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SERVICES TRADE RESTRICTIVENESS, MARK-UPS AND COMPETITION

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This report explores the relationship between services trade policies and mark-ups at the firm level, taken as a measure of competitive pressure. Restrictive regulations are found to enable firms to charge higher mark-ups in a majority of services sectors, suggesting ample scope for pro-competitive gains from trade liberalisation. Barriers to establishment consistently enable incumbent firms shielded from competition to raise their prices, while a lack of regulatory transparency and complex administrative procedures tend to add to all firms' operating expenses. A "tax equivalent" of trade-restrictive regulations is then inferred from the abnormal price-cost margin of domestic firms in each service sector. These estimates indicate the magnitude of the welfare costs of regulatory trade restrictions across sectors and countries. The sectors with the highest average tax equivalents of STRI indices are broadcasting, construction, storage, and air and maritime transport, while those with the lowest averages are road transport, architecture and cargo-handling. There is however considerable variation between countries in all sectors.

Keywords: Services, competition, mark-ups, trade liberalisation, regulation, services trade restrictions

JEL: D22, F13, F14, F61, L11, L8, L9

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EXECUTIVE SUMMARY

This report explores the relationship between OECD Services Trade Restrictiveness (STRI) indices and mark-ups at the firm level, which are taken as a measure of competitive pressure. As such, it contributes to quantifying the costs of services trade restrictions for the sectors and countries included in the STRI database. It focuses on the pro-competitive gains from trade as a major source of economic benefits from unilateral or negotiated liberalisation.

Using data from the financial statements of services firms in 42 countries and 19 sectors from the BvD ORBIS database, the study analyses the direction in which services trade and competition policies affect profit margins, and which types of policies matter sector by sector, while taking into account the impact of various country and enterprise characteristics on profitability. The impact assessment of STRI measures on mark-ups encompasses the effects of restrictions creating both fixed and variable costs of operation, and affecting all modes of supply.

Restrictive regulations are found to enable firms to charge higher mark-ups in a majority of services sectors, reflecting the fact that impediments to trade raise the cost of entry and operations for foreign firms and more broadly create a policy environment that discourages new entrants. In particular, barriers to establishment consistently enable incumbent firms shielded from competition to raise their prices. Conversely a lack of regulatory transparency and complex administrative procedures tend to be associated with lower price-cost margins. This finding suggests that such regulatory restrictions are mostly cost-raising, in the sense that they add to all locally established firms' operating expenses.

A "tax equivalent" of trade-restrictive regulations can be inferred from the abnormal price-cost margin of domestic firms in each service sector. Estimates of the regulatory tax associated with trade restrictions in each sector and country are presented based on the main results of the empirical analysis. A breakdown into tax equivalents arising from different types of regulatory restrictions is also presented. The sectors with the highest average tax equivalents of STRI indices are broadcasting (38%), construction (21%), storage, and air and maritime transport (19%), while those with the lowest averages are road transport, architecture and cargo-handling. There is however considerable variation across countries in all sectors.

The tax equivalents presented in this report are necessarily subject to statistical uncertainty, which is made explicit by presenting confidence intervals along with the point estimates. It is to be kept in mind that rather than interpreting the point estimates as a highly precise quantification, they should be taken as an indication of the magnitude of the welfare costs of regulatory restrictions and their relative importance across sectors, countries and policy categories.

1. Introduction

The OECD Services Trade Restrictiveness Indices provides a quantitative measure of the level of trade restrictiveness in 19 services sectors and 42 countries. The indices summarise the state of regulatory barriers to trade in services on a scale of 0 to 1, thereby ensuring full comparability across countries and over time (Geloso-Grosso et al., 2015).[1] While there is ample suggestive evidence that the costs of such restrictions are substantive for the economies imposing them as well as for their trading partners (Nordås and Rouzet, 2015), the "how much" question is of paramount relevance when it comes to prioritising policy reforms. Converting the STRIs into trade cost equivalents will enable a deeper impact assessment of policy scenarios.

Methodologies to quantify the economic importance of regulatory services barriers rely on either price wedges or the comparison between actual and benchmark services trade. This report delves into price signal based estimation by exploring the relationship between STRI indices and mark-ups at the firm level, which are taken as a measure of competitive pressure. It analyses the direction in which services trade and competition policies affect profit margins, and which types of policies matter sector by sector. A "tax equivalent" of trade-restrictive regulations can then be inferred from the abnormal price-cost margin of domestically established firms.

Different methodological approaches to estimate the trade costs of regulatory restrictions have their strengths and weaknesses. The strategy pursued in this paper complements estimations based on firm- or sector-level trade data in several respects. One advantage is the availability of data on firms' price-cost margins, at least for a subset of firms, in almost all countries and sectors included in the STRI – while the existence and quality of detailed trade in services data varies greatly across countries, and it rarely covers distribution, logistics or audio-visual services. Furthermore, profit margins are affected by both fixed and variable costs and reflect the competition between domestic and foreign firms through all modes of supply, including commercial establishment on which detailed flow data is sparse. Looking directly at pricing information also enables us to derive tax equivalents from analytical results with relatively few assumptions about consumer behaviour.

When relating services trade and investment regulations to the profitability of local firms, the underlying hypothesis is that protection from foreign entry limits competition in local markets and increases the market power of existing firms. Barriers to entry then generate two types of inefficiencies which drive up prices. First, the profit-maximising strategy for incumbent firms is to raise prices and lower quantities ("allocative inefficiency"), leading to higher mark-ups and a loss for consumers. Second, the incentives to innovate in order to improve productivity and cut costs may be reduced insofar as higher costs are more likely to be passed on to consumers ("dynamic inefficiency"). The market structure in a given country and sector is however affected not only by policy-induced barriers to entry but also by other factors such as sector-specific economies of scale, network externalities or demand-side characteristics. This paper attempts to isolate the contribution of trade and investment policy.

A priori, the impact of trade restrictions on the profitability of domestic services firms could go in either direction depending on the nature of the costs entailed. On the one hand, by raising the cost of entry and operations disproportionately for foreign firms, they limit the attractiveness of the market to foreign competitors and enable local firms to charge higher prices for a given cost structure. The same prediction holds if restrictive regulations create fixed costs for all firms (including domestic ones) so that a higher price-cost margin is needed to recoup those initial investments. On the other hand, services regulations could narrow firms' profit margins if they create recurring variable costs for all firms and demand is sufficiently sensitive to prices to prevent a full pass-through of these costs to consumers. In practice we expect the first channel to dominate where most of the regulations recorded in the STRI are entry restrictions or impediments to operations specific to foreign firms, and the second to dominate where restrictions primarily affect ongoing operations on a non-discriminatory basis and a large number of firms are active in each market.

The use of price-cost margins to estimate the impact of services trade regulations has been pioneered by the Australian Productivity Commission (Findlay and Warren, 2000). Similar approaches have been applied by Dihel and Shepherd (2007) to calculate tax equivalents of trade

1. The STRI database and indices are available at http://oe.cd/stri.

policy indicators for banking, insurance, telecoms, engineering and distribution services. More recent studies include Bottini et al. (2011) on banking and telecoms in four Middle East and North Africa countries, and Fontagné and Mitaritonna (2013) on distribution and telecoms in 11 emerging countries.

More broadly, the literature on services has established that services are subject to larger trade frictions than goods, or in other words to less international exposure (Miroudot et al., 2013) and that competition in services is overall less intense than in goods sectors (Bottini and Molnar, 2010). While not pretending to provide a single explanation for either of these two stylised facts, this paper links them through the lens of services trade restrictiveness.

Against this backdrop, the report is organised as follows. Section 2 describes the data and methodology. Section 3 presents a descriptive analysis of competition and profitability in the services and countries considered. Section 4 analyses the contribution of services trade restrictions to mark-ups and Section 5 derives estimates of tax equivalents in selected sectors. Section 6 concludes.

2. Methodology and data

The approach pursued in this paper is to use firm-level financial data from balance sheets and income statements to infer price-cost margins. The magnitude of economic costs is then calculated by econometrically relating firm-level margins to STRIs while controlling for other determinants of profitability. Costs estimated from this method can be labelled "tax equivalents" in order to distinguish them from "tariff equivalents" derived from trade data.

Methodological approach

The empirical model relates firm-level profit margins (as a measure of mark-ups over marginal costs) to the STRI indices of their sector of primary activity, along with firm and country characteristics.[2] It is estimated sector by sector and the coefficients on the STRIs indicate the abnormal positive or negative margin associated with regulatory restrictions. More specifically, we run the following specification:

$$Markup_{isc} = \alpha + \beta STRI_{sc} + \gamma X_{isc} + \delta Z_{sc} + \varepsilon_{isc}$$

The subscript *i* indicates the firm dimension, *s* the sector dimension and *c* the country dimension. A set of controls is included to disentangle the specific contribution of the STRI from other determinants of profitability. The existing literature suggests that companies' price-cost margins are influenced by their size, market share, demand growth, capital intensity, and productivity or operational efficiency. Measures capturing these factors are entered in the right-hand side (a set X_{isc}). At the country level, market size can matter as well as some specific indicators for each sector, which are detailed below. Z_{sc} denotes the set of variables that vary at the country level for each sector.

An additional difficulty comes from the fact that the variables are defined at several levels (firm and country). There are two options to deal with this issue. One is to cluster the standard errors at the country level, which is the approach chosen in this paper. Another option is to perform a two-stage estimation (as in Dihel and Shepherd, 2007) where the first stage estimates the relationship between firm-level margins, firm characteristics and country fixed effects, and the second stage estimates the contribution of the STRIs and other country-level variables to the first-stage country fixed effects. However in the present case, the relatively small sample available for the second stage (at most 42 countries) favours the single-step approach.

Potentially heterogeneous effects of restrictions on different types of firms can be explored with this methodology. Barriers to trade and competition may have a different impact on firms located in the same country depending on their size and productivity. We test for a differential

2. This report uses the terms "mark-ups", "price-cost margins" and "profit margins" interchangeably. Strictly speaking, we are measuring profit margins or profitability, which are used as a proxy for firms' mark-ups.

impact of regulations by including interactions of these factors with STRI indices. Impediments to foreign investment are also likely to affect differently domestically-owned firms and multinational enterprises (Nordås and Ragoussis, 2015). We explore this dimension with information on the country of each firm's global ultimate owner.

The main drawback of the method is that while the impact of trade restrictions on price-cost margins can be estimated, the separate contributions of the price and cost channels cannot. We expect restrictive regulations to raise prices as trade barriers limit competition in local services markets, enabling domestic firms to charge higher mark-ups over variable costs than under fully competitive conditions. It may also be that the compliance cost of regulations raises costs across the board, but these additional costs are more likely to be passed through to customers if high entry barriers limit competition in the output market. Standard accounting data enables us to retrieve profit margins before fixed costs, but more detailed data on prices charged for services and costs incurred are few and far between. Therefore we will not be able to disentangle whether a given impact of the STRI on the price-cost margin comes from costs or rents. This limitation is likely to bias downward our estimates of the impact of services restrictions on profit margins; hence the derived tax equivalents should be taken as conservative measures.

Box 1. Theory and channels

The hypothesis that openness to trade puts competitive pressure on local firms to reduce their mark-ups is, perhaps surprisingly, not a prediction of the workhorse trade models. Most "new" trade models rely on increasing returns to scale and constant elasticity of substitution (CES) preferences, in part for analytical convenience, but a feature of such models is that all firms charge an identical and constant mark-up over marginal costs. In those cases there is no pricing-to-market.

There are however several models that provide theoretical underpinnings to our main hypothesis and predict a fall of industry-level mark-ups upon trade liberalisation. In Melitz and Ottaviano (2008), mark-ups increase in firm productivity but also depend on the toughness of competition, determined by both the number of competitors and their average price. Lowering variable trade barriers intensifies product market competition and has two competing effects. On the one hand, the least efficient firms are driven out of the market, so that surviving firms are the most efficient ones, i.e. those that charge the highest mark-ups. On the other hand, enhanced competition leads each firm to lower its price, inducing a downward shift in the distribution of mark-ups which always trumps the effect of exit.

In addition, mark-ups are increasing in the size of fixed costs (as opposed to per-unit costs) insofar as for a given marginal cost, a larger operational profit is required to recover higher fixed costs. Hence to the extent that the cost of services restrictions is at least partly in the form of fixed costs, lifting such restrictions is expected to result in lower profit margins through this additional channel. Melitz and Ottaviano (2008) also find that firms charge lower mark-ups in larger markets, which guides our choice of market size as a control variable.

Similar insights are drawn from the models of Atkeson and Burstein (2008), Feenstra and Weinstein (2010) and Edmond et al. (2015). In these models, each firm's mark-up over marginal cost is an increasing function of the firm's own market share. The removal of trade barriers then yields pro-competitive gains as it leads to the entry of new foreign firms, which reduces market concentration. As long as the average market share per firm is reduced, the average mark-up of the sector is expected to fall as well. This framework could suggest controlling for the market structure in each service sector in the estimation. However it should be kept in mind that market concentration can hardly be considered as independent from trade and competition policies.

Firm-level data

The firm-level information on profit margins, sales and other characteristics is drawn from the Bureau van Dijk (BvD) Orbis database. Orbis is a commercial database providing financial and ownership information on a broad sample of companies worldwide.[3] The financial statements are harmonised according to standardised accounting rules to ensure international comparability.

3. This report uses the September 2015 vintage of the BvD Orbis database. The coverage of services firms for OECD countries and large non-member economies is close to comprehensive for public companies but varies by country for private firms. The methodology may thus be more robust for sectors where large listed companies account for a larger part of the market. See Kalemli-Ozcan et al. (2015) on the representativeness of the global Orbis database.

We extract financial data on firms established in the 42 countries included in the STRI database with their primary activity in services sectors.[4] There is sufficient information for the following STRI sectors: computer services, construction, telecoms, distribution, professional services (composed of architecture, engineering, legal and accounting/auditing services), transport services (including air, maritime, road and rail transport), courier and postal services, audio-visual services (broadcasting and motion pictures), logistic services (cargo-handling and storage/warehousing services) and financial services (commercial banking and insurance). Financial statements of commercial banks follow a different format and are drawn from separate modules of Orbis. After excluding very small firms having less than three employees, our sample comprises 2 158 000 firms with sufficient information on profit margins. The number of firms in each sector and country is shown in Annex 1, Table A.2. The sectors with the largest numbers of firms in the sample are distribution services (covering wholesale and retail trade), construction, computer services and road transport.

It should be pointed out that the coverage of services firms is not fully representative of global services industries. Orbis is known to over-represent European countries and also has relatively large coverage of Japan, Korea and the Russian Federation, but its coverage of the American continent and other Asian economies is much narrower. Detailed financial data is also less commonly available for smaller and younger firms than for large enterprises. For countries and sectors where Orbis contains very few firms with full financial information, we complement the dataset with data on public companies extracted from the FactSet Fundamentals database. While the coverage is improved to some extent by this procedure, it remains highly unbalanced across countries. The necessary assumption will be that given the characteristics that we control for, the business models and pricing behaviour of firms in the dataset do not deviate significantly from those of non-sampled firms in the same industry.

For all sectors except commercial banking, we use the ratio of EBITDA (earnings before interest, tax, depreciation and amortisation) over net sales as a measure of the profit margin. For commercial banking, the net interest margin is the proxy for mark-ups. A detailed list of other firm-level variables considered for the estimation is presented in Annex 1, Table A.3. For all sectors, we posit that the profit margin is likely to be influenced by: firm size (total sales, total assets or number of employees); productivity (measured as total factor productivity, sales per employee or value added per employee)[5]; capital intensity; firm growth; whether the firm is part of a multinational enterprise; export orientation; and sector-specific determinants of market structure and prices, which will be introduced in the discussion of each sector. For all variables, we take average values by firm over 2012-2014 to match the period covered by the STRI as closely as possible. Annex 2 describes the procedure implemented to identify implausible or inconsistent values and impute missing values where possible.

Country-level data

At the country level, mark-ups in any sector can be influenced by the size of the domestic market if larger markets are characterised by more intense competition among domestic providers. We therefore include the GDP (in logs) of each firm's country of establishment in the estimation.

Moreover, sector studies suggest other determinants of profit margins such as demand pull factors specific to each sector. For telecoms, mobile and broadband subscription rates per 100

4. The reported primary NACE Rev. 2 sector is matched to the STRI classification as shown in Annex 1, Table A.1.

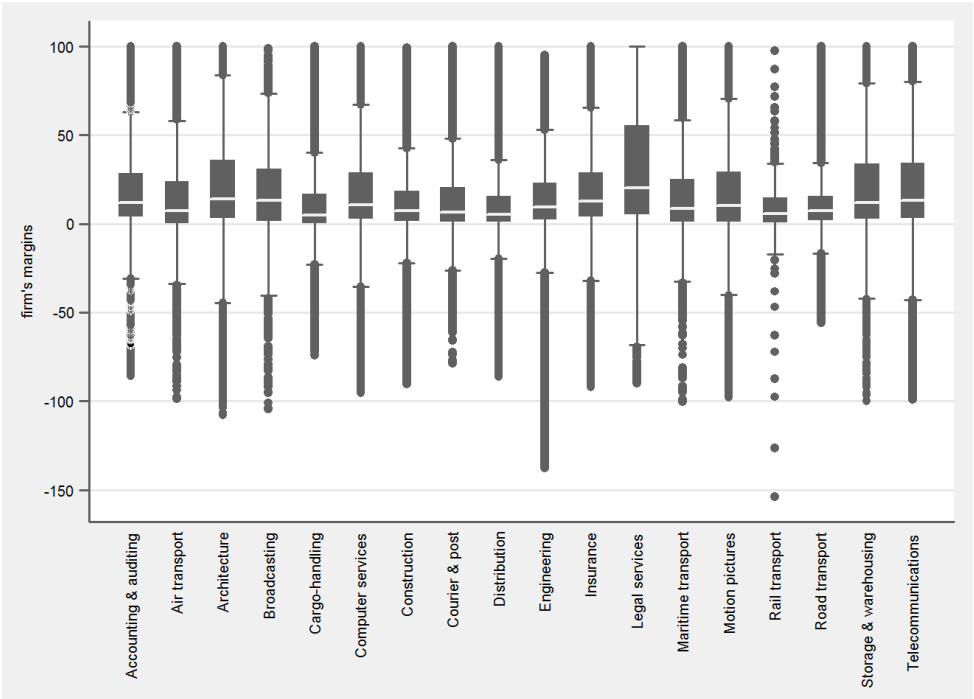
5. Total factor productivity is estimated using the Levinsohn-Petrin methodology, which requires information on sales or value-added, number of employees, fixed assets and costs of materials. TFP is a more accurate measure of firms' productive efficiency than labour productivity, but comes at the cost of data requirements that reduce the sample for some countries (see Gal, 2013). In the absence of information on firm-specific prices of services sold, sales and other variables expressed in monetary units are deflated with country-level GDP deflators. Empirical measures of TFP and labour productivity then reflect not only "true" efficiency but are also to some extent influenced by the firm's pricing power (De Loecker and van Biesenbroeck, 2016; Forlani et al., 2016). The effect of unobserved firm-level prices would be to bias our regression estimates downwards.

inhabitants are used as proxies for the size of the sector, and recent growth in industry-level revenue captures the speed of its development. For engineering, demand-side factors include the share of high-tech exports in total manufacturing exports and the share of R&D expenditure in GDP. For transport, we also consider the importance of trade in goods with the openness ratio and merchandise trade growth. For banking, net interest margins are influenced by the inflation rate prevalent in the country as well as regulatory liquidity and capital requirements. For insurance, we take into account the development of the private insurance market with insurance penetration rates, i.e. the share of life and non-life insurance premiums in GDP. The sources of these variables are listed in Annex 1, Table A.3.

3. Competition and profitability in services

Before analysing the relationship between services trade restrictions and mark-ups, this section briefly depicts the patterns of profit margins across sectors and countries. The distribution of firm-level margins by service sector is presented in Figure 1, along with basic statistics in Table 1. The highest average margins and spread are found in legal services, reflecting the market power that arises from the highly customised nature of those services but also barriers to entry that are prevalent in most economies. The same applies to a lesser extent to other professional services. Telecommunications and computer services also exhibit large average profit margins. In telecoms, substantive investments in tangible equipment are required to operate, which may create large entry and fixed costs. In computer services, the high intensity in intangible knowledge capital may be an important driver of profitability. The same sectors are among those with the most dispersion in mark-ups as indicated by the gap between the first and third quartiles.

Figure 1. Distribution of margins across firms by sector, 2012-2014 average



Source: Orbis and own calculations. For each sector, the outside limits of the box show the 25th and 75th percentiles of the distribution of estimated margins (each observation is the average margin for a given firm over the period 2012-2014, in %). The line inside the box indicates the median. The end points represent the most extreme observations within 1.5 times the inter-quartile range.

Table1. Firm-level profit margins: Summary statistics

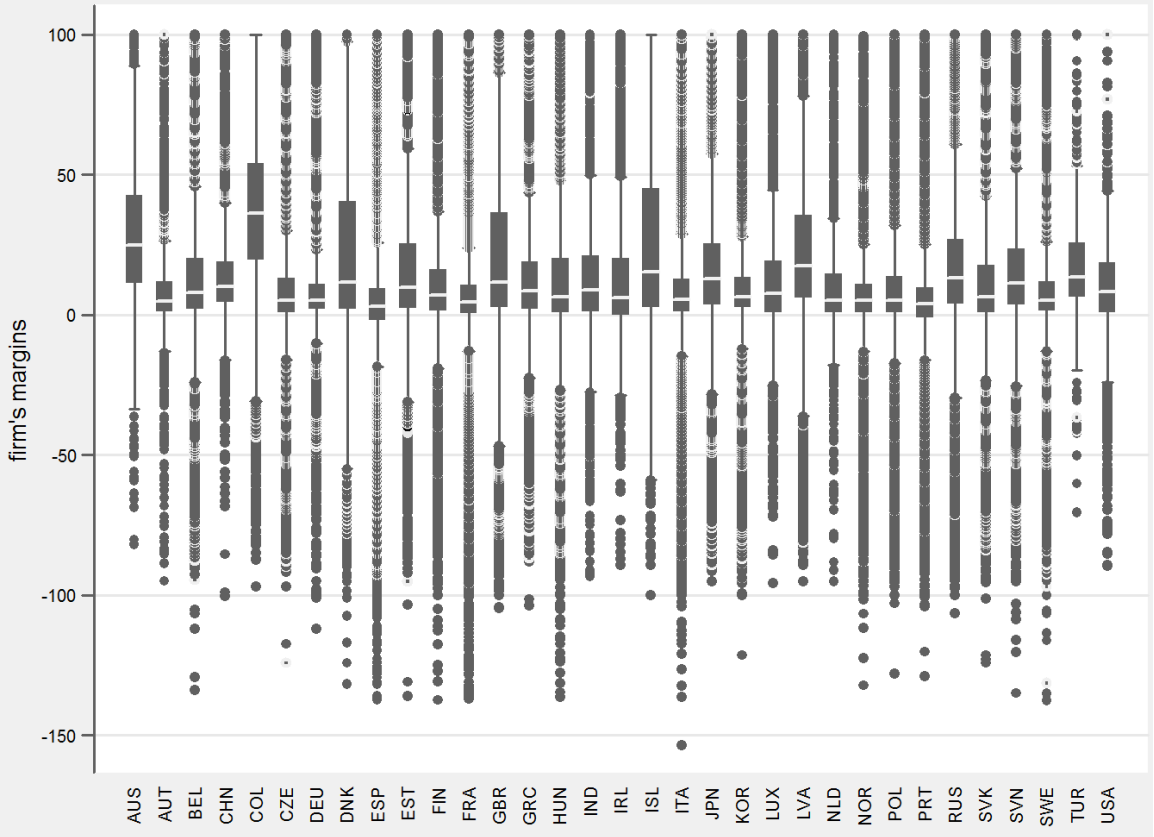
STRI sector	Number of observations	Mean	Weighted mean	Standard deviation	Weighted standard deviation	Minimum	Maximum
Accounting & auditing	53 751	19.72	15.07	27.34	16.20	-85.62	100
Air transport	1 995	14.30	9.62	31.46	8.07	-98.58	100
Architecture	35 485	21.34	15.82	30.81	18.93	-107.71	100
Broadcasting	1 641	15.16	25.97	30.55	12.86	-104.35	98.95
Commercial banking	3 044	3.14	2.21	2.25	1.69	0.03	16.17
Computer	120 244	18.39	17.73	29.26	16.56	-95.52	100
Construction	751 451	11.74	8.56	20.75	13.38	-90.26	99.33
Courier & Post	4 411	14.77	10.25	27.21	8.13	-78.48	100
Distribution	947 929	10.25	7.19	20.88	10.16	-86.21	100
Engineering	61 576	13.39	9.39	25.38	13.47	-137.66	94.90
Insurance	20 679	19.52	16.86	27.45	23.46	-92.13	100
Legal services	17 325	32.36	25.55	36.58	20.76	-90.15	100
Logistics, cargo-handling	4 961	11.41	12.87	25.68	15.71	-74.08	100
Logistics, storage & warehousing	8 617	21.44	10.92	30.66	17.25	-100	100
Maritime transport	2 472	14.88	13.05	27.34	16.63	-100.34	99.84
Motion pictures	18 271	15.91	14.91	29.79	17.66	-97.95	100
Rail transport	308	8.03	34.26	23.11	11.83	-153.81	97.70
Road transport	89 767	11.71	9.77	20.12	14.37	-55.91	100
Telecommunications	14 130	20.36	31.45	30.07	19.25	-99.18	100
Total	2,158,057	12.23	6.18	22.60	11.05	-153.81	100

Source: Orbis and own calculations. Each observation is the average margin for a given firm over the period 2012-2014, in %. For weighted means and standard deviations, the weights are total sales. For commercial banking, margin is measured with a different methodology (net interest margin) and therefore not fully comparable with other sectors.

