 22 sectors in terms of foreign equity limitations, screening or approval mechanisms, restrictions on the employment of foreigners as key personnel and operational restrictions (e.g. restrictions on branching and on capital repatriation or on land ownership)
- *Tariff barriers*: Simple cross-product average of effectively applied tariffs.
- *Differential treatment of foreign suppliers*: Discrimination of foreign firms with respect to taxes and subsidies, public procurement, entry regulation and appeal and procedures.
- *Barriers to trade facilitation*: Recognition of foreign regulations, use of international standards and international transparency of domestic regulation.

The PMR indicators are complemented by a set of indicators that summarise information not by regulatory domain, but by sector. These indicators cover seven network sectors (electricity, gas, rail transport, air transport, road transport, post and telecom) and two services sectors (professional services and retail trade). The indicators on the electricity, gas, post and telecom sectors also include information on market structure, which is not part of the PMR indicators since the latter focuses solely on policy settings.

The PMR indicators are based on “objective” data about laws and regulation as opposed to “subjective” assessments by market participants in opinion surveys. Hence, they capture the “de jure” policy settings. While this makes the indicators more comparable across countries by insulating them from context-specific assessments, it also entails a number of limitations. For instance, informal regulatory practices such as administrative guidelines or self-disciplinary measures by professional associations are only captured to a very limited extent by the PMR indicators. Also the way in which

Figure 2.A1. The tree structure of the new PMR indicator set



regulations are applied by authorities is hardly reflected in the PMR indicators, even though enforcement can have a considerable impact on the level of competition.

The PMR methodology: New features and weighting techniques

The 2013 update of the PMR indicator set introduces two changes to the methodology. First, the scoring and aggregation system has been modified to make the overall indicator value less sensitive to changes in particular data points, to align the scoring system across sectors and to move to equal weights also at the lowest levels of aggregation. Second, the new methodology makes use of a broader set of questions to maintain the relevance of the indicator set in the context of evolving competition issues in OECD countries.

The additional information covers a broad range of different regulatory areas. The low-level indicators that are the most affected by the incorporation of additional data are *scope of SOEs*, *legal barriers to entry* and *price controls* (extension of the sector coverage), *use of command and control regulation* (refinement of the component on shop opening hours), *communication and simplification of rules and procedures* (refinement of both the communication and simplification components), and *barriers in network sectors* (refinement of the entry component and extension of this component to the water services sector). A new low-level indicator was created to cover the *governance of state-owned enterprises* as this topic has gained more and more attention in recent years. The *barriers to trade and investment* component was significantly overhauled to make use of data that was recently collected by the OECD Directorate of Trade and Agriculture for the Services Trade Restrictiveness Index (STRI).

Composite quantitative indicators that are derived from lower-level qualitative information are prone to aggregation (and therefore measurement) errors, which ultimately reflects uncertainty regarding the appropriate weighting scheme. First, the

choice of equal weighting is ultimately arbitrary, and the aggregate indicator values and cross-country positions would be somewhat different if alternative weighting scheme were applied. *Second*, the aggregate indicator values depend on the nesting structure of the indicators, which is again reflected in the weights attributed to each low-level indicator. For instance, the low-level indicator on *scope of SOEs* has a lower weight in the aggregate PMR indicator than the low-level indicator on *price controls*, since the former gets a weight of one-eighth in the high-level indicator on *state control* while the latter gets a weight of one-fourth.

In theory weights should be used that reflect the relative importance of each lower-level indicator for market outcomes, but in practice the latter is unknown. The PMR indicator set assigns equal weights at each step of aggregation. To investigate how sensitive the cross-country differences in the various dimensions of product market regulations are to the choice of the weighting scheme, a random weights technique is applied.

The random weights technique consists of using randomly drawn rather than equal weights to aggregate the 18 low-level indicators into the three high-level indicators. Starting with the low-level indicators, the technique uses 10 000 randomly generated weights to calculate 10 000 values of the three high-level indicators. The high-level indicators are directly computed from the low-level indicators to avoid making assumptions about the nesting structure of the mid-level indicators. The overall PMR indicator is then computed as the simple average of the three high-level indicators, i.e. at this final step of aggregation no randomisation is applied. The reason is that randomisation at such an aggregate level would lead to very wide confidence intervals. The random weights are drawn from a uniform distribution between zero and one and are then normalised so that they sum to unity.¹ The distributions of values of the high-level indicators and the overall PMR indicator are then used to calculate 90% confidence intervals around the mean value.²

Notes

1. In absence of knowledge about the distribution of weights, the choice of a uniform distribution was made for simplicity.
2. For the *state control* and *barriers to entrepreneurship* components the indicator values presented in Figures 2.2 and 2.3 do not lie in the middle of the confidence bands because the mid-level indicators do not consist of the same number of low-level indicators, while average value that is generated by the random weights analysis implicitly assumes that this is the case.