In sales-weighted terms, the highest profit margins are found in rail transport, telecoms and broadcasting, indicating that the largest providers charge higher mark-ups for these services. This observation is likely to reflect the oligopolistic nature of network sectors where the high initial cost of building and expanding a network leads to a limited number of large-scale infrastructure owners with market power. Rail transport is the most striking example, where the sector is composed of few firms per country typically split between large, highly profitable firms and small companies realising losses or very narrow profit margins. In all other sectors, average sales-weighted profit margins fall short of simple averages. This indicates that in non-network services, either smaller firms cater to niche markets where they can charge higher profit margins, or competition is more intense, making high mark-up firms less competitive and thus less able to grow.

Figure 2 shows the distribution of profit margins by country for economies where the total number of observations is more than 1 000. It should be kept in mind that the cross-country differences are driven both by the relative levels of firms' mark-ups across countries in the same industry and by the sector composition of the sample in each country.

Figure 2. Distribution of margins across firms by country, 2012-2014 average



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.

Source: Orbis and own calculations. For each sector, the outside limits of the box show the 25th and 75th percentiles of the distribution of estimated margins. The line inside the box indicates the median. The end points represent the most extreme observations within 1.5 times the inter-quartile range. Countries with less than 1 000 firms are not shown, although used in the analysis. Commercial banks are not included in this figure as the margin data is not fully comparable with other sectors.

4. Trade restrictions and profit margins in services

In this section the determinants of profit margins in 19 services sectors are analysed following the methodology outlined in Section 2. In general, a positive sign on the STRI index or its sub-components is interpreted as rent-creating regulation, meaning that measures restricting trade and competition enhance the pricing power of domestic firms and drive mark-ups upward. We expect this effect to prevail in particular in oligopolistic markets where few firms are present, and with respect to restrictions on entry and discriminatory regulation. A negative sign on the STRI score or its sub-components is interpreted as excessive cost-creating regulation, where the compliance cost is a drain on firms' profit margins. We expect the cost impact to dominate in sectors where the market is relatively atomised with a sufficient number of active firms – each having sufficiently small market share – to prevent a full pass-through of extra costs into prices, and in the case of restrictions affecting recurring operations or the general business environment.

For each sector, the standard specification controls for potential determinants of profitability including foreign ownership, total factor productivity, capital intensity, sales growth and firm size measured by either sales, assets or number of employees.[6] Consistent with theoretical priors, we

6. A set of regressions (unreported) was also run including the share of foreign sales in total sales as an indicator of international orientation, but this variable is not available for a large share of the sample (at most 13% of the observations in the original samples contain information on export sales). It was therefore excluded from the main specifications. The results obtained with labour productivity instead of TFP were also similar.

find that firms with higher productivity are more profitable across the board. In all sectors, firms that feature higher capital intensity of production also have higher margins. Considering that profit margins are calculated before depreciation and amortisation of fixed capital, if firms have pricing power, they optimally charge a higher mark-up to recoup the cost of expensive investments in physical assets. Moreover, building an extensive and high-performing physical network can be a source of competitive advantage in network services which are heavily infrastructure-dependent. Faster-growing firms are also able to extract higher profit margins in almost all sectors.

Being foreign-owned is associated with narrower margins, with two potential explanations. On the one hand, multinational firms may be more efficient (even after holding total factor productivity constant), with leaner overhead cost structure, and thus more able to compete aggressively in prices. Alternatively, lower profit margins of foreign-owned companies may be a sign of discriminatory regulation that imposes a disproportionate burden on their profitability relative to domestic firms. Lastly we introduce GDP as an indicator of market size, along with variables capturing the development of the sector where relevant. Holding other factors constant, firms' margins are lower in countries with higher GDP, or in other words competition tends to be more intense in larger markets.

A baseline specification is identified for each service category, taking into account the specificities of the sector. This baseline specification is used to disentangle the effects of different types of policy measures, such as discriminatory versus non-discriminatory barriers or restrictions on establishment versus operations.[7]

Policy measures that restrict trade, investment or competition may not affect all firms in a similar fashion. Not all types of firms may be able to extract higher profit margins from protective policies, just like not all firms may be equally equipped to deal with the administrative costs of complying with burdensome regulations. Size, productivity and multinational status are likely to matter in determining how firms respond to the policy environment. We explore the differential impact of the STRI on mark-ups along these dimensions by including interactions of the STRI indices with an indicator of foreign ownership and with quartiles of the size and productivity variables.

The detailed regression results are shown in Annex 3. Their main insights are described below sector by sector.

Telecoms

The results for the telecoms sector are presented in Table A.5. We introduce three variables to capture the stage of development and speed of change in the telecoms market: mobile penetration, broadband density and recent growth in total revenue from telecommunications services. Industry revenue growth is never a significant predictor of firm-level margins, and is therefore dropped from the baseline specification. A higher broadband density is associated with lower profit margins, which suggests that mark-ups tend to fall as markets mature.[8] Firm size as measured by total assets or sales takes a negative sign once we hold capital intensity constant, indicating that the gains from economies of scale are to some extent offset by firm strategies of growing by cutting margins to expand their customer base.

The coefficient on the aggregate STRI index is positive through not statistically significant. In this sector where typically few providers compete head-to-head and a historical incumbent often has a dominant market share with ownership of the most extensive infrastructure network, the STRI mostly records entry restrictions and the lack of pro-competitive regulation levelling the playing field between the incumbent and new providers. High STRI scores indicate that the regulatory framework does not guarantee a competitive environment and enables established

7. Across almost all sectors, barriers to establishment are significantly associated with higher price-cost margins. This is consistent with the theoretical insight that where entering a market is more costly, fewer firms are present but they charge higher mark-ups to make up for the initial investment. There is therefore strong evidence that the restrictions entailed in the STRI impose economically significant fixed costs over and above the costs that are of a per-unit nature.

8. One must however be cautious about endogeneity: it may also be that in environments with more barriers to entry, mark-up pricing restrains the development of the market.

large telecom operators to charge higher prices than would be the case under healthy competition.

Splitting the index by policy areas further reveals that barriers to competition are among the main measures pushing up mark-ups. A high score in this area indicates that the competition law and its enforcement fail to prevent dominant operators from abusing their market power, which then turns into high prices charged to consumers and businesses. However the sub-indicator for regulatory transparency and administrative requirements yields a negative sign, suggesting that the compliance burden of excessive red tape and the lack of predictable rules raise operating costs across the board.

Computer services

Table A.6 shows the regression results for computer services, including data processing, hosting, software and related consultancy services. As in the telecom sector, higher broadband density is associated with lower mark-ups charged by computer services providers. The negative signs on the aggregate STRI indicators suggest that trade restrictions are likely to compress margins by increasing the costs of doing business in the sector, especially as regards non-discriminatory restrictions related to barriers to competition and lack of regulatory transparency. The costs created by those regulatory restrictions appear to be borne primarily by the least productive firms, possibly because they are least able to pass through those costs into their output prices without losing competitiveness.

Construction

Table A.7 reports the regression results for construction. The aggregate STRI score is positive across the different specifications and its discriminatory component is statistically significant. The results indicate that where foreign construction firms face specific barriers – in particular to establishing a commercial presence – the regulatory framework is not sufficient to ensure adequate competitive pressures on the construction companies already operating in the domestic market. The largest construction companies are those benefitting most from protected domestic markets in terms of inflated price-cost margins. When looking at the STRI disaggregated along different policy dimensions, it emerges that restrictions to foreign entry and operations and measures limiting the temporary movement of construction workers all create a more favourable environment for incumbents to raise their mark-ups. Conversely non-discriminatory regulatory restrictions and administrative red tape tend to compress profit margins by driving up operating costs.

Distribution services

The findings on distribution services are presented in Table A.8. In this sector, firm size (measured by total assets) is associated with higher profit margins, perhaps an outcome of the ability of the largest wholesalers and retailers to obtain more favourable price concessions from their suppliers.

The aggregate STRI score is not significantly related to profit margins in the distribution sector, but this masks opposite forces at play depending on the type of restrictions. Discriminatory measures – largely overlapping with those that fall under the ambit of market access and national treatment provisions – drive up firms' mark-ups, while domestic regulatory restrictions tend to lower their profitability. Looking at the different policy areas separately reveals that discrimination in operations and the lack of regulatory transparency are strongly negatively associated with profitability. These restrictions include measures such as an absence of clear licensing criteria, numerous and costly procedures to build a warehouse, or delays at customs. They affect particularly smaller and less productive firms which are least likely to be able to reflect those costs into output prices. Conversely restrictions on foreign entry are found to drive up wholesalers and retailers' profit margins, presumably by limiting competition in their output market. While both types of policy measures tend to increase prices, the former also raise the expenses of firms that are present in the market, hence a muted combined effect on price-cost margins.

Professional services

Accounting and auditing

The results for accounting and auditing services are presented in Table A.9. Holding other factors constant, firm size (as measured by net sales) is negatively related with profit margins, indicating that large accounting and auditing firms aiming at developing their client base will do so by compressing their mark-ups.[9] Another possible explanation is that small firms tend to serve a niche of the market that demands more customised services than the standard ones offered by big accounting/auditing firms and for which they can charge higher mark-ups.

The aggregate STRI score is not statistically related to profit margins, in part disguising the contrasting effect of different types of restrictions. Restrictions that hamper the establishment of new firms, and therefore reduce competition in the accounting/auditing market, are associated with higher profit margins. Also, restrictions that limit the movement of foreign accountants and auditors, often in the form of nationality or residency requirements to practice, as well as lack of recognition of foreign qualifications, are likely to reduce competitive pressure in the market and thus drive up the profit margins of existing firms. Domestic barriers to competition have a similar effect. Furthermore, discriminatory measures and other limitations imposed on foreign firms by tying them to locally-qualified professionals compress operating profit margins by increasing operating costs.

Architecture

Table A.10 presents the results for architectural services. At the country level, for architecture as well as for engineering services, we include two variables to capture the level of development of these sectors: the share of R&D expenditure in GDP and the share of high technology exports in total merchandise exports. While the former is not statistically significant, the latter is found to be weakly related with profit margins indicating that architectural firms operating in a more technologically advanced environment are able to set higher mark-ups.

The aggregate STRI is associated with slightly higher profit margins, suggesting that barriers to trade and investment in architecture may reduce competitive pressures. The split of the index by policy areas also reveals that barriers to competition such as restrictions on fee-setting and advertising distort the level playing field and lead to higher profit margins for existing firms. Furthermore lack of regulatory transparency and excessive visa processing time could severely impact on the movement of foreign professionals and represent additional cost constraints in this labour-intensive sector.

Engineering

The results for engineering are illustrated in Table A.11. As in other professional services, size (measured by firm-level net sales) is negatively associated with firm profitability, possibly due to the fact that smaller engineering firms specialise in offering more customised services at higher feed to less price-sensitive clients. At the country level, although not statistically significant, the coefficient associated with the level of technological development would suggest that firms in more high-tech markets are more likely to absorb the scientific know-how and provide more refined services for which they could charge higher mark-ups.

As for other professional services, higher profit margins are found in correspondence of higher restrictions to trade and investment as captured by the aggregate STRI score though the relationship is not statistically significant at conventional levels. Barriers to competition are the main component reducing the level of competition in the domestic market and favouring existing engineering companies, which could charge higher fees.

9. Existing literature suggest that large accounting/auditing firms attract large high quality companies requiring less than average accounting/auditing work, hence charging lower fee premiums. See Ireland and Lennox (2002).

Legal services

Table A.12 shows results for legal services. As for other professional services, we find that size (as measured by firm-level net sales) is negatively associated with price-cost margins suggesting that smaller firms are more likely to have higher mark-ups when holding other characteristics constant; again, presumably because they target specific markets by offering non-standardised services.

At the aggregate level, the STRI score does not appear to be related to firm profitability. Turning to the different dimensions of the STRI, non-discriminatory measures often found in domestic regulation and limiting competition, are more likely to increase the market power of well-established legal services providers and allow them to charge above-market fees.

Transport and courier services

Maritime freight transport

The results for maritime freight transport are shown in Table A.13. Holding other factors constant, we find that firm size, as measured by total assets, is negatively associated with profit margins. Larger shipping companies might face higher operating costs as they tend to manage a larger fleet, with larger vessels being generally more costly, both at sea and in ports, than smaller ones.

At the country level, we consider two variables: the growth rate of merchandise trade and a proxy for openness measured as the share of merchandise trade in GDP. We retain only the latter in our baseline specification as the former is not found to be statistically significant. We find openness to be a significant negative predictor of profitability, presumably because a more open goods market faces more competitive pressures as the demand specifically addressed to ocean freight is larger and sustains a larger number of competitors.

The STRI aggregate score has a positive but not statistically significant coefficient. Looking at the different dimensions of the STRI, we find indication that more restrictive domestic regulatory regimes, that apply to both domestically and foreign owned shipping companies, create a suitable environment for firms to raise mark-ups. For instance, if shipping agreements are partially or fully exempted from the national competition law, shipping companies may use these agreements to fix prices in order to maximise their profits. Barriers to the establishment of new shipping companies are also linked to higher profit margins, presumably by limiting competitive pressure in the market. For instance, cargo preferences according to which only domestic vessels can transport certain type or quantity of cargo, by precluding the possibility for foreign carriers to participate in that market segment, shelter domestic shipping companies which could apply higher freight rates and thus accrue higher price-cost margins.

Air transport

Table A.14 reports the results for air transport, where the STRI covers establishment in the passenger and freight segment with the accompanying movement of people (but excludes cross-border trade, which is governed by bilateral agreements). The set of explanatory variables in the baseline specifications are the same as for other transport sectors. As for maritime freight transport, we find that larger airline carriers tend to have smaller profit margins, presumably because they have a larger air fleet with larger airplanes and therefore face diseconomies of scale from higher operating expenses.[10]

At the country level, and differently from maritime freight transport, the rate of growth in merchandise trade has a positive relationship with profit margins in air transport, indicating that airline companies are able to charge higher mark-ups in fast-growing markets.

The aggregate STRI score is found to have a positive impact on firm profitability and, although the corresponding coefficient is not statistically significant, it suggests that barriers to

10. Another possible explanation might be that often large airlines are current or former SOEs that serve many regional airports within their home country either because of universal service obligations or to retain slots, while smaller new entrants tend to pick the most profitable routes.

trade and investment in the airline sector could be associated with fare increases which are likely to be borne by customers. Decomposing the STRI into its various components highlights how barriers to competition, for instance in the form of non-competitive slot allocation for take-off and landing, price fixing and anti-trust exemption of airline alliances, could lead to anti-competitive behaviour that ultimately increases fares and inflates profit margins. We also find that trade restrictions tend to shelter specifically the least productive airlines, which compounds their economic cost.

Rail freight transport

The results for rail freight transport are shown in Table A.15. As for air transport, at the country level, merchandise trade growth is associated with higher mark-ups, again suggesting that rail companies operating in a more dynamic market increase their freight rates in order to maximise their profit margins.

The aggregate STRI score, although statistically not significant, is positively associated with mark-ups; however this result should be taken with caution given the small number of observations in this sector. By looking at the decomposition of the STRI across its different policy areas, we find that discriminatory measures such as lack of inter-operability and/or adoption of common standards on the compatibility of infrastructure and rolling stocks, are likely to increase the operating costs of rail operators running trains between countries and result in lower profit margins. This conclusion, however, should be interpreted cautiously due to the limited number of rail operating companies available in our sample.[11]

Road freight transport

Table A.16 shows results for road freight transport. As in other transport sectors, we find that firm size, measured by total assets, is negatively associated with firm profitability. Similarly to other modes of transport, the aggregate score of the STRI is not statistically significant; however its non-discriminatory component is positively associated with higher margins, indicating that regulatory hurdles in this sector are more likely to translate into higher freight rates. Among the different categories of measures, barriers to competition and opaque regulatory regimes tend to be associated with higher price-cost margins, however discriminatory tax treatment and preferences for local truck operators in public tendering seem to increase operating costs for foreign trucking companies and hence compress their profit margins.

Courier and postal services

The courier sector comprises postal services, including as provided by designated postal operators, as well as express delivery of letters and packages. The aggregate STRI score in the sector is strongly associated with higher mark-ups of locally established providers, as shown in Table A.17. Both discriminatory and non-discriminatory measures contribute to raising profit margins of incumbents, though only the former are statistically significant. Distinguishing further between policy areas reveals the rent-creating effects of barriers to competition, including preferential treatment granted to state-owned operators, and of discriminatory barriers to the establishment of new foreign firms.

Logistic services

In logistics services, two segments of the sector are considered: cargo-handling services (at airports, ports, rail and road facilities) and storage and warehousing. Trade restrictions in cargo-handling are strongly associated with higher profit margins of firms specialised in the provision of such services (Table A.18). Cargo-handling suppliers across all size classes and productivity levels appear to be able to reap higher margins in more restrictive markets. The results highlight the anti-competitive nature of restrictions to foreign entry and administrative requirements, which account for the bulk of the effect. Profit margins in the storage and warehousing sector do not

11. Furthermore, competition with other modes of transport -- and in particular with road transport, directly competing with rail on land transport – could blur the channels through which the regulatory regime of one sector influences the full transport chain.

appear, however, to be significantly correlated with the STRI index (Table A.19). It might also be that impediments to trade in logistics services restrict competition upstream or downstream in the multi-modal transport and logistics chain, in which case our sector-by-sector approach does not capture cross-sectoral rent-creating effects.

Audio-visual services

Broadcasting

In TV broadcasting, trade restrictions are prevalent in many countries. The results presented in Table A.20 show that such impediments to foreign entry are associated with higher mark-ups of domestically established broadcasters, especially the largest ones. The anti-competitive effect of trade restrictions comes from limitations to foreign establishment and to the accompanying movement of people. Such limitations shelter domestic firms from international competition and include inter alia limits to the participation of foreign investors in the capital of broadcasting companies, foreign investment screening or nationality conditions for key personnel.

Motion pictures

In the motion picture industry, Table A.21 reveals a negative but not reveal a statistically significant relationship between trade restrictiveness and profit margins. However when delving into the finer types of measures, it appears that movie production, post-production and distribution companies earn higher mark-ups in countries that impose more limitations on the establishment of new firms and the movement of temporary personnel. Restrictions on foreign entry on a cross-border basis, such as broadcast or screen quotas, are associated with narrower profit margins; this finding may stem from a higher cost of domestic productions that benefit from reserved market shares.

Financial services

Insurance

Table A.22 reports the results for insurance. We control for insurance penetration at the country level to assess the degree of development of the insurance market,[12] but find no statistically significant relationship with price-cost margins. However looking at firm size measured by either gross premiums written or total assets, it appears that larger insurers charge smaller margins. The negative size effect may reflect more intense competition for the internationalised segments of the market including the insurance of large commercial and reinsurance, as well as economies of scale in insurance agency networks and auxiliary services conducted in-house.

More restrictive regulatory regimes are strongly associated with higher profit margins in the insurance sector. Considering that insurance markets are fairly concentrated within countries, in particular as regards the retail life and non-life segments, barriers to the entry of new insurers enable those already present in the market to charge higher premiums. Trade in insurance services is primarily conducted through the presence of foreign affiliates for retail policies, and on a cross-border basis for large risks. Impediments to the local establishment of foreign insurance companies effectively reserve a substantive share of the market to domestic insurers, and prohibiting the provision of cross-border insurance shields locally-established carriers from competition on high-value contracts. It is therefore no surprise that the various types of regulatory restrictions, those that create the most protection for domestic insurers are market access issues and impediments to the establishment of foreign insurers. Conversely non-discriminatory restrictions, in particular related to the lack of transparency in regulation and administrative processes, are associated with smaller profit margins as they create undue costs for all active insurers, domestic or foreign.

12. In particular insurance penetration is higher in economies where public social safety nets and public health insurance schemes are less protective, which may influence the pricing strategies of insurance providers.

Commercial banking

The results for commercial banking are depicted in Table A.23. Several bank-level variables are included in the estimation as potential determinants of net interest margins.[13] The capital adequacy ratio, a reflection of prudential regulatory requirements, is associated with lower interest margins which can be interpreted as the cost for banks of holding less risky assets and lending less aggressively in order to comply with solvency requirements. The share of non-performing loans indicates how effective the bank is at screening borrowers; lower lending efficiency results in higher net interest margins for banks to maintain their profit levels. The fact that less efficient banks are able to charge higher interest rates rather than being driven to become leaner or exit is in itself an indicator that banking markets re not fully competitive. Bank margins do not vary significantly with the liquidity ratio. At the country level, high inflation rates increase the uncertainty with regard to future real returns on lending operations, which leads banks to charge a higher spread on loans over deposits.

The aggregate STRI is not significantly related to bank interest margins. However the decomposition by policy area reveals that discriminatory measures towards foreign financial institutions tend to allow domestic banks to charge comparatively higher interest rates and offer lower remuneration on deposit accounts. Barriers to competition that affect all established banks, such as interest rate regulation, product filing requirements or a strong intervention of the state in the sector, have the effect of compressing banks' profit margins. This last finding may reflect policies that direct lending to specific segments of the economy and sector regulation that aims at preserving low-cost credit even at the expense of the efficient allocation of available funds, making it more difficult for private banks to operate a profitable business model.

5. Estimated tax equivalents of regulatory trade restrictions

Since profit margins are price signals, converting the coefficients related to trade restrictions into estimated tax equivalents could in principle be straightforward. They are derived from comparing the level of observed price-cost margins to those we would expect if all trade and investment barriers were lifted so as to bring the STRI indices to zero, while assuming no change in all other relevant factors.

However this estimation is subject to two important caveats. First, some of the indicators included as explanatory variables in the regressions along with the STRI may themselves be affected to some extent by the regulatory environment. For instance, given that a large share of trade in goods is carried by sea, one may think that restrictions on the conduct of maritime transport have a bearing on an economy's openness in merchandise trade. Or similarly, a regulatory framework that sustains high prices in the telecoms sector is likely to have a feedback effect on tele-density. The estimates presented in this section necessarily disregard such additional channels, but this assumption warrants caution in their interpretation in terms of potential impact of regulatory reform "holding everything else constant".

Second, we only observe profit margins, but as mentioned previously, regulatory restrictions in services sectors can raise both prices and costs depending on whether their effect is predominantly rent-creating or cost-increasing. We cannot independently identify the two channels for lack of data on prices and costs separately. We can however infer which of the two effects dominates from the signs of the coefficients on the STRI and its components: a positive sign indicates that the main effect of trade barriers is to enable incumbent firms to charge higher prices, and a negative sign suggests that the impact of regulations is first and foremost to raise operating costs. In the former case, we can interpret the findings in terms of a "consumption tax" hurting those who purchase the services. In the latter case, restrictions are more akin to a "production tax" adding to firms' expenses.[14]

13. See the literature identifying the determinants of banking efficiency, e.g. Saunders and Schumacher (2000), Demirgüç-Kunt et al. (2004).

14. More precisely, the tax equivalents calculated in this section correspond to a consumption tax which is not at all absorbed by firms (in case of a positive sign), or to a production tax which is not at all passed through

Deriving "tax equivalents" of the STRI requires focusing on only one of these channels at a time. We will therefore make the strong assumption that where the sign of the coefficient is positive, all of the impact comes from prices, and conversely when the sign is negative, all of the impact is accounted for by costs. It goes without saying that this assumption is likely to be violated in the case of the aggregate STRI, especially where we find that different components of the STRI affect the price-cost margin in different directions for the same sector. For instance in telecoms, barriers to competition drive up mark-ups while administrative red tape drives them down. We therefore focus on the STRI decomposition by policy areas as more likely to comprise measures with similar impact. The remaining assumption of a one-directional impact of trade restrictiveness by STRI component in each sector is a conservative one: if anything, it biases downward our tax equivalent estimates. For instance, we will attribute fully a positive relationship between the STRI and price-cost margins to higher prices, assuming no effect on costs; but if regulations also raise the cost of doing business, the actual impact on prices is even larger than estimated.[15]

The STRI measures falling under restrictions on foreign entry, restrictions to the movement of people and other discriminatory measures usually correspond to policies that discriminate against foreign services providers, while most of the measures recorded as barriers to competition and issues related to regulatory transparency apply equally to domestic and foreign firms. From a trade policy perspective, it could be interesting to focus on the discriminatory components that are at the core of negotiations. The results presented below allow the reader to isolate the contribution of policy areas of interest to the overall tax equivalents. It should however be kept in mind that overlooking the non-discriminatory measures would underplay the true cost of regulatory restrictions on two accounts. On the one hand, domestic regulatory issues such as antitrust law, state-owned enterprises, asymmetric regulation in telecoms or transparency in rule-making are part and parcel of recent trade deals and could potentially be negotiated away. On the other hand, from a consumer welfare perspective, unnecessary regulatory restrictions that ultimately raise the price of services sold are just as relevant whether they constrain all firms or specifically protect domestic providers against foreign competitors. (Helvetica 9)

The tax equivalents of services restrictions based on the regression results reported in Section 4, distinguishing the contribution of each policy area, are depicted in Figures 3 to 12.[16] The average point estimates range from 3.2% in Road freight transport to 38.5% in Broadcasting services but there is considerable variation across countries, which reflects variation in the underlying levels of restrictiveness. Figures A.2 to A.11 in Annex 4 show the 80% confidence intervals associated with these point estimates, and illustrate the degree of uncertainty that surrounds them. (Helvetica 10)

The highest tax equivalents are found in Broadcasting, largely driven by restrictions to foreign entry, Construction, reflecting mostly restrictions to movement of people, and Logistic services, in particular Storage and warehousing, where barriers to competition play a significant role. On the other end of the spectrum, Road transport, Architecture and Cargo-handling services exhibit the lowest "tax equivalents", mostly driven by barriers to competition and lack of regulatory transparency.[17] Road transport, Distribution and Air transport are also the sectors with more homogenous "tax equivalents", while the highest dispersion is found in Accounting/auditing and Broadcasting services, reflecting in part the underlying level of heterogeneity of the corresponding regulatory regimes across countries analysed.

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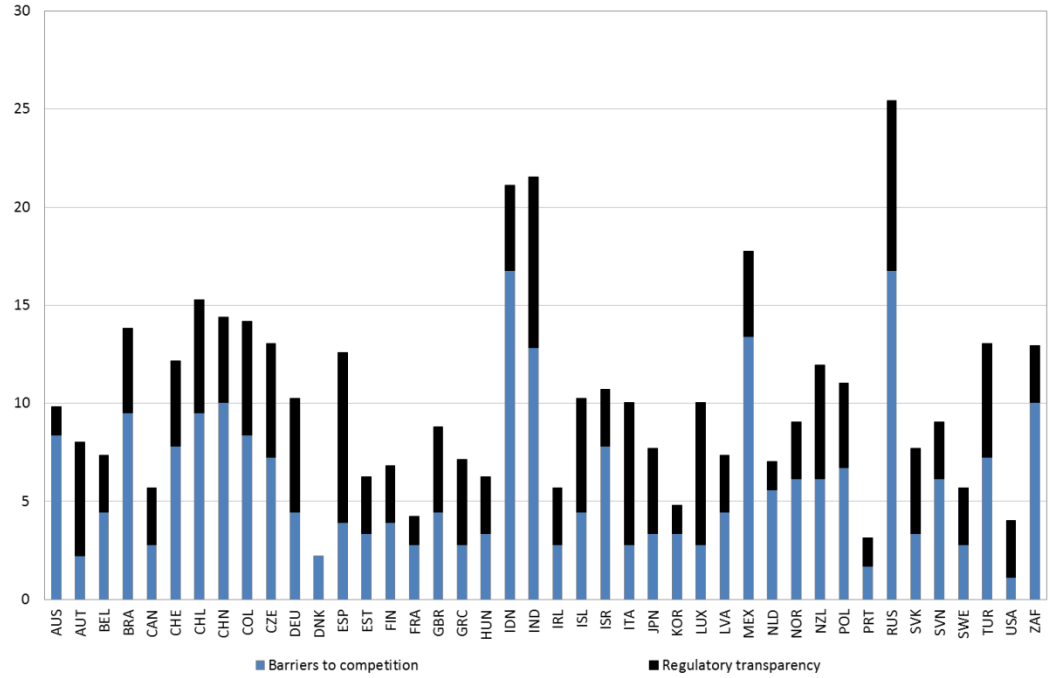
to consumers (in case of a negative sign). If there is positive pass-through in either case, the underlying tax estimates would be higher.

15. Annex 2 describes in more details the methodology implemented to compute tax equivalents and explains the mechanism behind the potential downward bias.

16. For each sector, only the point estimates of the coefficients that are significant at least at the 20% level were retained for the calculation of tax equivalents. In the commercial banking sector, the tax equivalent refers to estimated percentage point additional interest rates attributable to restrictive regulations.

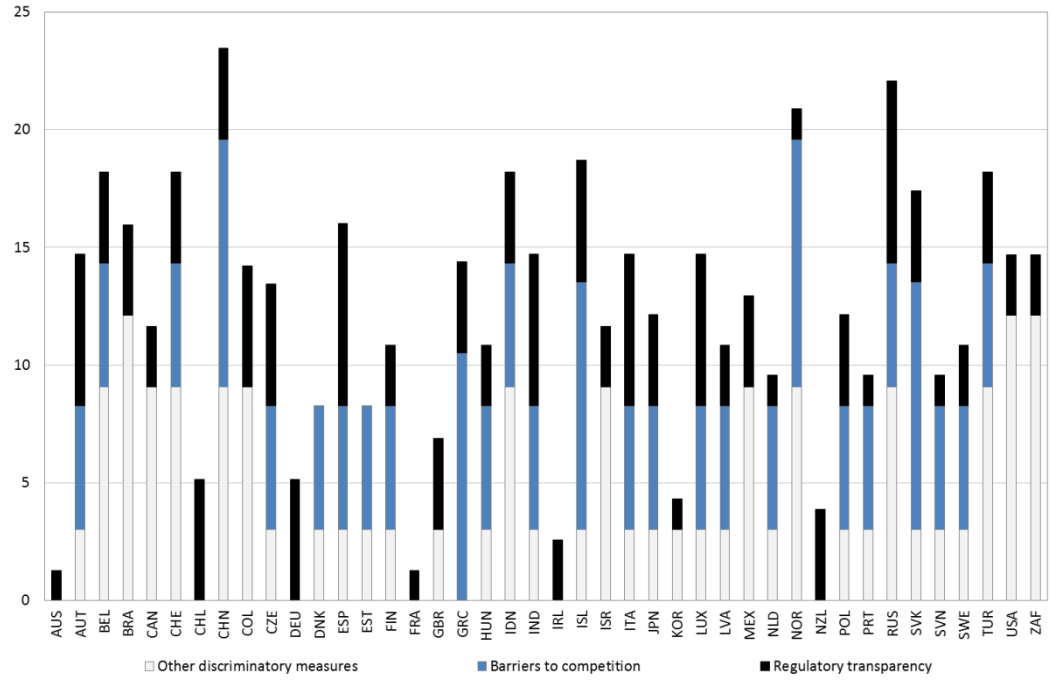
17. It is worth recalling that in the construction of the aggregate "tax equivalents" of each sector we consider only the contribution of policy areas whose associated coefficient is statistically significant.

Figure 3. Estimated tax equivalent of the STRI for Telecoms, contribution by policy area (%)



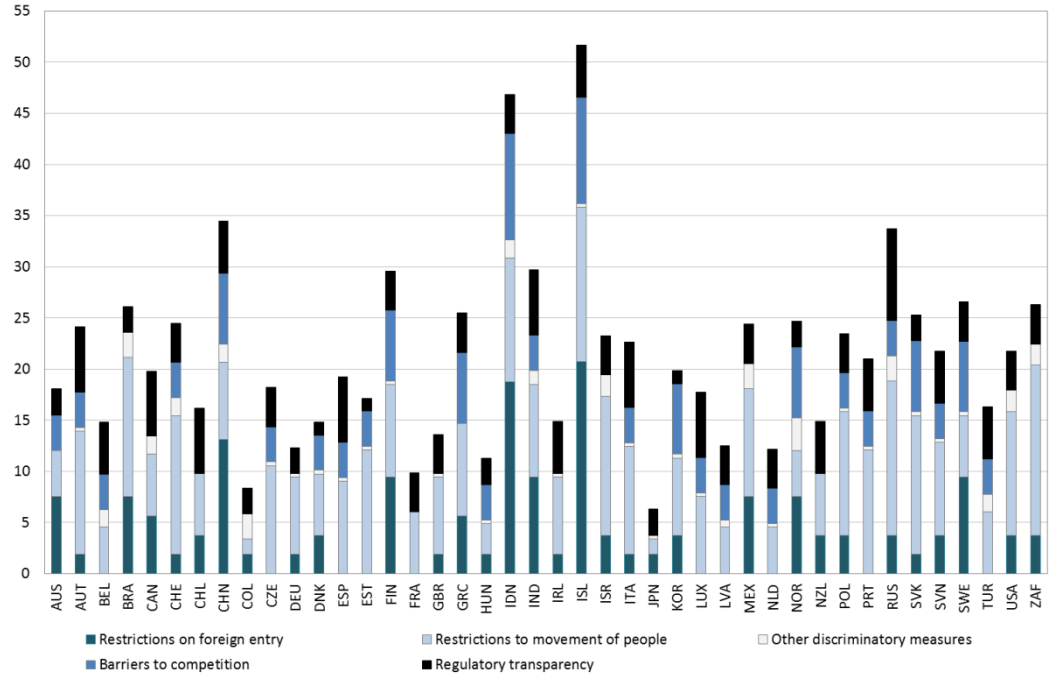
Source: Own calculations based on the estimates presented in Table A.5, column 3.

Figure 4. Estimated tax equivalent of the STRI for Computer services, contribution by policy area (%)



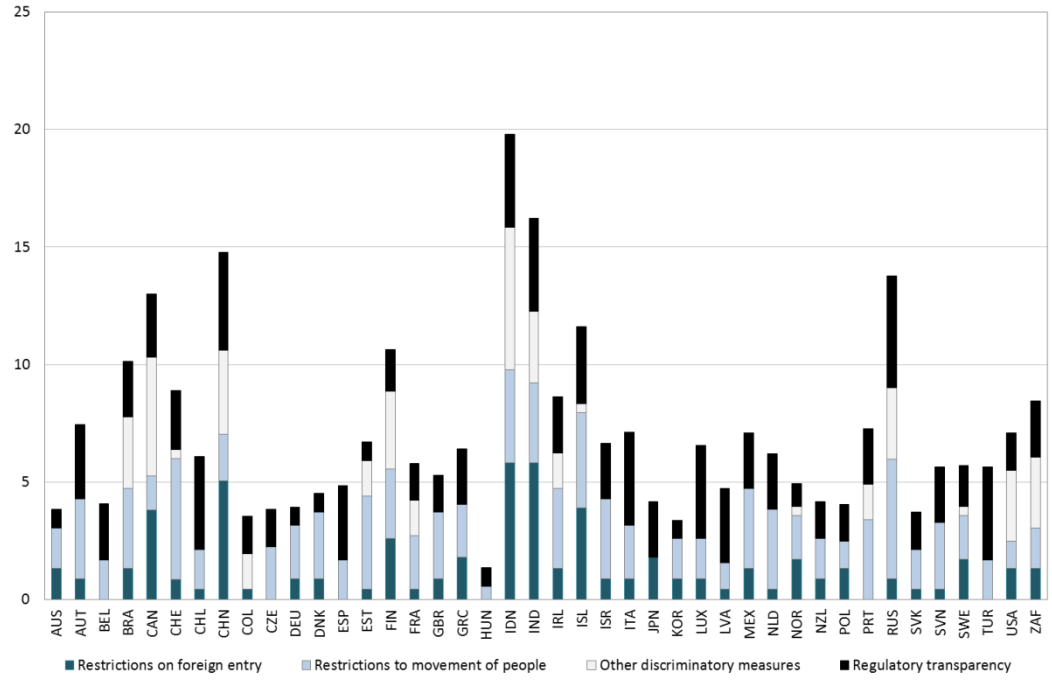
Source: Own calculations based on estimates presented in Table A.6, column 3.

Figure 5. Estimated tax equivalent of the STRI for Construction, contribution by policy area (%)



Source: Own calculations based on estimates presented in Table A.7, column 3.

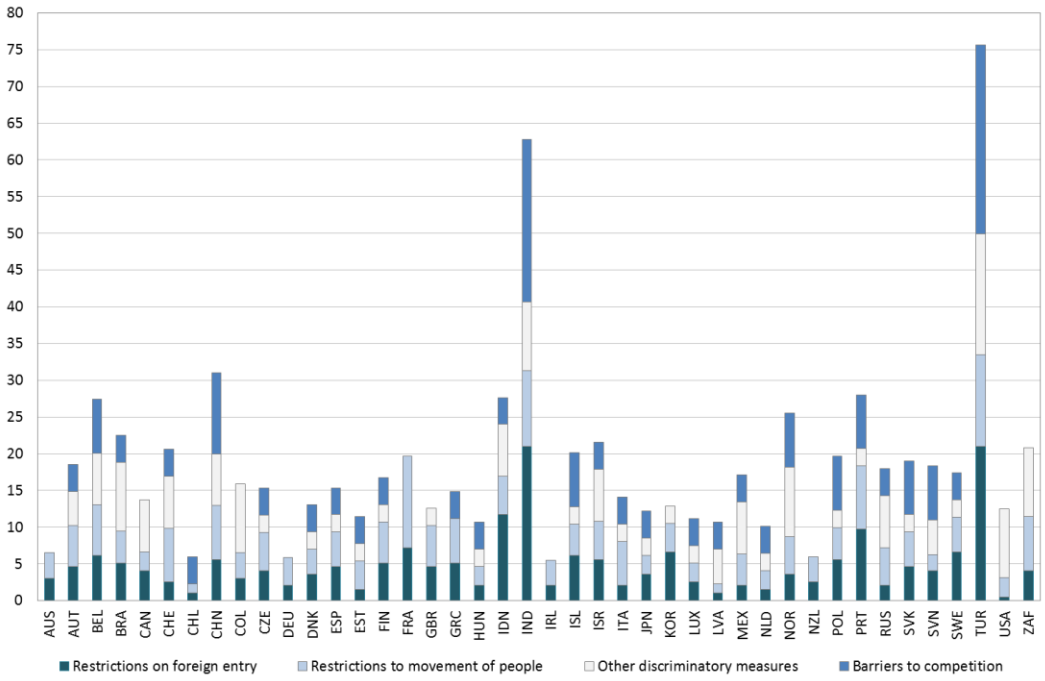
Figure 6. Estimated tax equivalent of the STRI for Distribution, contribution by policy area (%)



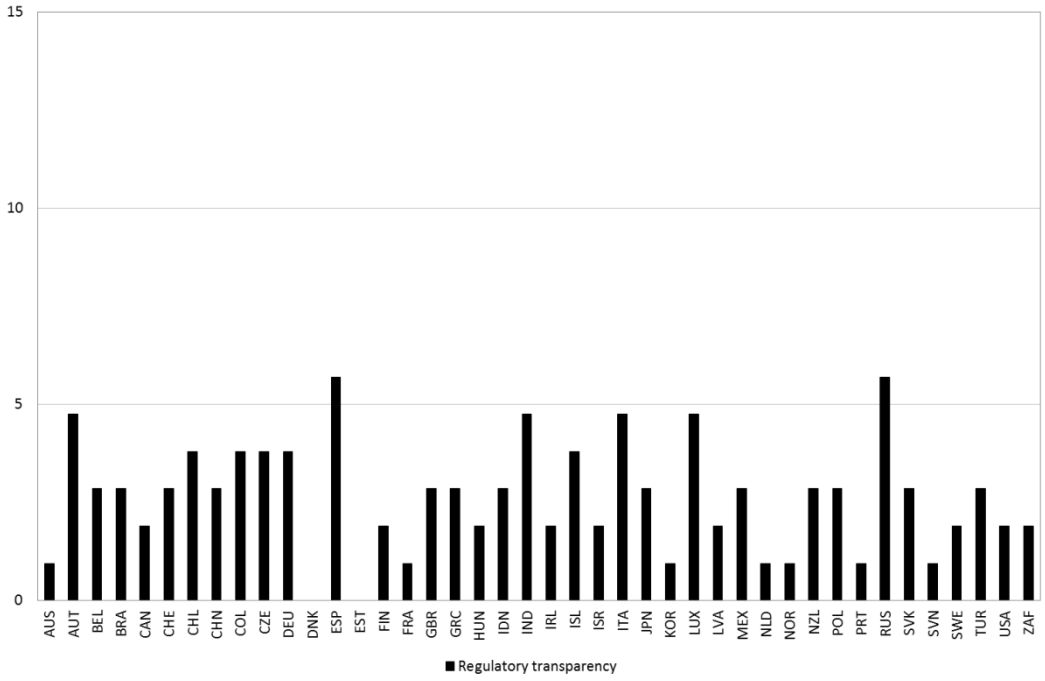
Source: Own calculations based on estimates presented in Table A.8, column 3.

Figure 7. Estimated tax equivalent of the STRI for Professional services, contribution by policy area (%)

(a) Accounting and auditing services



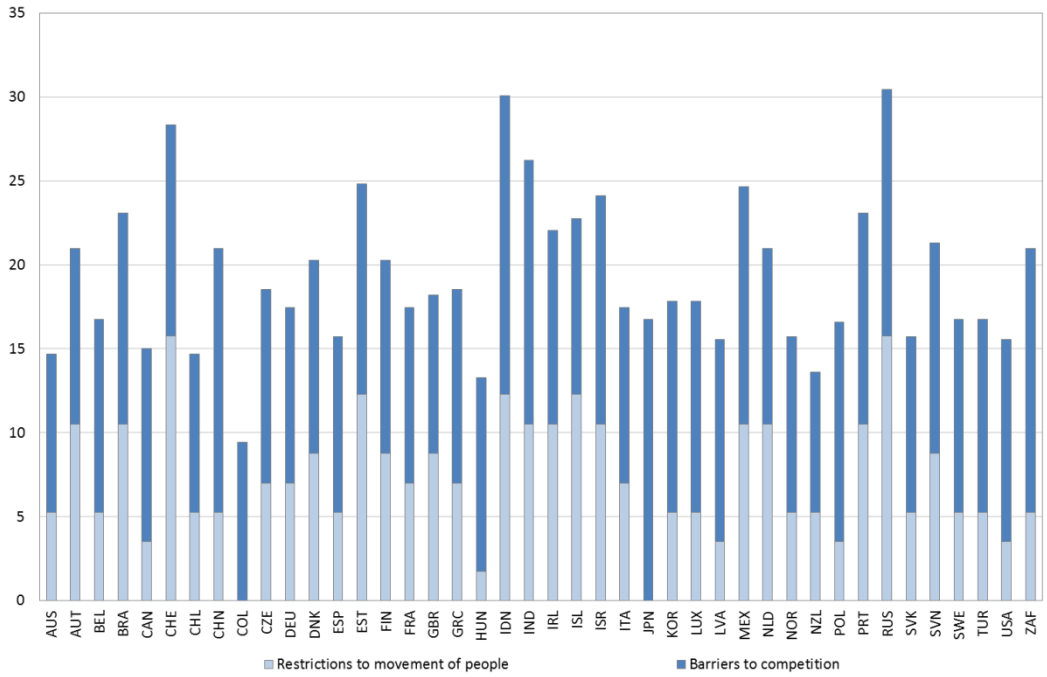
(b) Architecture



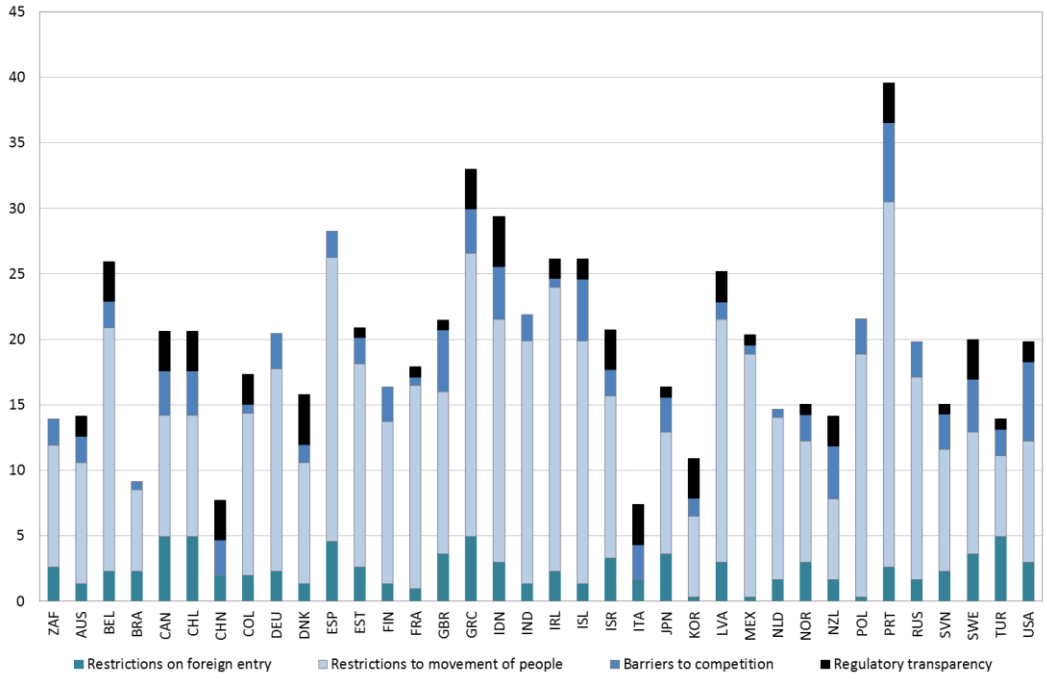
Source: Own calculations based on estimates presented in Tables A.9 and A.10, column 3.

Figure 8. Estimated tax equivalent of the STRI for Transport services, contribution by policy area (%)

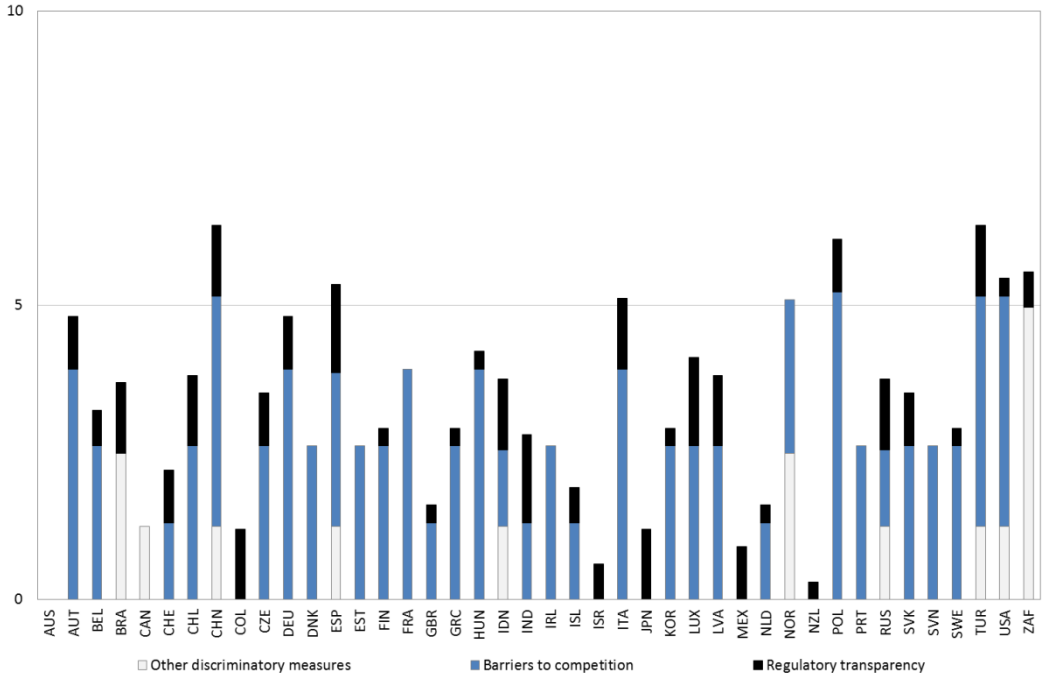
(a) Air transport



(b) Maritime freight transport

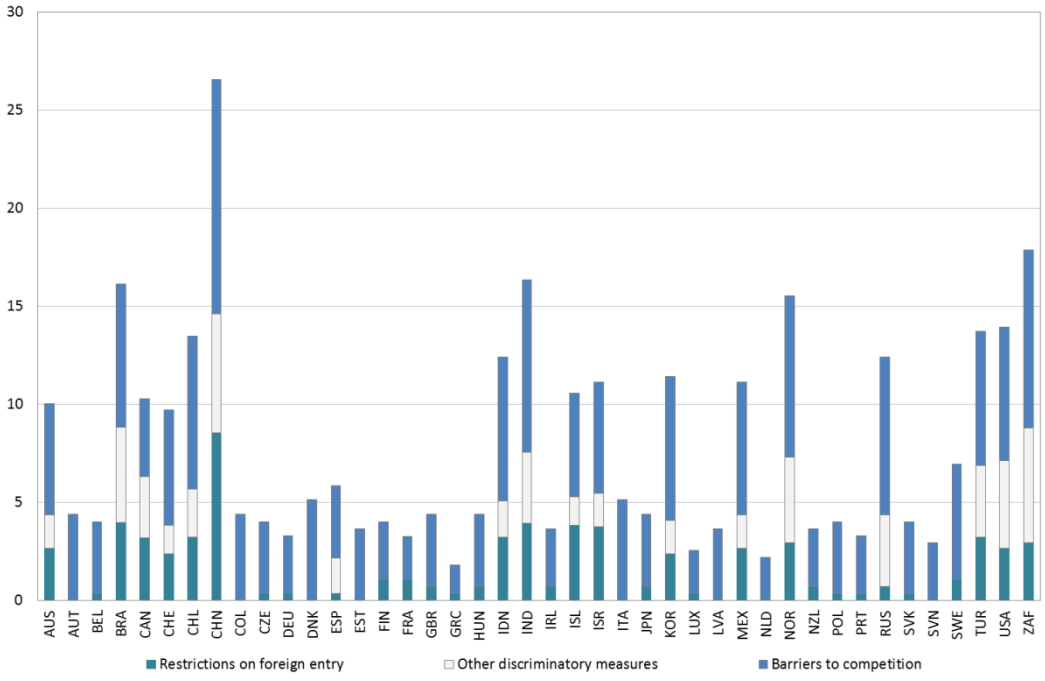


(c) Road freight transport



Source: Own calculations based on estimates presented in Tables A.13 to A.16, column 3.

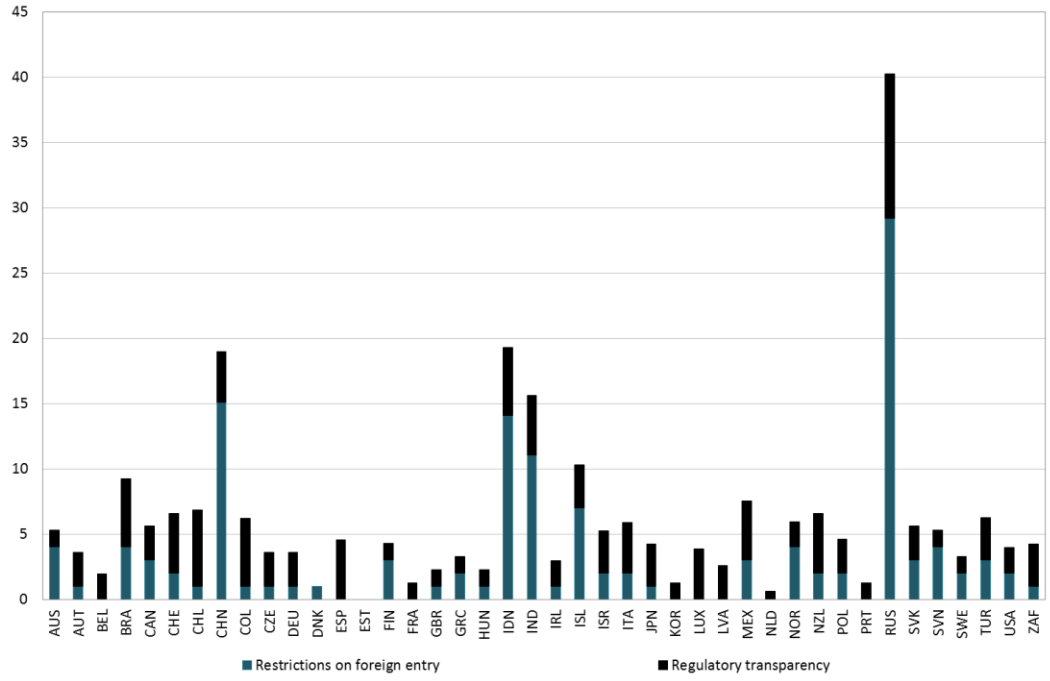
Figure 9. Estimated tax equivalent of the STRI for Courier services, contribution by policy area (%)



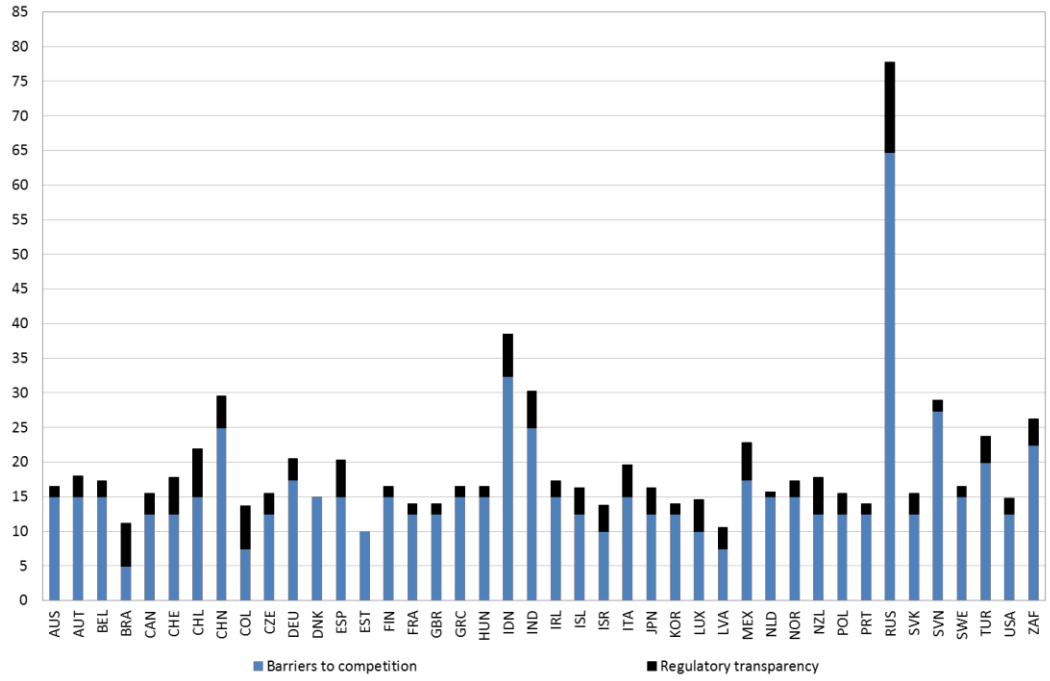
Source: Own calculations based on estimates presented in Table A.17, column 3.

Figure 10. Estimated tax equivalent of the STRI for Logistics, contribution by policy area (%)

(a) Cargo-handling



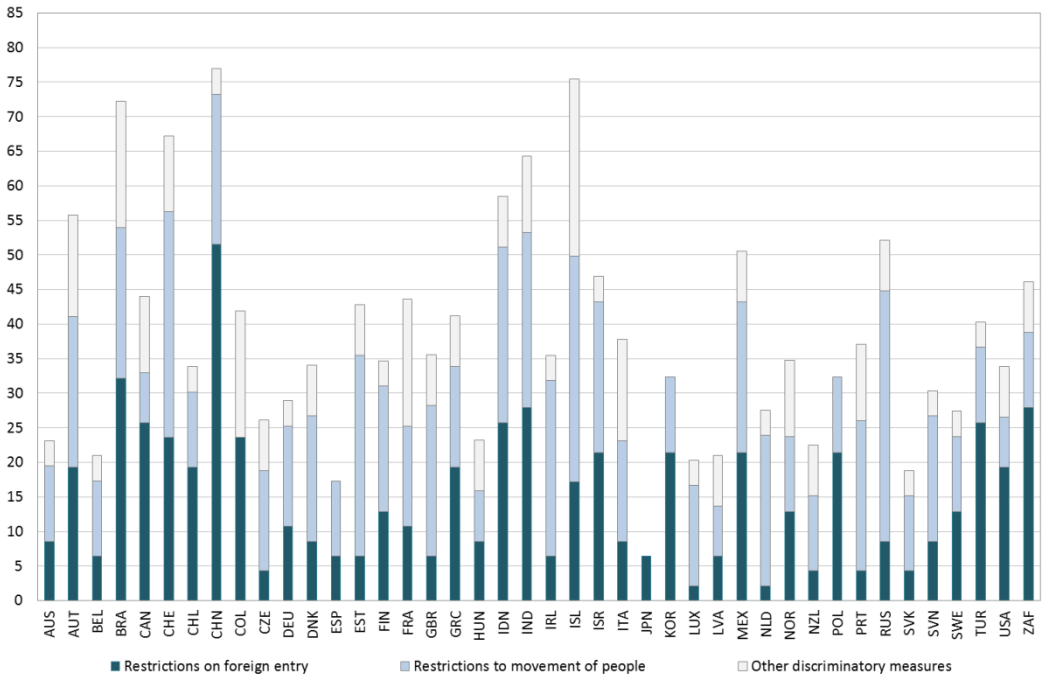
(b) Storage and warehousing



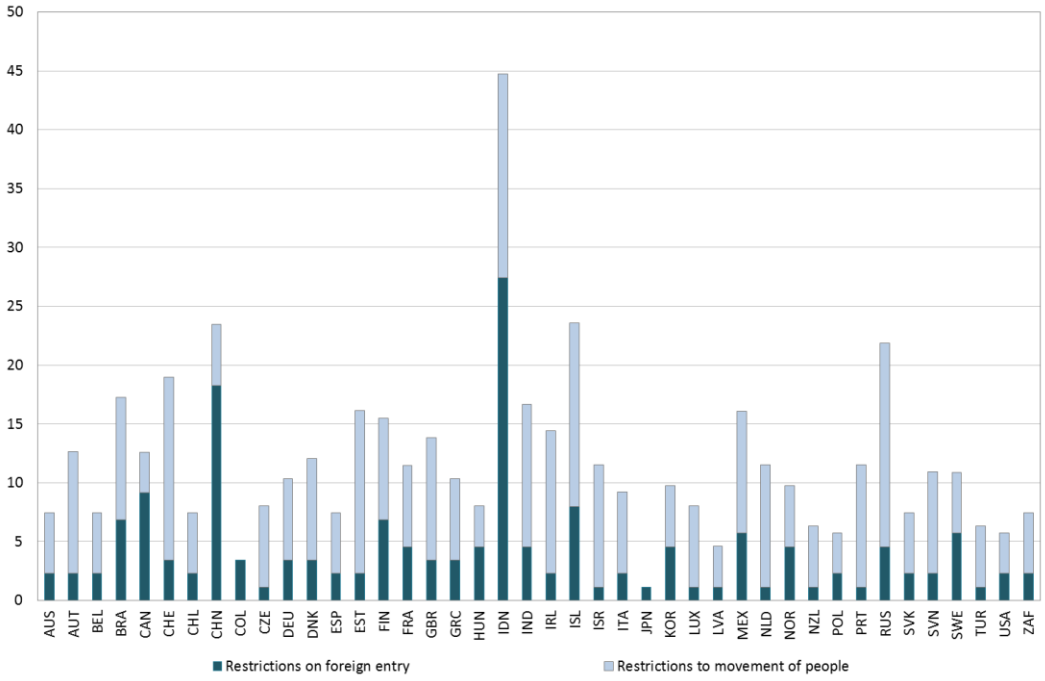
Source: Own calculations based on estimates presented in Tables A.18 and A.19, column 2.

Figure 11. Estimated tax equivalent of the STRI for Audio-visual services, contribution by policy area (%)

(a) Broadcasting



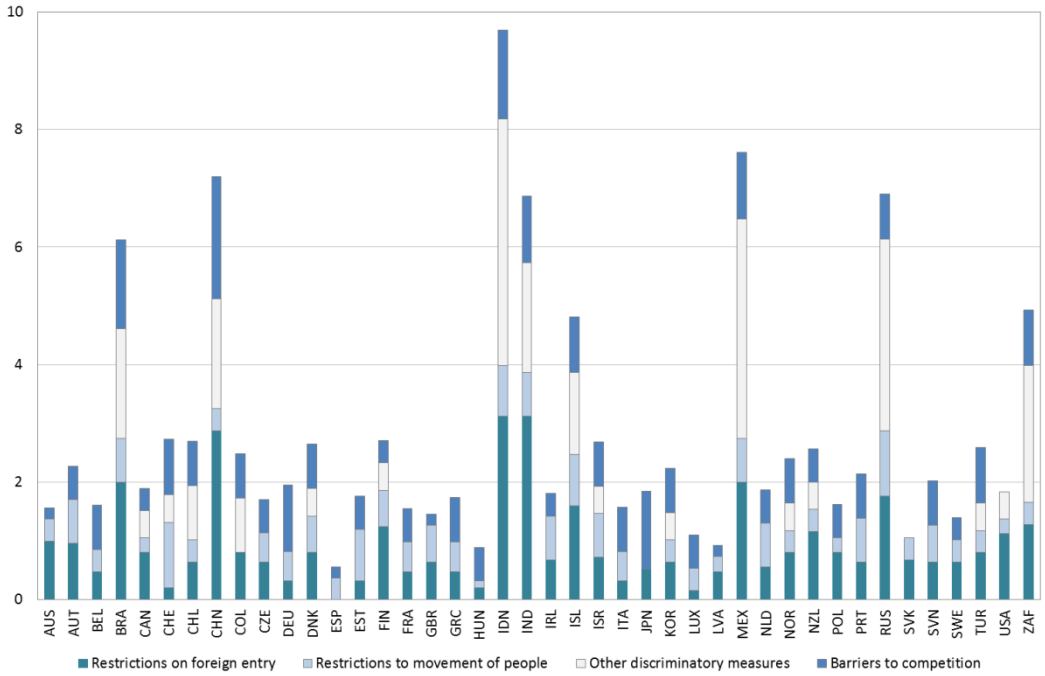
(b) Motion pictures



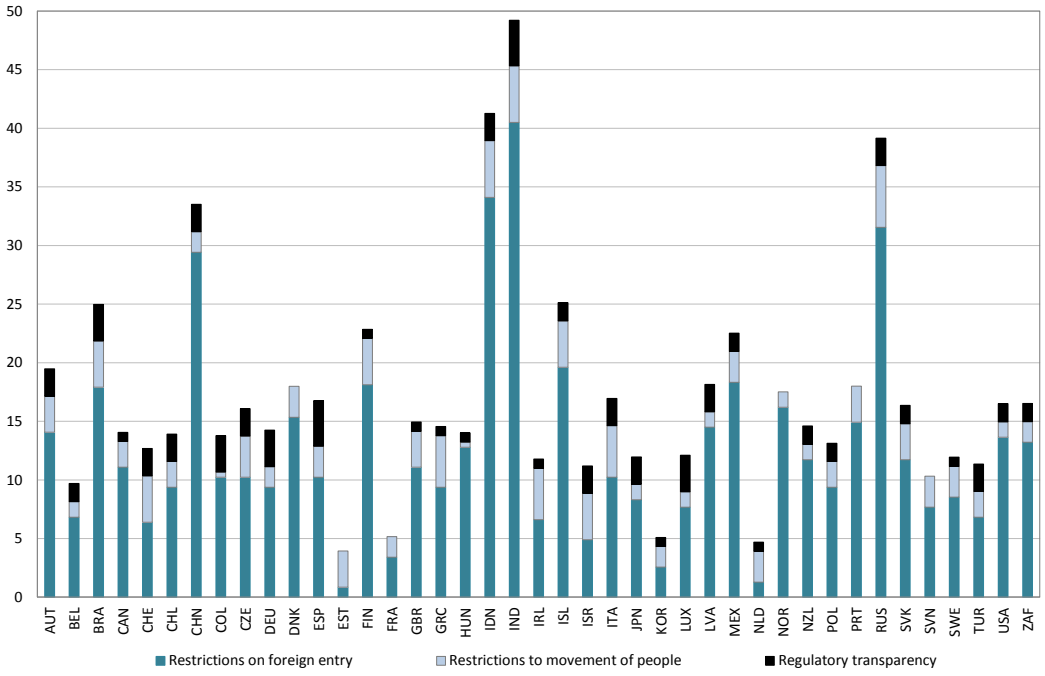
Source: Own calculations based on estimates presented in Tables A.20 and A.21, column 2.

Figure 12. Estimated tax equivalent of the STRI for Financial services, contribution by policy area (%)

(a) Commercial banking



(b) Insurance



Source: Own calculations based on estimates presented in Tables A.22 and A.23, column 3. For commercial banking, the tax equivalent refers to estimated percentage point additional interest rates attributable to restrictive regulations.

6. Concluding remarks

This study analyses the impact of trade and investment policies on the competitive environment in services sectors. We find that restrictive regulations enable firms to charge higher mark-ups in a majority of services sectors, reflecting a policy environment that discourages foreign entry and alleviates competitive pressure. Looking into the different types of regulations and policy areas also yields richer insights. In particular barriers to the establishment of foreign competitors tend to raise prices through higher market power of local firms, while a lack of regulatory transparency and complex administrative procedures add to operational expenses.

We have estimated conservative "tax equivalents" of regulatory restrictions in fifteen services sectors, broken down to reflect the contribution of the various categories of policies. The average point estimates for the regulatory tax associated with trade restrictions range from about 3% in road freight transport to over 30% in broadcasting, with high variation across countries in all sectors. The results highlight the high potential for pro-competitive gains from liberalising services through unilateral reforms or a negotiated removal of trade barriers.

The tax equivalents presented in this report are necessarily subject to statistical uncertainty, which is made explicit by presenting confidence intervals along with the point estimates. It is to be kept in mind that rather than interpreting the point estimates as a highly precise quantification, they should be taken as an indication of the magnitude of the welfare costs of regulatory restrictions and their relative importance across sectors, countries and policy categories.

The relationship between restrictive services policies and competition has been analysed in a cross-country static context, by looking at the medium to long-run outcomes of different policy choices in different markets. It is to be expected that the same mechanisms are at play as individual countries undertake reforms towards more intense competitive pressure. Exploring the dynamic effects of reforms within countries, such as whether entry and exit of services firms increases after trade liberalisation or changes in the competition regimes, is a promising area of future research.

References

Atkeson, A. and A. Burstein (2008), "Pricing-to-Market, Trade Costs, and International Relative Prices", *The American Economic Review*, 98(5), pp. 1998-2031.

Bottini, N., M. A. Marouani and L. Munro (2011), "Service Sector Restrictiveness and Economic Performance: An Estimation for the MENA Region", *The World Economy*, 34(9), pp. 1652-1678.

Bottini, N. and M. Molnar (2010), "How large are competitive pressures in services markets? Estimation of mark-ups for selected OECD countries", *OECD Journal: Economic Studies*, Vol. 2010/1. http://dx.doi.org/10.1787/eco_studies-2010-5kmh5x5dbkf8.

De Loecker, J. and J. Van Biesenbroeck (2016), "Effect of International Competition on Firm Productivity and Market Power", *NBER Working Paper* 21994.

Demirgüç-Kunt, A., L. Laeven and R. Levine (2004), "Regulations, Market Structure, Institutions, and the Cost of Financial Intermediation", *Journal of Money, Credit and Banking*, Vol. 36, No. 3, pp. 593-622.

Dihel, N. and B. Shepherd (2007), "Modal Estimates of Services Barriers", *OECD Trade Policy Papers*, No. 51, OECD Publishing, Paris. http://dx.doi.org/10.1787/148425814101.

Edmond, C., V. Midrigan and D. Xu (2015), "Competition, Markups, and the Gains from International Trade", *The American Economic Review*, 105(10), pp. 3183-3221.

Feenstra, R. and D. Weinstein (2010), "Globalization, Markups and U.S. Welfare", *NBER Working Paper* 15749.

Fontagné, L. and C. Mitaritonna (2013), "Assessing Barriers to Trade in the Distribution and Telecom Sectors in Emerging Countries", *World Trade Review*, 12(1), 57-78.

Findlay, C. and T. Warren (2000), *Impediments to Trade in Services: Measurement and Policy* Implications, Routledge.

Forlani, E., R. Martin, G. Mion and M. Muûls (2016), "Unraveling Firms: Demand, Productivity and Markups Heterogeneity", *CEPR Discussion Paper* No. 11058.

Gal, P. N. (2013), "Measuring Total Factor Productivity at the Firm Level using OECD-ORBIS", *OECD Economics Department Working Papers*, No. 1049, OECD Publishing, Paris. http://dx.doi.org/10.1787/5k46dsb25ls6-en.

Geloso Grosso, M., F. Gonzales, S. Miroudot, H. K. Nordås, D. Rouzet and A. Ueno (2015), "Services Trade Restrictiveness Index (STRI): Scoring and Weighting Methodology", *OECD Trade Policy Papers*, No. 177, OECD Publishing, Paris. http://dx.doi.org/10.1787/5js7n8wbtk9r-en.

Ireland, J.C., and C.S. Lennox (2002), "The large audit firm fee premium: A case of selectivity bias?", *Journal of Accounting, Auditing and Finance*, 17(1), pp. 73-91.

Kalemli-Ozcan, S., B. Sorensen, C. Villegas-Sanchez, V. Volosovych and S. Yesiltas (2015), "How to Construct Nationally Representative Firm-Level Data from the Orbis Global Database", *NBER Working Paper* 21558.

Melitz, M. and G. Ottaviano (2008), "Market Size, Trade, and Productivity", *Review of Economic Studies*, 75, 295–316.

Miroudot, S., J. Sauvage and B. Shepherd (2013), "Measuring the Cost of International Trade in Services", *World Trade Review*, 12(4), pp. 719-735.

Nordås, H. K. and D. Rouzet (2015), "The Impact of Services Trade Restrictiveness on Trade Flows: First Estimates", *OECD Trade Policy Papers*, No. 178, OECD Publishing, Paris. http://dx.doi.org/10.1787/5js6ds9b6kjb-en.

Nordås, H.K. and A. Ragoussis (2015), "Trade Restrictiveness and Competition in Services", mimeo.

Saunders, A. and L. Schumacher (2000), "The Determinants of Bank Interest Rate Margins: An International Study", *Journal of International Money and Finance*, Vol. 19, pp. 813-832.

Annex 1.

Data Description

Table A.1. Sector classification

STRI sector	NACE 2 sectors
Computer services	631 - Data processing, hosting, and related activities; web portals 62 - Computer programming, consultancies and related activities 582 - Software publishing
Construction	41 – Construction of buildings 42 - Civil engineering 43 - Specialised construction activities
Courier and Postal services	53 - Postal and courier activities
Telecommunications	61 - Telecommunications
Distribution	46 - Wholesale trade, except of motor vehicles and motorcycles, excluding: 4646 - Wholesale of pharmaceutical goods 4671 - Wholesale of solid, liquid and gaseous fuels and related products 47 - Retail trade, except of motor vehicles and motorcycles and excluding: 473 - Retail sale of automotive fuel in specialised stores 4773 - Dispensing chemist in specialised stores
Accounting and auditing	692 - Accounting, bookkeeping and auditing activities; tax consultancies
Architecture	7111 - Architectural activities
Engineering	7112 - Engineering activities and related technical consultancy
Legal services	691 - Legal activities
Air transport	51 - Air transport, excluding: 5122 - Space transport
Maritime transport	502 - Sea and coastal freight water transport
Rail transport	492 - Freight rail transport
Road transport	494 - Freight transport by road and removal services
Logistics, cargo-handling	5224 - Support activities for transportation, cargo-handling
Logistics, storage and warehousing	521 - Warehousing and storage
TV broadcasting	602 - Television programming and broadcasting activities
Motion pictures	591 - Motion picture, video and television programme activities
Commercial banking	6419 - Other monetary intermediation 6491 - Financial leasing 6492 - Other credit granting
Insurance	651 - Insurance 652 - Reinsurance 6622 - Activities of insurance agents and brokers

Source: Own correspondence based on http://ec.europa.eu/eurostat/web/nace-rev2.

Table A.2. Number of firms by country and sector

Country	Accounting & auditing	Air transport	Architecture	Broadcasting	Commercial banking	Computer services	Construction	Courier & Post	Distribution	Engineering
AUS	23	13	16	6	16	59	254	12	778	175
AUT	28	14	15	1	110	230	568	8	1 399	36
BEL	1 065	36	766	9	22	2 678	8 742	189	12 415	792
BRA		1			56	4	25		16	3
CAN		8	1	4	29	77	28	1	93	15
CHE	1			1	135	7	7	1	28	4
CHL		1				1	14		11	
CHN	2	15	11	41	23	221	1 023	15	8 849	198
COL	1 177	174	4 877	52	12	3 174	12 001	308	40 567	2
CZE	2 171	27	377	25	20	2 460	10 554	22	22 708	1 216
DEU	273	32	141	26	722	2 169	10 280	95	12 199	1 605
DNK	439	24	174	15	49	1 487	1 758	60	3 178	445
ESP	10 131	123	2 484	261	43	6 431	68 128	604	87 700	5 361
EST	1 026	17	142	3	3	1 099	3 791	33	4 393	531
FIN	1 458	51	546	14	13	2 601	13 241	99	11 741	2 481
FRA	9 908	178	7 826	118	22	23 716	143 247	325	172 357	19 159
GBR	1 288	301	720	139	85	9 824	15 365	219	15 657	1 437
GRC	170	20	40	53	8	563	1 410	35	6 391	248
HUN	5 662	47	951	131	15	6 254	15 663	274	30 958	4 390
IDN		2	1	2	36	10	26	1	51	3
IND	20	13	99	48	23	487	817	8	952	16
IRL	34	20	73		1	266	331	8	656	1
ISL	81	10	34	3	2	140	718	6	860	60
ISR		2		2	6	38	28		40	4
ITA	2 341	103	152	119	151	19 336	81 814	423	93 543	2 910
JPN	89	103		223	131	5 803	188 800	436	43 133	6 705
KOR	140	49	1 204		13	6 379	25 803	82	33 658	3 208
LUX	100	8	18		6	129	786	8	1 020	67
LVA	1 164	13	350	33	14	1 297	4 978	50	9 039	459
MEX		3			5		7		8	
NLD	30	2	3	6	15	219	255	8	1 214	105
NOR	1 641	26	433	12	64	1 733	11 636	105	14 967	1 441
NZL		14	1	6	4	80	43	11	552	25
POL	1 612	43	677	99	26	3 511	9 502	53	21 218	1 030
PRT	4 225	49	783	25	19	2 152	19 659	127	32 848	1 620
RUS	2 734	334	11 143		356	7 528	70 479	479	220 893	1
SVK	1 303	11	339	23	7	1 843	5 005	37	12 962	1 103
SVN	2 154	31	726	87	15	2 384	8 760	206	9 161	2 139
SWE	1 254	43	356	11	20	3 423	15 613	59	18 303	2 531
TUR	1	6	6	1	30	46	204	1	1 016	21
USA	6	26		42	702	377	83	3	371	26
ZAF		2			15	8	5		26	3
Total	53 751	1 995	35 485	1 641	3 044	120 244	751 451	4 411	947 929	61 576

continued

Table A.2. Number of firms by country and sector (*continued*)

Country	Insurance	Legal services	Logistics cargo-handling	Logistics storage & warehousing	Maritime transport	Motion pictures	Rail transport	Road transport	Telecoms	Total
AUS	84	15	1	11	3	11	2	33	33	1 545
AUT	37	9		19	1	8	5	97	20	2 605
BEL	523	656	191	186	47	301	18	1 317	213	30 166
BRA	1			1	1		6	2	7	123
CAN	13		1	1	5	5		7	43	331
CHE	7	3			1	2	6		4	207
CHL	1				5		1	1	16	51
CHN	9	3	22	78	86	14	2	94	85	10 791
COL	1 156	1 052	212	137	27	451	2	2 389	1 290	69 060
CZE	3	179	22	103		185	16	2 310	290	42 688
DEU	403	30	33	157	81	128	26	1 359	173	29 932
DNK	120	96	10	35	95	135	2	239	80	8 441
ESP	2 805	3 202	286	717	284	1 273	23	10 306	1 282	201 444
EST	35	255	28	42	11	159	13	1 335	89	13 005
FIN	85	426	71	138	70	396	2	3 253	212	36 898
FRA	5 607	2 225	309	1 298	104	5 977	14	17 116	1 215	410 721
GBR	2 603	879	101	349	430	1 973	23	1 565	1 358	54 316
GRC	216	1	9	58	12	108		247	67	9 656
HUN	1 151	130	86	307		889	22	3 536	443	70 909
IDN	66		1		16	1		4	15	235
IND	17	3	37	36	19	79	5	10	117	2 806
IRL	44	47	10	72	14	94		42	48	1 761
ISL	10	33	2	4	1	80		85	22	2 151
ISR	7				1	1		1	21	151
ITA	2 290	79	2 220	891	42	1 787	11	10 871	989	220 072
JPN	391	75	9	431	338	358		4 423	439	251 887
KOR	704	174		399	291	733		1 255	406	74 498
LUX	71	8	3	5		13		151	19	2 412
LVA	103	365	116	110	16	97	9	1 760	236	20 209
MEX	3								4	30
NLD	13	18	10	21	16	28	3	62	31	2 059
NOR	63	398	26	47	278	197	4	1 706	214	34 991
NZL	16	1	8	8	9	9	3	1	24	815
POL	374	421	84	181	37	311	52	1 968	550	41 749
PRT	883	34	51	79	39	322	3	3 548	220	66 686
RUS	35	5 529	839	2 477	1	1 145		9 765	3 155	336 893
SVK		258	20	99		230	10	1 796	125	25 171
SVN	425	249	54	31	9	384	7	3 387	186	30 395
SWE	245	470	87	83	59	358	10	3 696	216	46 837
TUR	42		2	2	10	2		3	5	1 398
USA	16	2		4	13	27	8	27	160	1 893
ZAF	2								8	69
Total	20 679	17 325	4 961	8 617	2 472	18 271	308	89 767	14 130	2 158 057

Source: Orbis and own calculations, 2012-2014.

Table A.3. Variables and sources

Variable	Description	Source	Sector
Margin	All sectors except banking: 100*EBITDA / Sales Banking: Net interest margin	Orbis financials	All
Sales	Net sales or operating revenue	Orbis financials	All
Total assets	Total assets (Fixed assets + Current assets)	Orbis financials	All
Number of employees	Total number of employees included in the company's payroll	Orbis financials	All
Total factor productivity	Levinsohn-Petrin estimation on sales or value-added	Orbis	All
Labour productivity	Sales / Number of employees or Value-Added/Number of employees	Orbis financials	All
Capital intensity	100*Fixed assets / Sales	Orbis financials	All
Firm growth	All sectors except banking: Growth rate of sales, 2011-2014 Banking: Growth rates of gross loans, 2011-2014	Orbis financials	All
Foreign ownership	1 if country of establishment different from country of global ultimate owner 0 if same country or missing information	Orbis ownership	All
Export orientation	100*Export revenue / Sales	Orbis financials	All
Market size	Gross domestic product in EUR	WDI	All
Mobile density	Number of mobile subscriptions per 100 inhabitants	ITU	Telecoms
Broadband density	Number of broadband subscriptions per 100 inhabitants	ITU	Telecoms
Telecom growth	Growth in revenue from all telecommunication services in local currency, 2011-2013	ITU	Telecoms
Goods trade growth	Growth rate of merchandise exports and imports, 2011-2014	WDI	Transport
Openness ratio	(Merchandise exports + Merchandise imports)/GDP	WDI	Transport
High-tech share	High-technology exports / Manufacturing exports	WDI	Engineering & Architecture
R&D	Research and development expenditure / GDP	WDI	Engineering & Architecture
Capital ratio	Bank-level capital adequacy ratio	Orbis financials	Banking
Liquidity ratio	100*Capital funds / Deposits and short-term funding	Orbis financials	Banking
Non-performing loans	100*Non-performing loans / Gross loans	Orbis financials	Banking
Inflation	Annual consumer price inflation	IMF	Banking
Insurance penetration	100*Life and non-life insurance premiums / GDP	OECD	Insurance

Note: Unless otherwise specified, all variables are yearly averages over 2012-2014, and all monetary values are expressed in constant 2012 EUR.

Table A.4. Firm-level variables: Summary statistics

All sectors	Number of observations	Mean	Median	Standard deviation	Maximum	Minimum
Margins	2 155 013	12.25	7.01	22.61	100	-154
Labour productivity (based on sales)	1 431 895	223.32	93.48	2 503.54	1 719 445	0
Labour productivity (based on value added)	624 368	54.02	36.99	522.33	295 498	0
Total factor productivity (based on sales)	680 895	32.13	0.19	1 761.43	1 343 337	0
Total factor productivity (based on value added)	617 182	46.07	29.84	247.80	135 677	1
Net sales	2 155 013	9 755	479	424 978	370 094 113	0
Number of employees	1 434 277	57	9	2 463	2 200 000	3
Total assets	2 157 532	36 896	317	3 670 287	1 857 396 146	0
Capital intensity	2 156 856	25	0	4 497	4 788 672	0
Export orientation	432 902	4.1	0	15.4	1 085	0
Demand shifts : sales growth ++++++++++++++++++++++++++++-++-*-(2011-2014)	896 794	2 663	-5.79	1 051 821	972 615 232	-100

Commercial banking	Number of observations	Mean	Median	Standard deviation	Maximum	Minimum
Net interest margin	3 044	3.14	2.61	2.25	16.17	0.03
Gross loans	3 044	8 612 596	736 500	37 524 037	617 006 891	3.03
Gross loans, growth	1 737	51.33	9.17	911.05	37 114	-100
Capital intensity	2 994	19.75	1.63	695.33	37 700.00	0
Liquidity ratio	2 162	16.8	11.2	39.3	992	-0.09
Tier 1 ratio	2 004	15.41	12.90	18.91	474.07	-16.31
Total capital ratio	2 189	17.94	15.11	18.58	474.07	-16.31
Customer deposits	2 950	10 074 763	742 757	57 476 435	1 357 796 868	0

Source: Orbis and own calculations. Unless otherwise specified, all variables are yearly averages over 2012-2014, and all monetary values are expressed in constant 2012 EUR.

Annex 2.

Methodological notes

Treatment of ORBIS data

Before proceeding with the analysis, the firm-level information drawn from the Orbis Financials and Ownership databases have been subjected to a series of cleaning and imputation procedures.

First, some basic cleaning steps include removing accounts covering less than 12 months, assigning each financial statement to the previous calendar year if the closing date is before 1 July, and removing accounts with missing industry classification or key financial data. Duplicates (i.e. multiple observations for the same firm identifier and the same year) have been removed in the following sequence: 1) deleting observations with identical firm identifier, closing date and financial statement figures; 2) keeping the observation with unconsolidated information if both consolidated and unconsolidated statements are available for the same company; 3) keeping the observation with the closing date closest to the end of the calendar year; 4) keeping the observation from local registry filings rather than annual reports, while retaining financial information from the annual report where it is missing in the local registry filing; 5) manually checking the few remaining duplicates to keep the observation with non-rounded values or with the most information on secondary variables where they are not identical.

Second, basic accounting rules have been checked to verify that firms' profit margins were consistent with the standard accounting formulae and replaced in cases where these deviated from profit margins that could be derived from the underlying figures. For all sectors except commercial banking, we used the ratio of EBITDA (earnings before interest, tax, depreciation and amortisation) over net sales as proxy for profit margins. In cases where profit margins were missing, imputed values reconstructed from the available fundamental variables (EBITDA, net sales, EBIT margin and depreciation/amortisation, operating revenue or turnover, and cost of goods sold) were used. For banking, we used the net interest margin as an indicator of profit margins, and no values were imputed.

Third, a variable indicating whether companies are foreign-owned and the country of ownership was creating with the following procedure. The owner was identified year by year in the following sequence of criteria, where one stops at the first criteria that is fulfilled and only moves to the next if no owner has been identified up to the previous step: 1) headquarters; 2) global ultimate owner with a controlling majority; 3) global ultimate owner with at least 50% ownership; 4) controlling parent, immediate shareholder or shareholder holding at least 50% equity. The country of ownership was assigned based on the first two letters of the owner's BvD identifier. Where this procedure yields missing values, foreign ownership data was imputed based on information for the same firm from previous years (starting in 2007) or from following years. As a last resort, firms with no information on ownership were considered domestically owned.

Fourth, implausible values were also identified by flagging those firms reporting negative values in variables such as sales, total assets, number of employees and total revenues. Firms with total annual revenues exceeding EUR 500 billion or number of employees exceeding 2.5 million were removed from the sample.[18] Outliers and likely mistakes were identified and flagged as those firms whose profit margins exceeded the top and bottom 1% of the sample within each sector. In a few sectors where extreme values of margins remained, the bacon procedure was also applied to flag outliers. Extreme values in the explanatory variables were also

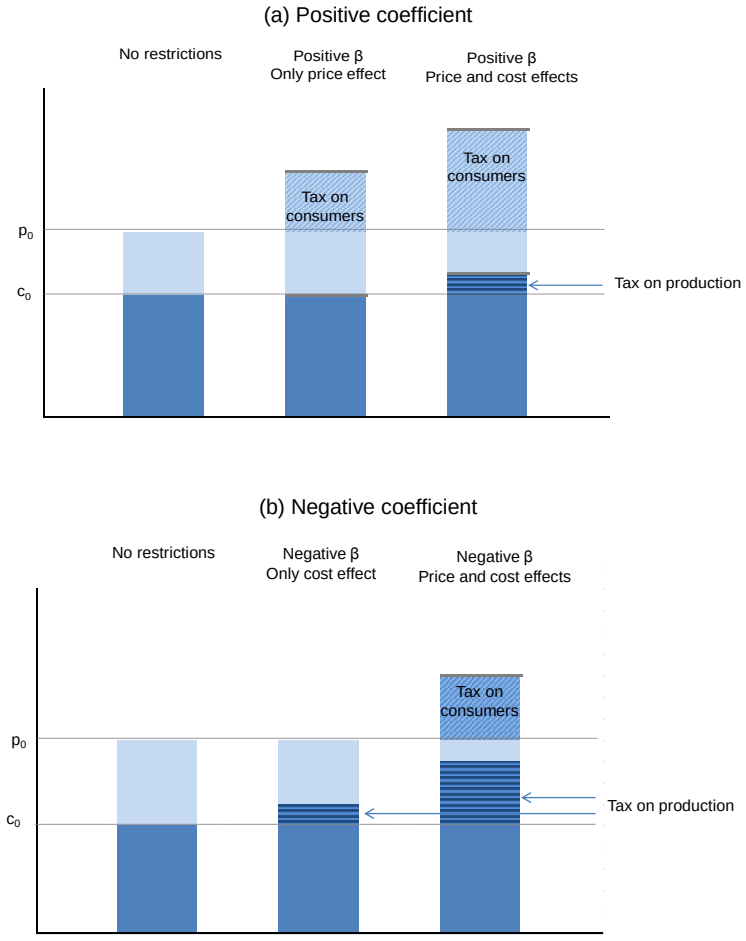
18. This threshold was referenced to Fortune Global 500 highest annual revenue recorded between 2012 and 2014 in the services sectors covered by our sample and corresponds to Wal-Mart's average revenues of USD 464 billion. Walmart is also the world's largest employer with 2.2 million employees.

checked in order to exclude cases where the figures were misreported (for instance because of missing commas) or misclassified (for instance if the actual core activity of the firm was not part of our sector classification). Lastly, micro-enterprises of less than three employees were dropped from the sample.

Estimation of tax equivalents

The tax equivalents by policy area are calculated from the regression results by sector, using the specification that decomposes the STRI score along its five policy dimensions. A positive coefficient is interpreted as rent-creating restrictions, in the sense that trade barriers allow firms to raise their prices to a level that more than fully reflects any cost increase. The tax equivalent is therefore calculated as a tax on consumption, such as a sales tax which would be fully paid by consumers without being absorbed by firms. Figure A.1, Panel (a) illustrates this case. Compared to a situation of no restrictions (left bar), the tax equivalent will be calculated assuming no impact of the STRI component on costs, as in the middle bar. In our data where we only observe price-cost margins rather than prices and costs separately, it is observationally equivalent to the situation represented on the right bar, where restrictions raise both costs and prices but prices increase by a larger magnitude. Hence as long as some categories of restrictions may impact both on operating costs and firms' pricing power, the tax equivalents may suffer from a downward bias.

Figure A.1. Illustration of price and cost effects on profit margins



A negative coefficient is interpreted as cost-raising restrictions, in the sense that trade barriers increase the costs of doing business for local firms more than can be reflected into output prices. The tax equivalent is therefore calculated as a tax on production, such as an output tax which would be fully paid by firms without being passed through to customers. Figure A.1, Panel (b) illustrates this case. Compared to a situation of no restrictions (left bar), the tax equivalent will be calculated assuming no impact of the STRI component on prices, as in the middle bar. In our data, it is observationally equivalent to the situation represented on the right bar, where restrictions raise both costs and prices but costs increase by a larger magnitude. Hence as long as some categories of restrictions may impact both on operating costs and firms' pricing power, the tax equivalents may again suffer from a downward bias.

For each sector *s*, country *c* and policy area *p*, a tax equivalent is calculated from the regression results as the abnormal margin attributable to the difference between the actual score and a zero score for the policy area, holding all other factors constant. Only the policy areas for which the estimated coefficient is different from zero at a 20% significance level are retained in the calculation. The estimate of the tax equivalent by sector and country and its variance (used to compute confidence intervals) are given by:

$$\tau_{sc} = \sum_{p \in P_s} abs(\beta_{sp}) * stri_{scp}$$

$$\mathrm{Var}(\tau_{sc}) = \sum_{p \in P_s} stri_{scp}^2 * Var(\beta_{sp}) + 2 \sum_{p \neq p';p,p' \in P_s} stri_{scp} * stri_{scp'} * Cov(\beta_{sp}, \beta_{sp'}) * I(\beta_{sp} * \beta_{sp'} > 0) - 2 \sum_{p \neq p';p,p' \in P_s} stri_{scp} * stri_{scp'} * Cov(\beta_{sp}, \beta_{sp'}) * I(\beta_{sp} * \beta_{sp'} < 0)$$

where β_{sp} is the regression coefficient corresponding to policy area *p* in sector *s*, P_s is the set of policy areas significantly related to profit margins in sector *s*, and *I(.)* is an indicator variable that takes value 1 if the expression in brackets is true and 0 otherwise.

Annex 3.

Regression Tables

Table A.5. Determinants of price-cost margins: Telecommunications

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFP (log)	9.491***	9.503***	9.773***	9.887***	9.457***	9.505***	9.476***	9.508***	8.203***
	(1.157)	(1.168)	(1.189)	(1.170)	(1.175)	(1.169)	(1.158)	(1.136)	(1.206)
Firm size (log)	-0.985***	-0.991***	-1.349***	-1.331***	-0.977***	-0.991***	-0.977***	-1.005***	-1.101***
	(0.249)	(0.250)	(0.223)	(0.227)	(0.249)	(0.250)	(0.250)	(0.327)	(0.227)
GDP (log)	-1.698***	-1.710***	0.0305	-0.477	-1.617**	-1.714***	-1.700***	-1.685***	-1.554***
	(0.577)	(0.575)	(0.499)	(0.498)	(0.606)	(0.582)	(0.578)	(0.556)	(0.528)
Capital intensity (log)	2.311***	2.313***	2.452***	2.413***	2.308***	2.313***	2.311***	2.312***	2.374***
	(0.372)	(0.371)	(0.369)	(0.368)	(0.371)	(0.371)	(0.372)	(0.358)	(0.330)
Firm grow th (log)	1.723**	1.718**	1.519**	1.629**	1.732**	1.719**	1.728**	1.721**	1.709**
	(0.654)	(0.645)	(0.661)	(0.643)	(0.648)	(0.646)	(0.655)	(0.651)	(0.657)
Foreign ow nership	-4.795***	-4.752***	-4.537***	-5.077***	-4.870***	-4.757***	-7.233	-4.871***	-4.936***
	(1.178)	(1.094)	(1.172)	(1.185)	(1.115)	(1.096)	(4.487)	(1.144)	(1.152)
Mobile penetration	0.0148	0.0145	0.00994	-0.0384	0.0151	0.0147	0.0138	0.0164	0.00838
	(0.0279)	(0.0277)	(0.0171)	(0.0257)	(0.0282)	(0.0277)	(0.0281)	(0.0260)	(0.0243)
Broadband density	-0.354***	-0.359***	-0.657***	-0.384***	-0.359***	-0.357***	-0.353***	-0.354***	-0.368***
	(0.0861)	(0.0924)	(0.102)	(0.0822)	(0.0917)	(0.0886)	(0.0859)	(0.0863)	(0.0870)
STRI	18.85						17.35		
	(11.87)						(12.97)		
Discriminatory		22.34							
		(16.08)							
Non-discriminatory		15.35							
		(22.22)							
Restrictions on foreign entry			10.30						
			(11.66)						
Restrictions to movement of people			-15.65						
			(77.71)						
Other discriminatory measures			-41.25						
			(126.7)						
Barriers to competition			58.43***						
			(17.75)						
Regulatory transparency			-192.2***						
			(30.87)						
All modes				116.5***					
				(21.28)					
Mode 3				-21.64*					
				(12.04)					
Mode 4				-70.79					
				(95.94)					
Establishment					10.32				
					(20.73)				
Operations					24.46				
					(17.52)				
Market access & National treatment						21.75			
						(14.28)			
Domestic regulation						16.41			
						(18.07)			
Foreign ow nership * STRI							15.29		
							(23.66)		
Size q1 * STRI								20.06	
								(15.87)	
Size q2 * STRI								21.33	
								(17.19)	
Size q3 * STRI								14.77	
								(12.42)	
Size q4 * STRI								19.38	
								(11.65)	
TFP q1 * STRI									-0.908
									(18.26)
TFP q2 * STRI									6.084
									(12.97)
TFP q3 * STRI									11.69
									(10.65)
TFP q4 * STRI									29.95***
									(10.04)
Observations	2,815	2,815	2,815	2,815	2,815	2,815	2,815	2,815	2,815
R-squared	0.273	0.273	0.284	0.280	0.273	0.273	0.273	0.273	0.276
Adjusted R2	0.270	0.270	0.281	0.277	0.270	0.270	0.270	0.270	0.273

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value added production function and size is total assets.

Table A.6. Determinants of price-cost margins: Computer services

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFP (log)	8.372***	8.401***	8.986***	8.338***	8.435***	8.327***	8.368***	8.532***	7.552***
	(1.043)	(1.095)	(1.029)	(1.058)	(1.051)	(1.071)	(1.044)	(1.043)	(1.220)
Firm size (log)	-0.600	-0.703*	-1.018***	-0.598	-0.694*	-0.649*	-0.596	-0.0541	-0.650
	(0.405)	(0.359)	(0.251)	(0.408)	(0.372)	(0.375)	(0.406)	(0.346)	(0.401)
GDP (log)	-1.083**	-0.160	-0.527	-1.160**	-1.199**	-0.528	-1.103**	-1.168**	-0.850
	(0.503)	(0.639)	(0.775)	(0.488)	(0.530)	(0.601)	(0.504)	(0.480)	(0.547)
Capital intensity (log)	1.652***	1.717***	1.768***	1.670***	1.707***	1.699***	1.651***	1.683***	1.679***
	(0.345)	(0.316)	(0.301)	(0.335)	(0.316)	(0.322)	(0.346)	(0.363)	(0.345)
Firm grow th (log)	2.285***	2.240***	2.161***	2.283***	2.236***	2.258***	2.287***	2.269***	2.277***
	(0.320)	(0.292)	(0.293)	(0.315)	(0.283)	(0.293)	(0.320)	(0.320)	(0.327)
Foreign ow nership	-4.942***	-4.642***	-4.465***	-5.032***	-4.740***	-4.763***	-1.501	-5.178***	-5.323***
	(1.053)	(0.972)	(0.698)	(1.033)	(0.905)	(0.988)	(3.648)	(0.960)	(0.983)
Brodband density	-0.508***	-0.711***	-0.921***	-0.442***	-0.412***	-0.620***	-0.506***	-0.514***	-0.580***
	(0.131)	(0.164)	(0.162)	(0.122)	(0.146)	(0.158)	(0.131)	(0.131)	(0.132)
STRI	-15.63						-13.92		
	(17.80)						(18.69)		
Discriminatory		7.005							
		(19.92)							
Non-discriminatory		-55.32**							
		(24.53)							
Restrictions on foreign entry			16.65						
			(31.99)						
Restrictions to movement of people			-6.203						
			(34.50)						
Other discriminatory measures			195.7**						
			(75.86)						
Barriers to competition			-300.5**						
			(122.5)						
Regulatory transparency			-61.60*						
			(31.23)						
All modes				-6.286					
				(37.48)					
Mode 3				-18.80					
				(23.46)					
Mode 4				12.90					
				(48.91)					
Establishment					41.77				
					(26.64)				
Operations					-34.14				
					(21.41)				
Market access & National treatment						11.10			
						(24.46)			
Domestic regulation						-37.15			
						(23.34)			
Foreign ow nership * STRI							-18.92		
							(17.28)		
Size q1 * STRI								-8.864	
								(17.84)	
Size q2 * STRI								-0.828	
								(17.39)	
Size q3 * STRI								-12.15	
								(17.21)	
Size q4 * STRI								-20.39	
								(17.77)	
TFP q1 * STRI									-24.00
									(19.61)
TFP q2 * STRI									-28.41
									(18.10)
TFP q3 * STRI									-24.71
									(18.01)
TFP q4 * STRI									-9.691
									(18.18)
Observations	34,045	34,045	34,045	34,045	34,045	34,045	34,045	34,045	34,045
R-squared	0.151	0.157	0.165	0.152	0.158	0.155	0.151	0.154	0.155
Adjusted R2	0.151	0.157	0.165	0.152	0.157	0.155	0.151	0.154	0.155

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value-added production function and size is total assets.

Table A.7. Determinants of price-cost margins: Construction

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFP (log)	5.028***	4.424***	4.317***	4.550***	4.710***	4.257***	5.028***	5.126***	2.987***
	(1.029)	(0.819)	(0.809)	(0.877)	(0.840)	(0.832)	(1.030)	(1.030)	(0.618)
Firm size (log)	0.258	0.254	0.241	0.302	0.129	0.298	0.258	-0.449*	0.0984
	(0.344)	(0.270)	(0.274)	(0.306)	(0.320)	(0.266)	(0.345)	(0.226)	(0.275)
GDP (log)	-0.858	-0.226	0.301	0.0150	-0.383	-0.0385	-0.858	-0.984	-1.103
	(0.831)	(0.696)	(0.755)	(0.745)	(0.487)	(0.629)	(0.831)	(0.806)	(0.817)
Capital intensity (log)	1.168***	1.373***	1.411***	1.286***	1.254***	1.381***	1.168***	1.184***	1.413***
	(0.324)	(0.221)	(0.203)	(0.234)	(0.227)	(0.207)	(0.324)	(0.324)	(0.249)
Firm grow th (log)	2.192***	2.121***	2.108***	2.157***	2.090***	2.128***	2.192***	2.180***	2.107***
	(0.255)	(0.222)	(0.211)	(0.217)	(0.233)	(0.228)	(0.255)	(0.252)	(0.228)
Foreign ow nership	-3.792***	-3.545***	-2.738**	-2.993***	-2.726***	-3.063***	-2.975	-3.104***	-3.638***
	(0.768)	(0.756)	(1.096)	(0.790)	(0.894)	(0.881)	(3.173)	(0.646)	(0.732)
STRI	13.77						13.80		
	(11.60)						(11.68)		
Discriminatory		62.47**							
		(23.28)							
Non-discriminatory		-41.32							
		(28.35)							
Restrictions on foreign entry			162.7***						
			(37.63)						
Restrictions to movement of people			157.6***						
			(51.95)						
Other discriminatory measures			25.59**						
			(11.81)						
Barriers to competition			-377.4***						
			(91.78)						
Regulatory transparency			-100.3***						
			(25.93)						
All modes				-11.74					
				(22.90)					
Mode 3				60.83***					
				(21.54)					
Mode 4				103.4					
				(70.48)					
Establishment					99.84***				
					(28.63)				
Operations					-9.343				
					(17.26)				
Market access & National treatment						92.98***			
						(23.88)			
Domestic regulation						-42.33**			
						(15.20)			
Foreign ow nership * STRI							-4.581		
							(16.00)		
Size q1 * STRI								-5.791	
								(13.57)	
Size q2 * STRI								7.751	
								(13.68)	
Size q3 * STRI								16.22	
								(11.06)	
Size q4 * STRI								18.88*	
								(9.446)	
TFP q1 * STRI									-19.66
									(17.80)
TFP q2 * STRI									7.343
									(12.83)
TFP q3 * STRI									12.96
									(10.65)
TFP q4 * STRI									14.49
									(10.54)
Observations	193,007	193,007	193,007	193,007	193,007	193,007	193,007	193,007	193,007
R-squared	0.092	0.106	0.113	0.103	0.109	0.111	0.092	0.095	0.105
Adjusted R2	0.0915	0.106	0.113	0.103	0.109	0.110	0.0915	0.0951	0.105

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a gross output production function and size is total assets.

Table A.8. Determinants of price-cost margins: Distribution

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFP (log)	3.699***	3.682***	3.654***	3.629***	3.677***	3.648***	3.699***	3.700***	2.701***
	(0.440)	(0.419)	(0.400)	(0.391)	(0.428)	(0.404)	(0.440)	(0.435)	(0.445)
Firm size (log)	1.811***	1.746***	1.659***	1.703***	1.739***	1.685***	1.810***	1.417***	2.240***
	(0.352)	(0.317)	(0.324)	(0.301)	(0.336)	(0.317)	(0.352)	(0.300)	(0.341)
GDP (log)	-0.602	-0.381	-0.183	-0.923***	-0.668	-0.430*	-0.599	-0.673	-0.724*
	(0.428)	(0.333)	(0.329)	(0.301)	(0.399)	(0.246)	(0.427)	(0.415)	(0.400)
Capital intensity (log)	0.171	0.227	0.261	0.219	0.170	0.251	0.172	0.164	0.0278
	(0.171)	(0.161)	(0.165)	(0.155)	(0.165)	(0.164)	(0.171)	(0.175)	(0.172)
Firm grow th (log)	2.434***	2.408***	2.400***	2.398***	2.410***	2.394***	2.434***	2.435***	2.402***
	(0.126)	(0.119)	(0.128)	(0.116)	(0.132)	(0.126)	(0.125)	(0.129)	(0.123)
Foreign ow nership	-2.773***	-2.817***	-2.723***	-3.197***	-2.650***	-2.732***	-1.458	-2.433***	-3.045***
	(0.383)	(0.462)	(0.542)	(0.476)	(0.426)	(0.528)	(1.185)	(0.378)	(0.394)
STRI	2.642						3.263		
	(13.12)						(13.32)		
Discriminatory		44.97***							
		(12.64)							
Non-discriminatory		-24.62							
		(17.61)							
Restrictions on foreign entry			42.73***						
			(10.58)						
Restrictions to movement of people			84.49						
			(64.39)						
Other discriminatory measures			-174.2*						
			(97.92)						
Barriers to competition			-17.01						
			(25.38)						
Regulatory transparency			-78.34***						
			(24.78)						
All modes				80.88**					
				(30.44)					
Mode 3				-20.09					
				(15.16)					
Mode 4				-221.2***					
				(51.54)					
Establishment					40.71**				
					(18.48)				
Operations					-21.17				
					(19.69)				
Market access & National treatment						53.83***			
						(12.63)			
Domestic regulation						-47.22***			
						(11.99)			
Foreign ow nership * STRI							-12.32		
							(10.00)		
Size q1 * STRI								-28.60	
								(22.34)	
Size q2 * STRI								-4.243	
								(16.37)	
Size q3 * STRI								6.196	
								(13.42)	
Size q4 * STRI								5.908	
								(11.06)	
TFP q1 * STRI									-22.24*
									(11.74)
TFP q2 * STRI									-5.824
									(11.89)
TFP q3 * STRI									6.239
									(12.62)
TFP q4 * STRI									22.87*
									(13.31)
Observations	304,231	304,231	304,231	304,231	304,231	304,231	304,231	304,231	304,231
R-squared	0.115	0.122	0.126	0.123	0.118	0.126	0.115	0.119	0.127
Adjusted R2	0.115	0.122	0.125	0.123	0.118	0.126	0.115	0.119	0.127

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a gross output production function and size is total assets.

Table A.9. Determinants of price-cost margins: Professional services - Accounting and auditing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFP (log)	8.577***	8.435***	9.143***	8.559***	8.531***	8.457***	8.572***	8.826***	7.176***
	(0.899)	(0.959)	(0.804)	(0.844)	(0.927)	(0.939)	(0.894)	(0.877)	(0.658)
Firm size (log)	-1.892***	-1.981***	-2.069***	-2.039***	-2.138***	-1.991***	-1.888***	-1.391**	-2.111***
	(0.479)	(0.485)	(0.525)	(0.508)	(0.490)	(0.492)	(0.475)	(0.510)	(0.532)
GDP (log)	-3.627***	-3.264***	-2.632*	-4.060***	-3.905***	-3.298***	-3.634***	-3.588***	-3.940***
	(0.753)	(1.049)	(1.469)	(0.645)	(0.677)	(0.954)	(0.759)	(0.776)	(0.923)
Capital intensity (log)	1.631***	1.644***	1.661***	1.685***	1.637***	1.638***	1.630***	1.631***	1.661***
	(0.234)	(0.227)	(0.240)	(0.237)	(0.221)	(0.227)	(0.234)	(0.253)	(0.241)
Firm grow th (log)	2.005***	1.999***	1.970***	2.003***	1.953***	1.994***	2.006***	2.005***	2.020***
	(0.274)	(0.270)	(0.288)	(0.268)	(0.285)	(0.275)	(0.274)	(0.265)	(0.293)
Foreign ow nership	-1.226	-1.015	-1.484	-0.977	-1.194	-1.045	-5.581	-2.400	-0.619
	(2.268)	(2.311)	(2.354)	(2.344)	(2.243)	(2.270)	(4.754)	(2.139)	(2.172)
STRI	9.296						9.177		
	(6.468)						(6.487)		
Discriminatory		3.800							
		(15.15)							
Non-discriminatory		-35.69							
		(74.55)							
Restrictions on foreign entry			-48.43***						
			(8.229)						
Restrictions to movement of people			32.11**						
			(13.87)						
Other discriminatory measures			-409.9***						
			(100.9)						
Barriers to competition			678.5***						
			(233.1)						
Regulatory transparency			-39.23						
			(46.69)						
All modes				80.67					
				(49.60)					
Mode 3				-13.65					
				(22.22)					
Mode 4				-1.369					
				(17.19)					
Establishment					42.79**				
					(19.06)				
Operations					-50.52				
					(35.28)				
Market access & National treatment						2.689			
						(17.06)			
Domestic regulation						-38.76			
						(80.38)			
Foreign ow nership * STRI							14.18		
							(14.73)		
Size q1 * STRI								18.81**	
								(7.086)	
Size q2 * STRI								10.60	
								(6.508)	
Size q3 * STRI								6.874	
								(6.622)	
Size q4 * STRI								6.180	
								(6.341)	
TFP q1 * STRI									4.284
									(7.447)
TFP q2 * STRI									10.04
									(7.756)
TFP q3 * STRI									14.92
									(8.949)
TFP q4 * STRI									17.07*
									(9.300)
Observations	23,143	23,143	23,143	23,143	23,143	23,143	23,143	23,143	23,143
R-squared	0.175	0.175	0.186	0.179	0.179	0.175	0.176	0.178	0.179
Adjusted R2	0.175	0.175	0.185	0.179	0.178	0.175	0.175	0.178	0.178

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value added production function and size is net sales.

Table A.10. Determinants of price-cost margins: Professional services - Architecture

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFP (log)	9.485***	9.503***	10.21***	9.824***	9.708***	9.526***	9.484***	9.547***	7.692***
	(1.429)	(1.492)	(1.171)	(1.305)	(1.466)	(1.500)	(1.429)	(1.445)	(1.307)
Firm size (log)	-1.101	-0.990	-1.246**	-1.125*	-1.009	-0.984	-1.101	-0.921	-1.194*
	(0.641)	(0.636)	(0.524)	(0.551)	(0.655)	(0.634)	(0.641)	(0.791)	(0.654)
GDP (log)	-4.580***	-2.962**	-1.122	-4.435***	-2.773**	-3.450***	-4.580***	-4.565***	-4.709***
	(1.001)	(1.239)	(1.705)	(0.977)	(1.027)	(0.976)	(0.999)	(0.984)	(1.090)
Capital intensity (log)	1.023***	1.089***	1.154***	1.055***	1.094***	1.084***	1.024***	1.017***	1.014***
	(0.293)	(0.297)	(0.326)	(0.292)	(0.297)	(0.294)	(0.292)	(0.292)	(0.289)
Firm grow th (log)	4.122***	4.091***	3.951***	4.086***	4.051***	4.088***	4.122***	4.127***	4.123***
	(0.475)	(0.495)	(0.510)	(0.488)	(0.501)	(0.496)	(0.475)	(0.470)	(0.466)
Foreign ow nership	-5.533**	-5.396**	-4.278**	-4.537**	-5.635**	-5.590**	-6.056	-5.703**	-5.355**
	(2.277)	(2.127)	(1.927)	(2.080)	(2.022)	(2.146)	(5.506)	(2.322)	(2.396)
High-tech share	22.34	6.190	-3.177	40.66*	13.14	8.705	22.32	21.97	25.89
	(16.51)	(20.84)	(20.15)	(20.39)	(17.03)	(19.59)	(16.61)	(16.79)	(16.99)
STRI	2.786						2.733		
	(15.63)						(16.05)		
Discriminatory		17.84							
		(23.35)							
Non-discriminatory		-40.39							
		(30.25)							
Restrictions on foreign entry			21.96						
			(49.98)						
Restrictions to movement of people			5.010						
			(12.79)						
Other discriminatory measures			-201.4**						
			(93.91)						
Barriers to competition			745.7***						
			(250.1)						
Regulatory transparency			-121.9***						
			(42.28)						
All modes				105.1					
				(75.37)					
Mode 3				15.68					
				(21.97)					
Mode 4				-37.11					
				(41.09)					
Establishment					21.46				
					(22.43)				
Operations					-29.29				
					(19.04)				
Market access & National treatment						12.78			
						(21.57)			
Domestic regulation						-31.98			
						(26.37)			
Foreign ow nership * STRI							2.154		
							(23.47)		
Size q1 * STRI								5.998	
								(18.95)	
Size q2 * STRI								4.576	
								(17.67)	
Size q3 * STRI								2.700	
								(16.09)	
Size q4 * STRI								1.784	
								(13.99)	
TFP q1 * STRI									-14.41
									(17.85)
TFP q2 * STRI									1.207
									(16.97)
TFP q3 * STRI									4.406
									(17.46)
TFP q4 * STRI									8.962
									(19.44)
Observations	5,724	5,724	5,724	5,724	5,724	5,724	5,724	5,724	5,724
R-squared	0.196	0.197	0.207	0.198	0.199	0.197	0.196	0.196	0.199
Adjusted R2	0.195	0.196	0.206	0.197	0.198	0.196	0.194	0.194	0.197

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value added production function and size is net sales.

Table A.11. Determinants of price-cost margins: Professional services - Engineering

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFP (log)	9.270***	9.241***	9.390***	9.322***	9.520***	9.280***	9.269***	9.265***	7.903***
	(1.232)	(1.287)	(1.547)	(1.420)	(1.372)	(1.327)	(1.231)	(1.253)	(1.574)
Firm size (log)	-2.239***	-2.228***	-2.206***	-2.246***	-2.314***	-2.236***	-2.239***	-1.945***	-2.330***
	(0.451)	(0.459)	(0.502)	(0.494)	(0.506)	(0.464)	(0.450)	(0.408)	(0.422)
GDP (log)	-2.613**	-1.719	-0.238	-2.479**	-1.725	-2.124	-2.613**	-2.636**	-2.630**
	(1.138)	(1.775)	(2.422)	(0.993)	(1.129)	(1.393)	(1.137)	(1.142)	(1.178)
Capital intensity (log)	1.055***	1.085***	1.112***	1.065***	1.096***	1.078***	1.055***	1.049***	1.062***
	(0.207)	(0.203)	(0.210)	(0.211)	(0.206)	(0.205)	(0.207)	(0.202)	(0.201)
Firm grow th (log)	3.175***	3.172***	3.150***	3.172***	3.149***	3.174***	3.176***	3.175***	3.181***
	(0.532)	(0.532)	(0.531)	(0.530)	(0.529)	(0.532)	(0.533)	(0.531)	(0.522)
Foreign ow nership	-3.394***	-3.378***	-3.515***	-3.412***	-3.392***	-3.377***	-3.829	-3.513***	-3.489***
	(0.883)	(0.876)	(0.868)	(0.883)	(0.864)	(0.889)	(3.036)	(0.852)	(0.899)
High-tech share	3.614	-4.494	2.917	2.457	-4.201	-1.545	3.599	2.577	7.985
	(18.13)	(23.34)	(22.79)	(18.19)	(16.96)	(21.80)	(18.11)	(18.37)	(19.21)
STRI	4.720						4.616		
	(12.20)						(12.62)		
Discriminatory		15.79							
		(23.03)							
Non-discriminatory		-24.34							
		(48.71)							
Restrictions on foreign entry			18.19						
			(49.40)						
Restrictions to movement of people			15.26						
			(15.72)						
Other discriminatory measures			27.47						
			(109.0)						
Barriers to competition			324.2**						
			(126.3)						
Regulatory transparency			-52.18						
			(67.24)						
All modes				23.71					
				(59.64)					
Mode 3				-10.10					
				(27.60)					
Mode 4				3.575					
				(29.57)					
Establishment					19.03				
					(18.75)				
Operations					-19.50				
					(20.97)				
Market access & National treatment						11.64			
						(19.79)			
Domestic regulation						-12.41			
						(40.50)			
Foreign ow nership * STRI							2.325		
							(15.24)		
Size q1 * STRI								5.795	
								(14.48)	
Size q2 * STRI								8.700	
								(14.03)	
Size q3 * STRI								4.082	
								(12.43)	
Size q4 * STRI								0.0806	
								(10.45)	
TFP q1 * STRI									0.246
									(12.93)
TFP q2 * STRI									5.848
									(12.63)
TFP q3 * STRI									12.88
									(13.76)
TFP q4 * STRI									23.00
									(17.42)
Observations	18,043	18,043	18,043	18,043	18,043	18,043	18,043	18,043	18,043
R-squared	0.172	0.172	0.178	0.172	0.175	0.172	0.172	0.172	0.174
Adjusted R2	0.171	0.172	0.177	0.172	0.175	0.172	0.171	0.172	0.174

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value added production function and size is net sales.

Table A.12. Determinants of price-cost margins: Professional services - Legal services

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFP (log)	12.53***	13.54***	13.21***	12.57***	13.43***	13.56***	12.54***	12.54***	11.97***
	(1.421)	(0.957)	(0.968)	(1.317)	(1.165)	(1.023)	(1.425)	(1.384)	(1.118)
Firm size (log)	-2.242***	-2.137***	-2.259***	-2.082***	-2.147***	-2.132***	-2.245***	-1.938***	-2.278***
	(0.570)	(0.614)	(0.730)	(0.563)	(0.616)	(0.617)	(0.574)	(0.492)	(0.551)
GDP (log)	-6.186***	-6.494***	-3.181	-6.534***	-7.003***	-7.100***	-6.189***	-6.091***	-6.278***
	(1.384)	(1.137)	(2.895)	(1.998)	(0.908)	(1.100)	(1.386)	(1.326)	(1.359)
Capital intensity (log)	1.824***	1.811***	1.827***	1.878***	1.813***	1.815***	1.825***	1.837***	1.828***
	(0.0623)	(0.0601)	(0.0664)	(0.0654)	(0.0605)	(0.0588)	(0.0615)	(0.0658)	(0.0661)
Firm grow th (log)	2.715***	2.677***	2.762***	2.773***	2.705***	2.692***	2.715***	2.695***	2.725***
	(0.225)	(0.229)	(0.263)	(0.253)	(0.238)	(0.230)	(0.225)	(0.224)	(0.222)
Foreign ow nership	-4.484	-5.618*	-6.063	-3.797	-4.937	-5.732	-3.491	-4.589	-4.378
	(3.104)	(3.247)	(3.762)	(3.063)	(4.021)	(3.347)	(6.966)	(3.265)	(3.131)
STRI	-7.807						-7.720		
	(13.97)						(14.11)		
Discriminatory		-25.42**							
		(9.849)							
Non-discriminatory		90.34***							
		(31.53)							
Restrictions on foreign entry			5.590						
			(38.92)						
Restrictions to movement of people			-66.45						
			(69.28)						
Other discriminatory measures			213.2						
			(379.9)						
Barriers to competition			843.0*						
			(453.5)						
Regulatory transparency			-93.04						
			(112.3)						
All modes				9.696					
				(93.00)					
Mode 3				-8.601					
				(39.64)					
Mode 4				-109.1					
				(89.71)					
Establishment					-78.79***				
					(23.14)				
Operations					88.94**				
					(42.23)				
Market access & National treatment						-16.10			
						(10.73)			
Domestic regulation						103.2***			
						(22.53)			
Foreign ow nership * STRI							-3.564		
							(20.74)		
Size q1 * STRI								-9.561	
								(14.21)	
Size q2 * STRI								-6.540	
								(14.24)	
Size q3 * STRI								-4.136	
								(13.29)	
Size q4 * STRI								-9.932	
								(14.01)	
TFP q1 * STRI									-11.73
									(13.83)
TFP q2 * STRI									-8.940
									(14.26)
TFP q3 * STRI									-3.856
									(13.10)
TFP q4 * STRI									-7.305
									(15.63)
Observations	4,588	4,588	4,588	4,588	4,588	4,588	4,588	4,588	4,588
R-squared	0.330	0.338	0.339	0.333	0.339	0.339	0.330	0.331	0.331
Adjusted R2	0.329	0.336	0.337	0.331	0.338	0.338	0.329	0.330	0.330

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value added production function and size is net sales.

Table A.13. Determinants of price-cost margins: Maritime freight transport

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFP (log)	7.610***	7.676***	7.496***	7.580***	7.479***	7.667***	7.639***	7.540***	7.599***
	(1.859)	(1.915)	(1.955)	(1.884)	(1.883)	(1.919)	(1.859)	(1.886)	(1.911)
Firm size (log)	-1.853**	-1.722**	-1.866**	-1.890**	-1.903**	-1.761**	-1.877**	-1.682*	-1.887**
	(0.803)	(0.812)	(0.817)	(0.822)	(0.839)	(0.808)	(0.807)	(0.952)	(0.890)
GDP (log)	-3.070***	-3.449***	-2.618**	-2.721***	-3.709***	-3.341***	-3.169***	-2.949***	-3.066***
	(1.002)	(1.130)	(0.964)	(0.879)	(0.996)	(1.116)	(0.989)	(0.962)	(1.017)
Capital intensity (log)	1.803***	1.802***	1.832***	1.848***	1.871***	1.802***	1.768***	1.824***	1.831***
	(0.465)	(0.461)	(0.466)	(0.456)	(0.459)	(0.463)	(0.454)	(0.463)	(0.475)
Firm grow th (log)	5.185***	5.205***	5.183***	5.159***	5.154***	5.195***	5.218***	5.149***	5.223***
	(0.588)	(0.590)	(0.593)	(0.595)	(0.613)	(0.592)	(0.587)	(0.559)	(0.531)
Foreign ow nership	2.852	2.782	0.907	0.874	1.433	2.844	8.744	2.938	2.685
	(2.688)	(2.779)	(2.820)	(2.941)	(2.772)	(2.737)	(6.281)	(2.722)	(2.761)
Openness ratio	-4.258*	-4.311**	0.0779	-2.626*	-4.646**	-4.263*	-4.409*	-4.142*	-4.091
	(2.298)	(1.898)	(1.409)	(1.472)	(1.655)	(2.042)	(2.439)	(2.260)	(2.441)
STRI	4.442						8.931		
	(18.13)						(20.04)		
Discriminatory		-0.210							
		(15.76)							
Non-discriminatory		51.11							
		(45.31)							
Restrictions on foreign entry			17.94						
			(11.26)						
Restrictions to movement of people			252.7***						
			(65.66)						
Other discriminatory measures			83.18						
			(154.3)						
Barriers to competition			-69.85						
			(67.38)						
Regulatory transparency			116.1						
			(83.47)						
All modes				87.40*					
				(48.73)					
Mode 3				-0.265					
				(10.10)					
Mode 4				210.2***					
				(63.34)					
Establishment					60.89***				
					(18.94)				
Operations					-70.83**				
					(28.94)				
Market access & National treatment						2.444			
						(16.94)			
Domestic regulation						29.46			
						(37.54)			
Foreign ow nership * STRI							-35.25		
							(30.34)		
Size q1 * STRI								7.192	
								(15.02)	
Size q2 * STRI								14.88	
								(13.64)	
Size q3 * STRI								2.431	
								(19.83)	
Size q4 * STRI								3.382	
								(19.49)	
TFP q1 * STRI									4.779
									(15.65)
TFP q2 * STRI									-3.130
									(12.27)
TFP q3 * STRI									11.39
									(16.66)
TFP q4 * STRI									2.250
									(28.17)
Observations	819	819	819	819	819	819	819	819	819
R-squared	0.265	0.266	0.276	0.276	0.272	0.266	0.266	0.267	0.268
Adjusted R2	0.258	0.258	0.266	0.267	0.263	0.258	0.258	0.257	0.258

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value added production function and size is total assets.

Table A.14. Determinants of price-cost margins: Air transport

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TFP (log)	15.41***	15.47**	15.08**	15.36***	15.34***	15.47***	16.30***	21.63*
	(5.349)	(5.583)	(5.409)	(5.366)	(5.206)	(5.366)	(5.485)	(10.76)
Firm size (log)	-2.593**	-2.538*	-2.528**	-2.534**	-2.537**	-2.578**	-2.123	-2.125**
	(1.250)	(1.230)	(1.142)	(1.103)	(1.145)	(1.245)	(1.441)	(0.830)
GDP (log)	0.147	0.102	1.536	-0.00200	0.0572	0.204	-0.0683	0.411
	(1.140)	(1.167)	(1.520)	(1.045)	(1.083)	(1.143)	(1.133)	(1.223)
Capital intensity (log)	1.556***	1.574***	1.555***	1.561***	1.559***	1.565***	1.687***	1.629***
	(0.429)	(0.434)	(0.444)	(0.428)	(0.431)	(0.437)	(0.452)	(0.422)
Firm growth (log)	2.951	3.010	2.973	3.000	2.995	2.834	3.346	2.944
	(2.069)	(2.074)	(2.036)	(2.064)	(2.037)	(1.987)	(2.230)	(2.013)
Foreign ownership	-6.974*	-7.002**	-6.446*	-7.157**	-7.180*	-29.77	-7.161**	-7.489*
	(3.419)	(3.366)	(3.498)	(3.326)	(3.541)	(21.21)	(3.160)	(3.713)
Merchandise trade growth	77.95*	74.20**	80.22*	72.23**	75.71**	80.06*	61.21	71.55*
	(39.17)	(34.93)	(40.56)	(29.48)	(34.81)	(40.23)	(36.00)	(34.82)
STRI	21.67					16.78		
	(19.63)					(21.76)		
Discriminatory		5.411						
		(24.88)						
Non-discriminatory		54.18						
		(109.1)						
Restrictions on foreign entry			-58.60					
			(64.19)					
Restrictions to movement of people			182.6					
			(281.8)					
Other discriminatory measures			130.4					
			(116.5)					
Barriers to competition			196.3					
			(120.7)					
Regulatory transparency			-69.50					
			(125.4)					
All modes				37.37				
				(160.9)				
Mode 3				7.820				
				(65.59)				
Mode 4				119.8				
				(316.9)				
Establishment					5.836			
					(213.1)			
Operations					13.91			
					(40.15)			
Foreign ownership * STRI						59.87		
						(49.44)		
Size q1 * STRI							48.10	
							(31.32)	
Size q2 * STRI							35.26*	
							(19.10)	
Size q3 * STRI							13.21	
							(19.03)	
Size q4 * STRI							20.45	
							(23.29)	
TFP q1 * STRI								48.84
								(34.70)
TFP q2 * STRI								26.29
								(18.40)
TFP q3 * STRI								12.52
								(12.67)
TFP q4 * STRI								-7.883
								(23.94)
Observations	412	412	412	412	412	412	412	412
R-squared	0.250	0.249	0.256	0.249	0.249	0.252	0.268	0.274
Adjusted R2	0.235	0.232	0.234	0.231	0.232	0.235	0.248	0.254

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value added production function and size is total assets. Since air transport services are excluded from the GATS, the distinction between market access/national treatment and domestic regulation is not made.

Table A.15. Determinants of price-cost margins: Rail freight transport

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFP (log)	6.770	6.784	6.521	6.666	6.609	6.806	7.099	7.032	-1.575
	(4.726)	(4.752)	(4.976)	(4.915)	(4.866)	(4.798)	(4.671)	(4.621)	(10.98)
Firm size (log)	-0.391	-0.334	-0.191	-0.517	-0.171	-0.289	-0.438	0.971	-0.929
	(1.860)	(1.860)	(2.019)	(1.870)	(1.908)	(1.883)	(1.859)	(2.342)	(1.426)
GDP (log)	-2.625	-2.617	-2.657	-2.623	-1.914	-2.616	-2.426	-3.759*	-2.532
	(1.695)	(1.696)	(1.921)	(1.886)	(1.358)	(1.672)	(1.668)	(2.110)	(1.532)
Capital intensity (log)	1.986	2.001	1.798	2.000	2.025	2.000	2.037	1.822	2.344
	(1.551)	(1.546)	(1.726)	(1.593)	(1.554)	(1.542)	(1.535)	(1.565)	(1.500)
Firm grow th (log)	4.333	4.422	4.417	4.243	4.703	4.455	4.348	5.125	4.027
	(4.212)	(4.361)	(4.427)	(4.409)	(4.365)	(4.365)	(4.231)	(4.263)	(3.686)
Foreign ow nership	4.035	4.230	3.826	3.682	3.425	4.286	-4.466	5.310	5.149
	(4.437)	(4.474)	(4.649)	(4.278)	(4.641)	(4.484)	(8.536)	(4.886)	(5.011)
Merchandise trade grow th	74.28	66.20*	59.15	78.04*	54.69	62.94	77.94	77.52	94.57
	(49.98)	(37.09)	(45.99)	(44.29)	(44.03)	(37.71)	(49.26)	(44.76)	(57.85)
STRI	26.56						11.18		
	(29.40)						(27.91)		
Discriminatory		9.304							
		(66.96)							
Non-discriminatory		37.44							
		(43.27)							
Restrictions on foreign entry			-54.64						
			(52.00)						
Restrictions to movement of people			100.8						
			(109.9)						
Other discriminatory measures			351.4						
			(451.0)						
Barriers to competition			12.37						
			(27.29)						
Regulatory transparency			-0.552						
			(80.70)						
All modes				-37.53					
				(182.8)					
Mode 3				33.98					
				(29.67)					
Mode 4				52.17					
				(82.65)					
Establishment					-81.98				
					(81.98)				
Operations					42.86				
					(44.08)				
Market access & National treatment						0.279			
						(63.17)			
Domestic regulation						39.75			
						(43.82)			
Foreign ow nership * STRI							60.72		
							(53.64)		
Size q1 * STRI								174.3*	
								(97.53)	
Size q2 * STRI								31.65	
								(32.94)	
Size q3 * STRI								84.23	
								(59.45)	
Size q4 * STRI								35.73	
								(33.67)	
TFP q1 * STRI									-104.8
									(106.9)
TFP q2 * STRI									4.242
									(37.18)
TFP q3 * STRI									19.49
									(24.71)
TFP q4 * STRI									48.24
									(47.49)
Observations	101	101	101	101	101	101	101	101	101
R-squared	0.192	0.193	0.200	0.193	0.204	0.193	0.195	0.257	0.238
Adjusted R2	0.122	0.113	0.0908	0.104	0.126	0.114	0.115	0.166	0.144

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value added production function and size is total assets.

Table A.16. Determinants of price-cost margins: Road freight transport

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFP (log)	9.108***	9.374***	9.803***	9.353***	9.423***	9.085***	9.121***	9.073***	10.04***
	(1.531)	(1.365)	(1.571)	(1.622)	(1.586)	(1.594)	(1.531)	(1.545)	(1.481)
Firm size (log)	-1.550***	-1.613***	-1.794***	-1.616***	-1.707***	-1.575***	-1.551***	-1.560***	-1.494***
	(0.179)	(0.171)	(0.225)	(0.216)	(0.228)	(0.211)	(0.180)	(0.220)	(0.155)
GDP (log)	-2.772***	-3.389***	-3.024***	-2.531***	-2.835***	-2.445***	-2.778***	-2.758***	-2.793***
	(0.549)	(0.647)	(0.540)	(0.523)	(0.469)	(0.538)	(0.551)	(0.544)	(0.573)
Capital intensity (log)	2.568***	2.611***	2.760***	2.650***	2.719***	2.607***	2.568***	2.556***	2.551***
	(0.350)	(0.344)	(0.333)	(0.350)	(0.335)	(0.359)	(0.350)	(0.349)	(0.358)
Firm grow th (log)	1.820***	1.785***	1.755***	1.815***	1.795***	1.826***	1.819***	1.809***	1.810***
	(0.176)	(0.180)	(0.183)	(0.171)	(0.176)	(0.175)	(0.176)	(0.178)	(0.177)
Foreign ow nership	-2.581**	-2.518**	-2.538**	-2.414**	-2.454**	-2.602**	-11.02**	-2.500**	-2.660***
	(0.973)	(1.021)	(0.952)	(0.917)	(1.014)	(0.973)	(5.053)	(0.956)	(0.872)
Merchandise trade grow th	8.466	9.981	17.42	10.18	6.467	14.26	8.143	8.480	7.067
	(14.91)	(11.86)	(12.61)	(18.62)	(15.85)	(19.02)	(14.81)	(14.74)	(13.70)
STRI	-4.486						-6.057		
	(15.37)						(14.76)		
Discriminatory		0.534							
		(13.92)							
Non-discriminatory		76.65*							
		(42.04)							
Restrictions on foreign entry			-2.436						
			(21.48)						
Restrictions to movement of people			21.61						
			(29.97)						
Other discriminatory measures			-74.27**						
			(35.59)						
Barriers to competition			67.89						
			(56.01)						
Regulatory transparency			64.00						
			(54.01)						
All modes				-17.20					
				(33.32)					
Mode 3				-5.912					
				(23.02)					
Mode 4				42.33					
				(29.09)					
Establishment					2.770				
					(20.86)				
Operations					-39.75				
					(31.51)				
Market access & National treatment						1.513			
						(18.08)			
Domestic regulation						-29.34			
						(32.31)			
Foreign ow nership * STRI							55.06*		
							(29.29)		
Size q1 * STRI								-10.60	
								(15.59)	
Size q2 * STRI								-3.540	
								(15.61)	
Size q3 * STRI								-4.202	
								(15.50)	
Size q4 * STRI								-5.365	
								(15.19)	
TFP q1 * STRI									7.758
									(14.30)
TFP q2 * STRI									5.537
									(14.09)
TFP q3 * STRI									-3.042
									(15.21)
TFP q4 * STRI									-5.317
									(15.26)
Observations	33,856	33,856	33,856	33,856	33,856	33,856	33,856	33,856	33,856
R-squared	0.300	0.302	0.308	0.302	0.302	0.300	0.300	0.300	0.301
Adjusted R2	0.299	0.302	0.308	0.301	0.302	0.300	0.300	0.300	0.301

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value added production function and size is total assets.

Table A.17. Determinants of price-cost margins: Courier and postal services

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFP (log)	2.048**	1.988**	1.514	1.903**	1.952**	1.896**	2.045**	2.070**	0.677
	(0.869)	(0.856)	(0.963)	(0.894)	(0.851)	(0.862)	(0.866)	(0.884)	(0.937)
Firm size (log)	0.165	0.140	0.127	0.206	0.129	0.119	0.163	0.263	0.155
	(0.155)	(0.164)	(0.176)	(0.149)	(0.169)	(0.169)	(0.154)	(0.197)	(0.158)
GDP (log)	-2.465***	-2.267***	-1.984***	-2.488***	-2.293***	-2.107***	-2.462***	-2.420***	-2.290***
	(0.436)	(0.475)	(0.458)	(0.343)	(0.451)	(0.528)	(0.433)	(0.437)	(0.386)
Capital intensity (log)	1.424***	1.442***	1.414***	1.356***	1.441***	1.454***	1.426***	1.418***	1.498***
	(0.220)	(0.222)	(0.227)	(0.218)	(0.220)	(0.224)	(0.222)	(0.216)	(0.196)
Firm growth (log)	2.552***	2.536***	2.347***	2.465***	2.520***	2.511***	2.552***	2.528***	2.497***
	(0.491)	(0.491)	(0.467)	(0.458)	(0.489)	(0.495)	(0.491)	(0.460)	(0.504)
Foreign ownership	-3.494	-3.394	-3.001	-2.993	-3.408	-3.347	-2.397	-3.550	-3.041
	(2.195)	(2.228)	(2.406)	(2.264)	(2.240)	(2.270)	(2.575)	(2.151)	(1.837)
STRI	12.90***						13.05***		
	(3.039)						(3.170)		
Discriminatory		23.34**							
		(8.565)							
Non-discriminatory		8.332							
		(7.749)							
Restrictions on foreign entry			8.893						
			(15.97)						
Restrictions to movement of people			89.58**						
			(36.85)						
Other discriminatory measures			-95.19						
			(89.58)						
Barriers to competition			45.05***						
			(13.52)						
Regulatory transparency			3.441						
			(24.64)						
All modes				30.69					
				(19.62)					
Mode 3				4.976					
				(12.31)					
Mode 4				90.48*					
				(51.35)					
Establishment					32.77***				
					(10.62)				
Operations					10.08				
					(6.276)				
Market access & National treatment						27.03***			
						(6.818)			
Domestic regulation						2.213			
						(8.821)			
Foreign ownership * STRI							-6.910		
							(15.72)		
Size q1 * STRI								40.31***	
								(6.547)	
Size q2 * STRI								11.03**	
								(4.415)	
Size q3 * STRI								15.52***	
								(5.157)	
Size q4 * STRI								14.09***	
								(2.372)	
TFP q1 * STRI									-8.460
									(10.47)
TFP q2 * STRI									10.87
									(6.781)
TFP q3 * STRI									10.26**
									(4.674)
TFP q4 * STRI									16.73***
									(3.676)
Observations	863	863	863	863	863	863	863	863	863
R-squared	0.154	0.156	0.166	0.160	0.157	0.157	0.154	0.160	0.168
Adjusted R2	0.147	0.148	0.155	0.151	0.149	0.149	0.146	0.151	0.158

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a gross output production function and size is total assets.

Table A.18. Determinants of price-cost margins: Logistic services - Cargo-handling

	(1)	(2)	(3)	(4)	(5)
TFP (log)	7.248***	7.493***	7.247***	7.267***	7.382***
	(1.045)	(1.169)	(1.041)	(1.049)	(1.256)
Firm size (log)	-0.880***	-0.969***	-0.878***	-0.406	-0.858***
	(0.253)	(0.249)	(0.254)	(0.483)	(0.256)
GDP (log)	-3.634***	-3.884***	-3.660***	-3.595***	-3.533***
	(0.602)	(0.516)	(0.605)	(0.598)	(0.609)
Capital intensity (log)	2.340***	2.414***	2.348***	2.271***	2.297***
	(0.403)	(0.457)	(0.402)	(0.408)	(0.402)
Firm grow th (log)	1.602***	1.571***	1.602***	1.613***	1.590***
	(0.225)	(0.210)	(0.225)	(0.225)	(0.225)
Foreign ow nership	-2.691**	-2.654**	3.515	-3.035***	-2.786**
	(1.011)	(1.081)	(5.783)	(1.007)	(1.039)
STRI	57.28***		61.30***		
	(17.43)		(16.95)		
Restrictions on foreign entry		62.27*			
		(32.77)			
Restrictions to movement of people		202.9			
		(124.4)			
Other discriminatory measures		-35.61			
		(165.2)			
Barriers to competition		20.09			
		(65.60)			
Regulatory transparency		68.48*			
		(33.91)			
Foreign ow nership * STRI			-40.17		
			(35.64)		
Size q1 * STRI				80.46***	
				(15.48)	
Size q2 * STRI				62.07***	
				(15.94)	
Size q3 * STRI				57.40***	
				(16.25)	
Size q4 * STRI				56.95***	
				(17.43)	
TFP q1 * STRI					66.22***
					(19.49)
TFP q2 * STRI					60.28***
					(17.29)
TFP q3 * STRI					55.79***
					(17.61)
TFP q4 * STRI					63.16***
					(17.81)
Observations	1,544	1,544	1,544	1,544	1,544
R-squared	0.326	0.330	0.326	0.331	0.329
Adjusted R2	0.323	0.325	0.323	0.327	0.324

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value added production function and size is total assets.

Table A.19. Determinants of price-cost margins: Logistic services - Storage and warehousing

	(1)	(2)	(3)	(4)	(5)
TFP (log)	13.63***	14.21***	13.62***	13.59***	13.49***
	(1.737)	(1.725)	(1.735)	(1.746)	(0.982)
Firm size (log)	-2.707***	-2.809***	-2.707***	-2.006**	-2.693***
	(0.391)	(0.366)	(0.388)	(0.789)	(0.412)
GDP (log)	-2.503***	-3.951***	-2.474***	-2.514***	-2.504***
	(0.628)	(0.783)	(0.633)	(0.626)	(0.650)
Capital intensity (log)	4.606***	4.543***	4.611***	4.612***	4.590***
	(0.211)	(0.214)	(0.213)	(0.213)	(0.201)
Firm grow th (log)	1.744***	1.828***	1.733***	1.738***	1.734***
	(0.252)	(0.261)	(0.259)	(0.253)	(0.265)
Foreign ow nership	-2.683**	-3.141**	-7.864	-2.676**	-2.747**
	(1.265)	(1.172)	(6.197)	(1.240)	(1.308)
STRI	-11.92		-15.44		
	(24.03)		(26.22)		
Restrictions on foreign entry		-64.76			
		(62.98)			
Restrictions to movement of people		111.4			
		(105.6)			
Other discriminatory measures		-141.9			
		(98.08)			
Barriers to competition		-213.7*			
		(111.3)			
Regulatory transparency		75.31**			
		(31.92)			
Foreign ow nership * STRI			36.71		
			(41.17)		
Size q1 * STRI				1.085	
				(24.61)	
Size q2 * STRI				-0.325	
				(21.77)	
Size q3 * STRI				-8.668	
				(23.81)	
Size q4 * STRI				-22.46	
				(26.16)	
TFP q1 * STRI					-14.47
					(24.90)
TFP q2 * STRI					-8.138
					(24.64)
TFP q3 * STRI					-19.57
					(24.83)
TFP q4 * STRI					-9.427
					(26.86)
Observations	2,194	2,194	2,194	2,194	2,194
R-squared	0.474	0.484	0.475	0.476	0.476
Adjusted R2	0.473	0.481	0.473	0.473	0.473

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value added production function and size is total assets.

Table A.20. Determinants of price-cost margins: Audio-visual services - Broadcasting

	(1)	(2)	(3)	(4)	(5)	(6)
TFP (log)	8.801**	9.141*	9.443**	8.803**	9.032**	7.979**
	(4.052)	(4.496)	(4.131)	(4.060)	(3.869)	(3.492)
Firm size (log)	-3.011	-3.906**	-3.413*	-3.022	-5.131*	-2.874
	(2.037)	(1.575)	(1.929)	(2.047)	(2.495)	(2.011)
GDP (log)	-2.732	-1.494	-4.297**	-2.726	-2.642**	-2.658
	(1.585)	(2.255)	(1.798)	(1.580)	(1.258)	(1.785)
Capital intensity (log)	0.0357	0.123	-0.102	0.0331	0.324	-0.0212
	(0.695)	(0.664)	(0.674)	(0.689)	(0.569)	(0.789)
Firm growth (log)	5.092	4.524	4.862	5.089	5.190	4.784
	(3.808)	(3.612)	(3.809)	(3.817)	(3.585)	(4.060)
Foreign ownership	-1.107	-0.848	-0.352	1.890	-0.747	-0.622
	(3.861)	(3.201)	(3.787)	(11.43)	(3.738)	(3.459)
STRI	38.30			38.87		
	(34.81)			(35.88)		
Restrictions on foreign entry		83.54***				
		(27.84)				
Restrictions to movement of people		464.8**				
		(214.5)				
Other discriminatory measures		-301.8***				
		(88.68)				
Barriers to competition		-228.9				
		(257.1)				
Regulatory transparency		-147.0				
		(159.6)				
Establishment			178.8**			
			(66.27)			
Operations			1.361			
			(32.93)			
Foreign ownership * STRI				-14.74		
				(57.01)		
Size q1 * STRI					12.41	
					(47.35)	
Size q2 * STRI					-10.55	
					(32.48)	
Size q3 * STRI					-20.63	
					(27.81)	
Size q4 * STRI					62.03***	
					(20.67)	
TFP q1 * STRI						12.93
						(60.45)
TFP q2 * STRI						38.81
						(39.69)
TFP q3 * STRI						49.17
						(34.51)
TFP q4 * STRI						36.33
						(39.16)
Observations	400	400	400	400	400	400
R-squared	0.140	0.169	0.151	0.140	0.168	0.144
Adjusted R2	0.125	0.145	0.134	0.123	0.147	0.122

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value-added production function and size is the number of employees. The distinction between measures pertaining to market access / national treatment or domestic regulation, and between discriminatory and non-discriminatory limitations, is not made in the STRI for audio-visual services.

Table A.21. Determinants of price-cost margins: Audio-visual services - Motion pictures

	(1)	(2)	(3)	(4)	(5)	(6)
TFP (log)	6.583***	7.072***	6.835***	6.614***	6.623***	7.535***
	(1.259)	(1.227)	(1.185)	(1.276)	(1.266)	(1.191)
Firm size (log)	-1.887***	-2.151***	-2.153***	-1.885***	-1.461**	-1.848***
	(0.428)	(0.520)	(0.476)	(0.431)	(0.547)	(0.409)
GDP (log)	-1.432	-2.171	-2.274*	-1.433	-1.448	-1.407
	(1.271)	(1.348)	(1.178)	(1.279)	(1.281)	(1.251)
Capital intensity (log)	1.878***	1.723***	1.827***	1.891***	1.857***	1.833***
	(0.142)	(0.177)	(0.156)	(0.141)	(0.155)	(0.142)
Firm growth (log)	2.290***	2.142***	2.256***	2.289***	2.311***	2.269***
	(0.399)	(0.395)	(0.394)	(0.402)	(0.397)	(0.399)
Foreign ownership	-4.160***	-4.974***	-5.164***	-16.86**	-4.635***	-4.694***
	(1.423)	(1.266)	(1.325)	(6.620)	(1.535)	(1.478)
STRI	-19.71			-26.09		
	(26.40)			(28.23)		
Restrictions on foreign entry		-65.11***				
		(22.06)				
Restrictions to movement of people		116.8**				
		(41.86)				
Other discriminatory measures		-60.27				
		(85.20)				
Barriers to competition		254.0				
		(233.5)				
Regulatory transparency		28.80				
		(46.42)				
Establishment			63.82*			
			(37.29)			
Operations			-49.36			
			(28.97)			
Foreign ownership * STRI				75.84*		
				(39.90)		
Size q1 * STRI					-4.774	
					(34.07)	
Size q2 * STRI					-14.29	
					(28.78)	
Size q3 * STRI					-26.04	
					(26.25)	
Size q4 * STRI					-19.06	
					(21.80)	
TFP q1 * STRI						2.249
						(26.13)
TFP q2 * STRI						-18.30
						(28.23)
TFP q3 * STRI						-28.07
						(26.42)
TFP q4 * STRI						-22.08
						(25.15)
Observations	4,131	4,131	4,131	4,131	4,131	4,131
R-squared	0.164	0.179	0.171	0.164	0.166	0.167
Adjusted R2	0.162	0.177	0.169	0.163	0.164	0.165

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value-added production function and size is the number of employees. The distinction between measures pertaining to market access / national treatment or domestic regulation, and between discriminatory and non-discriminatory limitations, is not made in the STRI for audio-visual services.

Table A.22. Determinants of price-cost margins: Financial services - Insurance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFP (log)	12.31***	12.70***	12.63***	12.83***	13.04***	12.71***	12.31***	12.57***	12.46***
	(1.096)	(1.142)	(1.160)	(1.155)	(1.139)	(1.140)	(1.098)	(1.104)	(1.540)
Firm size (log)	-2.693***	-3.168***	-3.055***	-2.854***	-3.147***	-3.169***	-2.701***	-2.216***	-2.695***
	(0.510)	(0.520)	(0.523)	(0.492)	(0.515)	(0.520)	(0.504)	(0.457)	(0.512)
GDP (log)	-3.018***	-1.682***	-0.159	-1.228**	-1.879***	-1.672***	-3.027***	-2.803**	-2.809**
	(1.016)	(0.489)	(0.769)	(0.452)	(0.463)	(0.481)	(1.017)	(1.069)	(1.048)
Insurance penetration	37.13	0.593	15.89	3.656	-8.064	-0.0977	38.58	29.70	33.55
	(47.16)	(26.31)	(20.56)	(17.71)	(20.99)	(26.06)	(46.08)	(45.04)	(45.12)
Capital intensity (log)	1.151***	1.199***	1.172***	1.117***	1.199***	1.200***	1.152***	1.157***	1.152***
	(0.114)	(0.0988)	(0.102)	(0.106)	(0.0881)	(0.0987)	(0.115)	(0.130)	(0.108)
Firm grow th (log)	1.532***	1.472***	1.404***	1.353***	1.440***	1.471***	1.531***	1.522***	1.503***
	(0.174)	(0.159)	(0.132)	(0.110)	(0.137)	(0.159)	(0.173)	(0.170)	(0.169)
Foreign ow nership	-3.506**	-2.928**	-1.983*	-2.244*	-2.416**	-2.916**	-7.420	-4.300**	-3.937**
	(1.373)	(1.164)	(1.145)	(1.096)	(1.060)	(1.165)	(8.263)	(1.627)	(1.475)
STRI	101.7***						100.9***		
	(26.37)						(25.88)		
Discriminatory		82.08***							
		(23.46)							
Non-discriminatory		-125.4**							
		(53.48)							
Restrictions on foreign entry			121.3***						
			(37.84)						
Restrictions to movement of people			150.0**						
			(57.30)						
Other discriminatory measures			-210.4						
			(267.0)						
Barriers to competition			87.43						
			(127.4)						
Regulatory transparency			-172.0**						
			(78.62)						
All modes				-50.75*					
				(26.26)					
Modes 1 and 2				67.68**					
				(25.93)					
Mode 3				98.79***					
				(25.47)					
Mode 4				724.9***					
				(182.3)					
Establishment					102.6***				
					(21.33)				
Operations					-150.9***				
					(48.86)				
Market access & National treatment						82.24***			
						(23.55)			
Domestic regulation						-127.8**			
						(53.68)			
Foreign ow nership * STRI							24.52		
							(50.22)		
Size q1 * STRI								118.5***	
								(26.64)	
Size q2 * STRI								112.7***	
								(27.32)	
Size q3 * STRI								98.57***	
								(26.23)	
Size q4 * STRI								100.0***	
								(25.69)	
TFP q1 * STRI									111.6***
									(25.37)
TFP q2 * STRI									102.2***
									(26.36)
TFP q3 * STRI									100.4***
									(25.42)
TFP q4 * STRI									109.8***
									(26.35)
Observations	7,542	7,542	7,542	7,542	7,542	7,542	7,542	7,542	7,542
R-squared	0.216	0.231	0.233	0.234	0.235	0.231	0.216	0.220	0.219
Adjusted R2	0.215	0.230	0.232	0.233	0.234	0.230	0.215	0.219	0.218

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. TFP is estimated with a value added production function and size is total sales.

Table A.23. Determinants of net interest margins: Financial services - Commercial banking

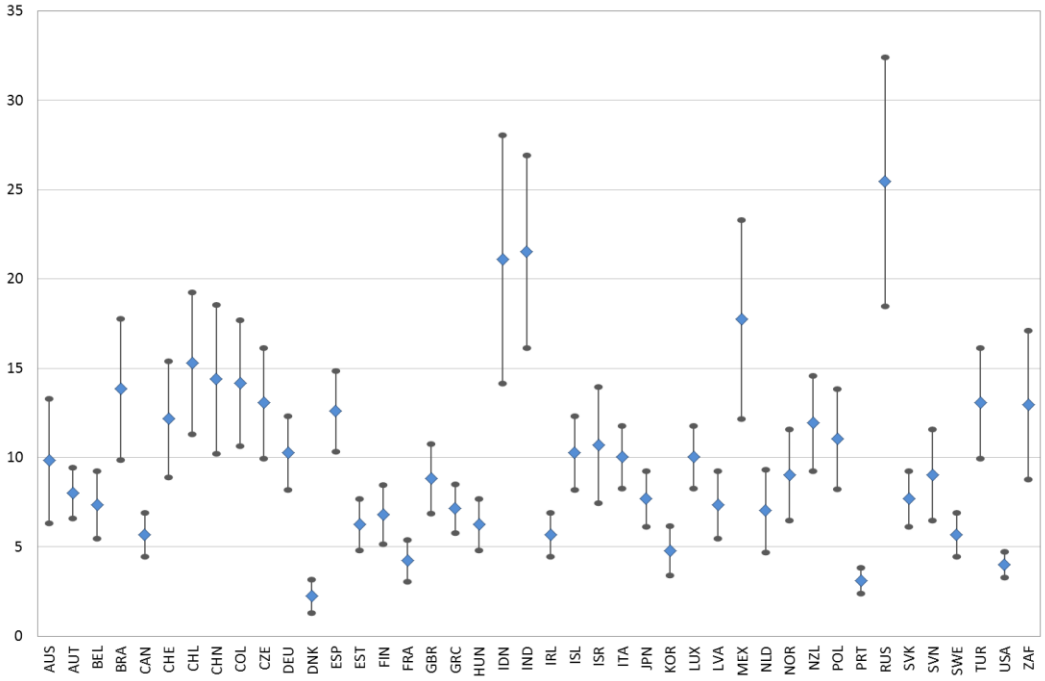
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Labour productivity (log)	0.250**	0.204*	0.205	0.228**	0.229**	0.209*	0.243**	0.249**	0.251
	(0.0958)	(0.119)	(0.122)	(0.107)	(0.105)	(0.117)	(0.0976)	(0.0982)	(0.151)
Firm size (log)	-0.202***	-0.181***	-0.183***	-0.187***	-0.196***	-0.186***	-0.197***	-0.196***	-0.192***
	(0.0233)	(0.0123)	(0.0150)	(0.0166)	(0.0184)	(0.0116)	(0.0233)	(0.0368)	(0.0243)
GDP (log)	0.410***	0.265***	0.233**	0.289**	0.357***	0.281***	0.403***	0.410***	0.409***
	(0.0549)	(0.0819)	(0.0941)	(0.112)	(0.0934)	(0.0857)	(0.0558)	(0.0548)	(0.0564)
Inflation	38.73***	39.49***	37.35***	41.49***	38.83***	39.70***	40.11***	38.67***	39.25***
	(4.930)	(5.687)	(8.361)	(8.331)	(5.073)	(5.897)	(4.202)	(4.654)	(4.462)
Firm growth (Gross loans, log)	0.149***	0.139***	0.138***	0.151***	0.147***	0.141***	0.153***	0.149***	0.162***
	(0.0239)	(0.0270)	(0.0238)	(0.0256)	(0.0235)	(0.0267)	(0.0242)	(0.0247)	(0.0226)
Foreign ownership	0.333	0.269	0.0985	0.157	0.305	0.269	-0.208	0.328	0.299
	(0.399)	(0.358)	(0.273)	(0.331)	(0.376)	(0.354)	(0.546)	(0.399)	(0.361)
Non-performing loans	9.396***	8.619***	9.070***	9.515***	8.976***	8.444***	9.434***	9.365***	9.521***
	(3.089)	(2.763)	(3.125)	(3.098)	(2.982)	(2.942)	(3.143)	(3.090)	(3.090)
Capital ratio	-4.095***	-3.762***	-4.009***	-3.834***	-3.962***	-3.874***	-4.151***	-4.205***	-4.164***
	(1.168)	(0.948)	(0.995)	(0.897)	(0.976)	(0.941)	(1.145)	(1.193)	(1.193)
Liquidity ratio	1.852	1.472	1.517	1.734	1.686	1.554	1.809	1.855	1.850
	(1.720)	(1.703)	(1.671)	(1.703)	(1.700)	(1.699)	(1.682)	(1.730)	(1.756)
STRI	-3.393						-4.460**		
	(2.113)						(2.045)		
Discriminatory		1.605							
		(3.832)							
Non-discriminatory		-8.955***							
		(2.531)							
Restrictions on foreign entry			-11.65***						
			(3.769)						
Restrictions to movement of people			-19.61*						
			(10.73)						
Other discriminatory measures			47.79***						
			(10.03)						
Barriers to competition			-17.39***						
			(4.988)						
Regulatory transparency			1.023						
			(11.52)						
All modes				-7.827					
				(9.289)					
Modes 1 and 2				-120.1					
				(81.51)					
Mode 3				1.758					
				(5.309)					
Mode 4				-8.362					
				(13.36)					
Establishment					-4.077				
					(4.773)				
Operations					-4.691				
					(6.386)				
Market access & National treatment						0.306			
						(4.184)			
Domestic regulation						-8.766***			
						(2.893)			
Foreign ownership * STRI							3.044		
							(2.099)		
Size q1 * STRI								-2.603	
								(2.738)	
Size q2 * STRI								-3.591	
								(2.500)	
Size q3 * STRI								-3.362	
								(2.513)	
Size q4 * STRI								-3.417*	
								(1.806)	
Labour prod. q1 * STRI									-4.399**
									(2.127)
Labour prod. q2 * STRI									-1.905
									(1.715)
Labour prod. q3 * STRI									-3.905**
									(1.579)
Labour prod. Q4 * STRI									-3.409**
									(1.477)
Observations	638	638	638	638	638	638	638	638	638
R-squared	0.338	0.353	0.366	0.353	0.346	0.350	0.341	0.338	0.348
Adjusted R2	0.327	0.341	0.351	0.339	0.334	0.338	0.329	0.325	0.334

Note: Robust standard errors clustered by country in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. q1, q2, q3 and q4 are indicator variables that take value 1 if the observation is in respectively the first, second, third and fourth quartiles of the corresponding variables, and 0 otherwise; where the first quartile includes the 25% lowest values and the fourth quartile includes the 25% highest values. Labour productivity is estimated based on net income and size is total assets.

Annex 4.

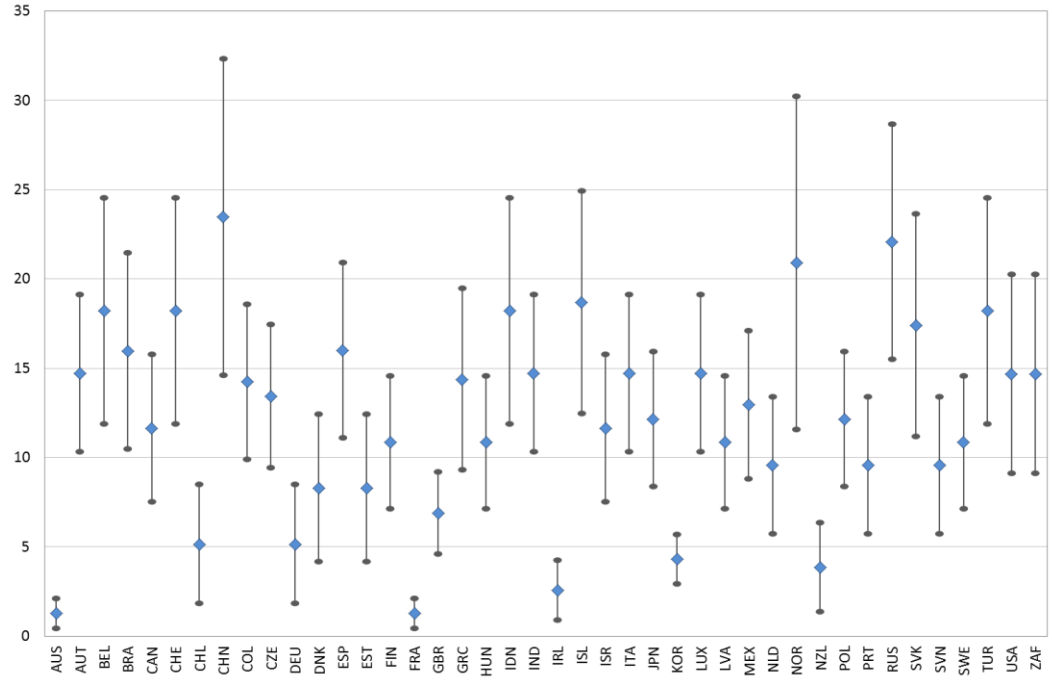
Estimated Tax Equivalents and Confidence Intervals

Figure A.2. Tax equivalents of the STRIs in Telecoms, point estimates and confidence intervals (%)



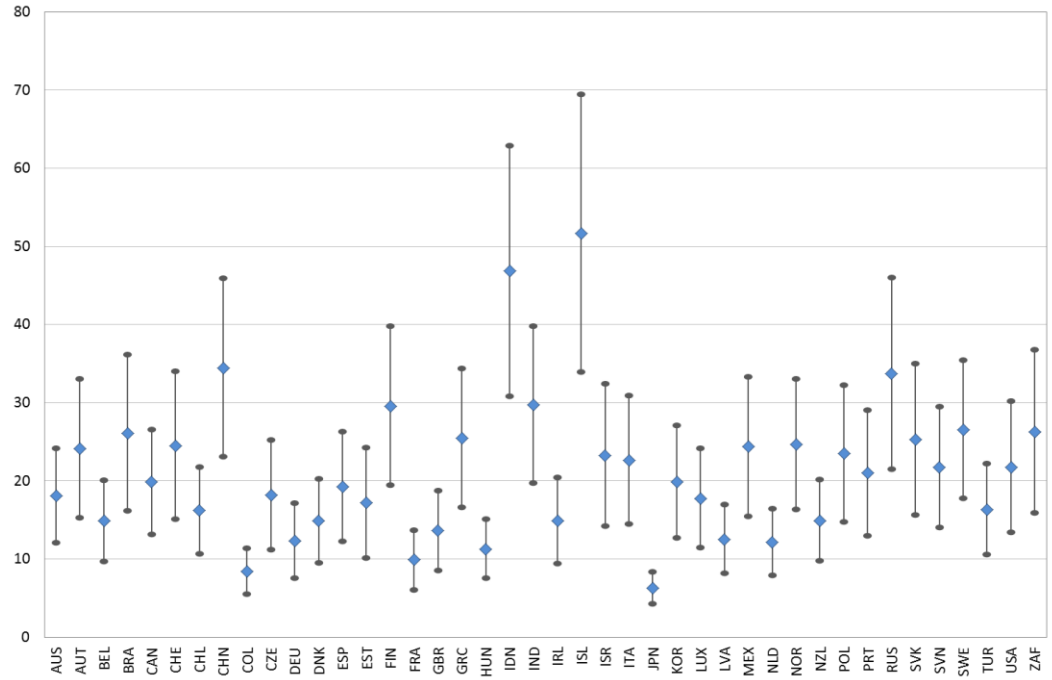
Source: Own calculations of point estimates and 80% confidence intervals based on Table A.5, column 3.

Figure A.3. Tax equivalents of the STRIs in Computer services, point estimates and confidence intervals (%)



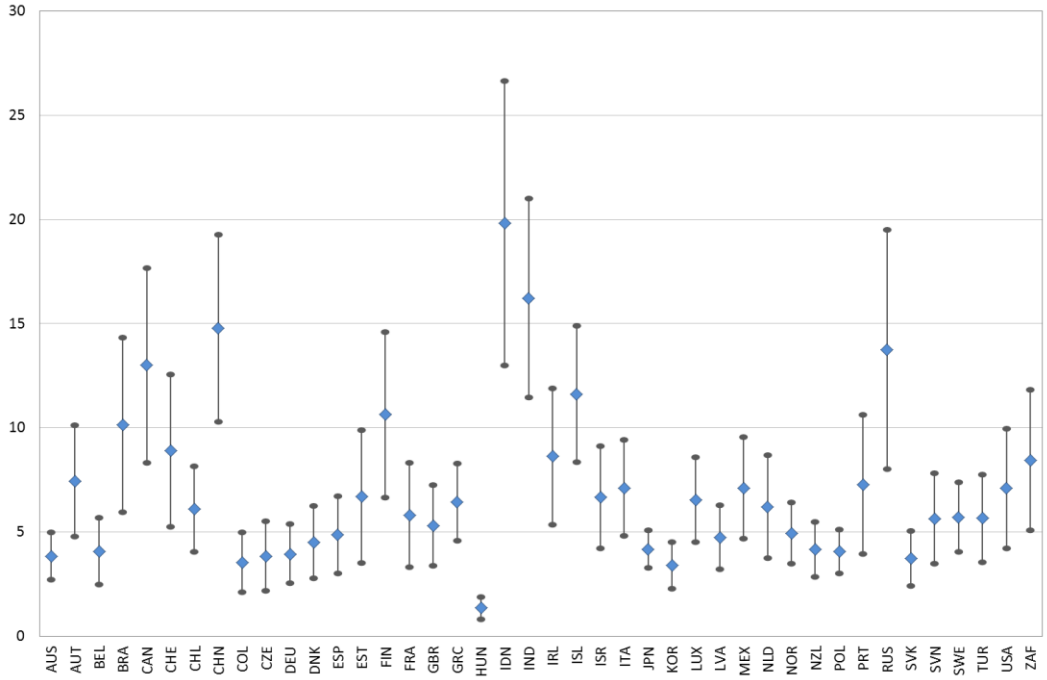
Source: Own calculations of point estimates and 80% confidence intervals based on Table A.6, column 3.

Figure A.4. Tax equivalents of the STRIs in Construction, point estimates and confidence intervals (%)



Source: Own calculations of point estimates and 80% confidence intervals based on Table A.7, column 3.

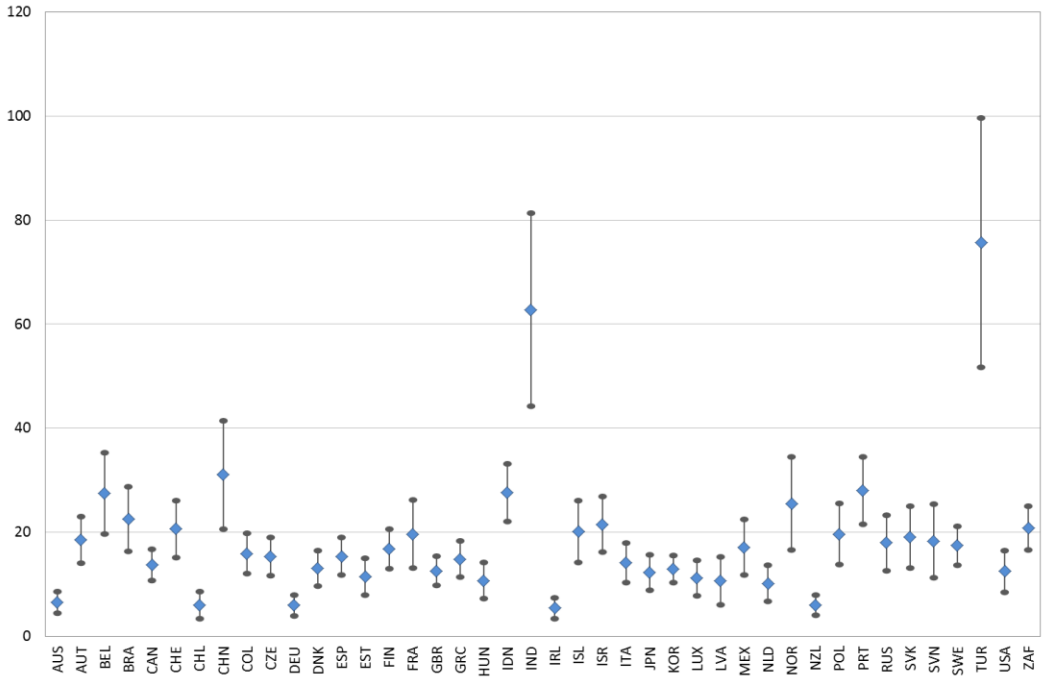
Figure A.5. Tax equivalents of the STRIs in Distribution, point estimates and confidence intervals (%)



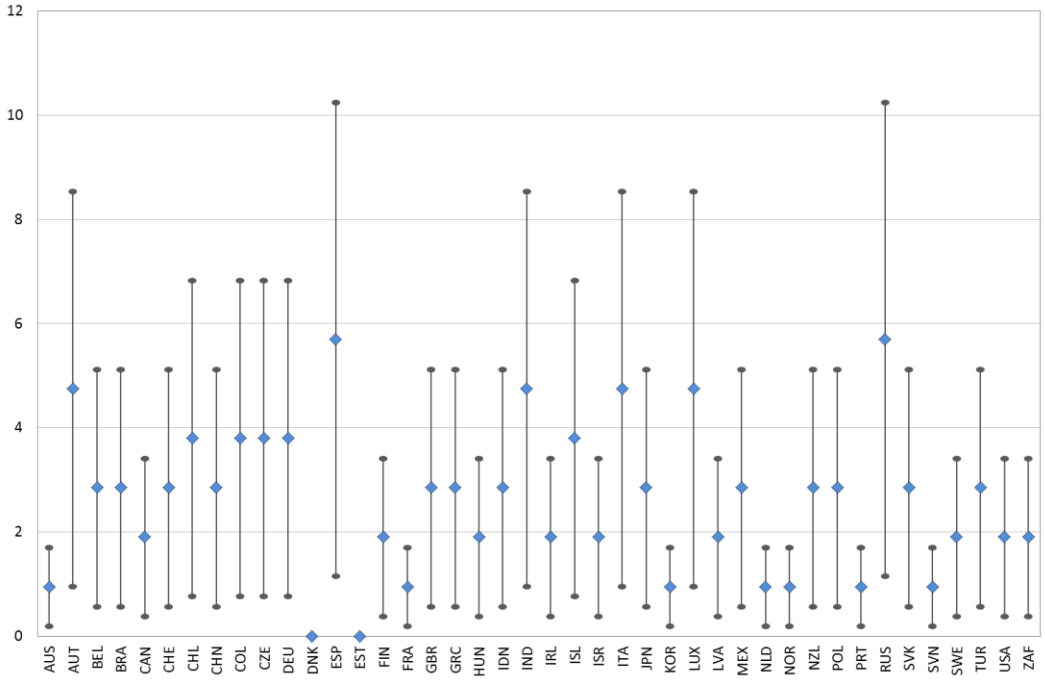
Source: Own calculations of point estimates and 80% confidence intervals based on Table A.8, column 3.

Figure A.6. Tax equivalents of the STRIs in Professional services, point estimates and confidence intervals (%)

(a) Accounting and auditing



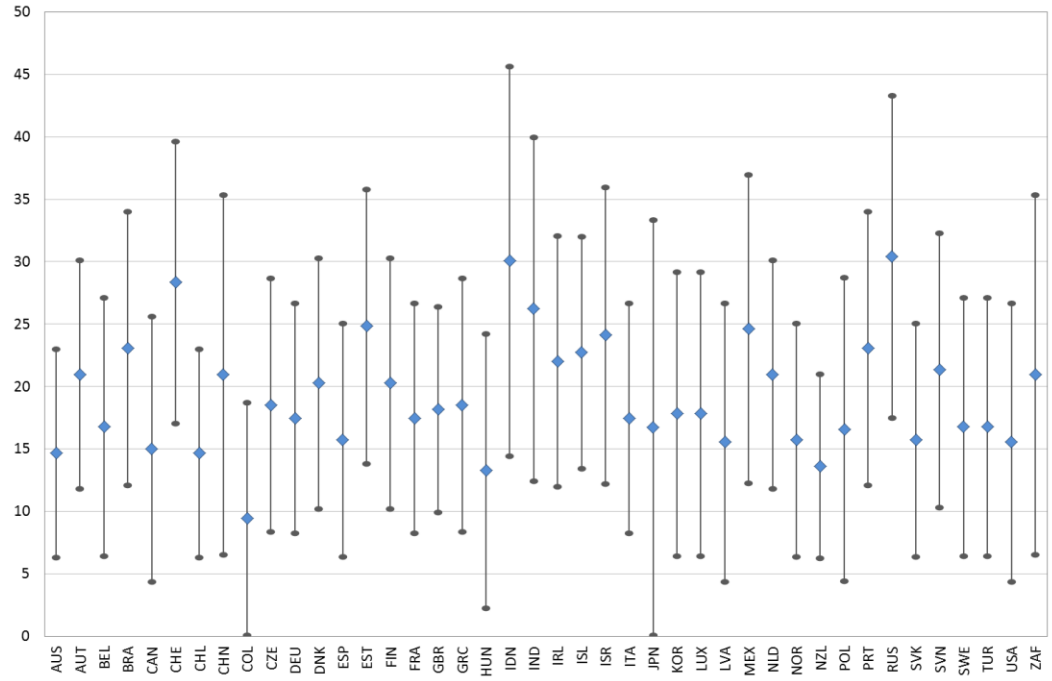
(b) Architecture



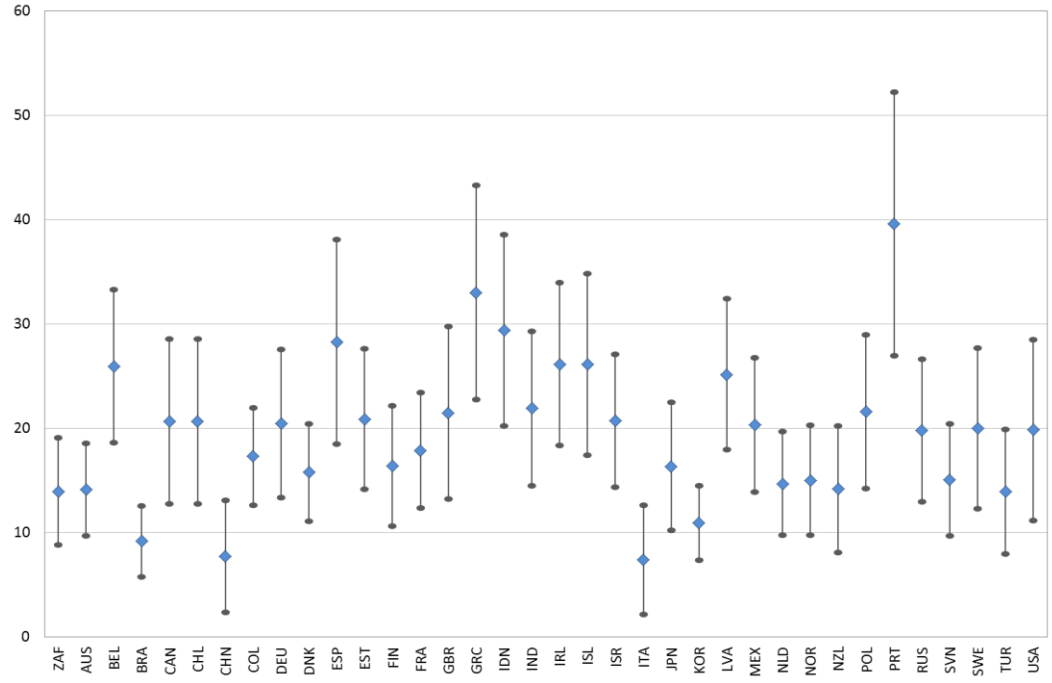
Source: Own calculations of point estimates and 80% confidence intervals based on Tables A.9 and A.10, column 3.

Figure A.7. Tax equivalents of the STRIs in Transport services, point estimates and confidence intervals (%)

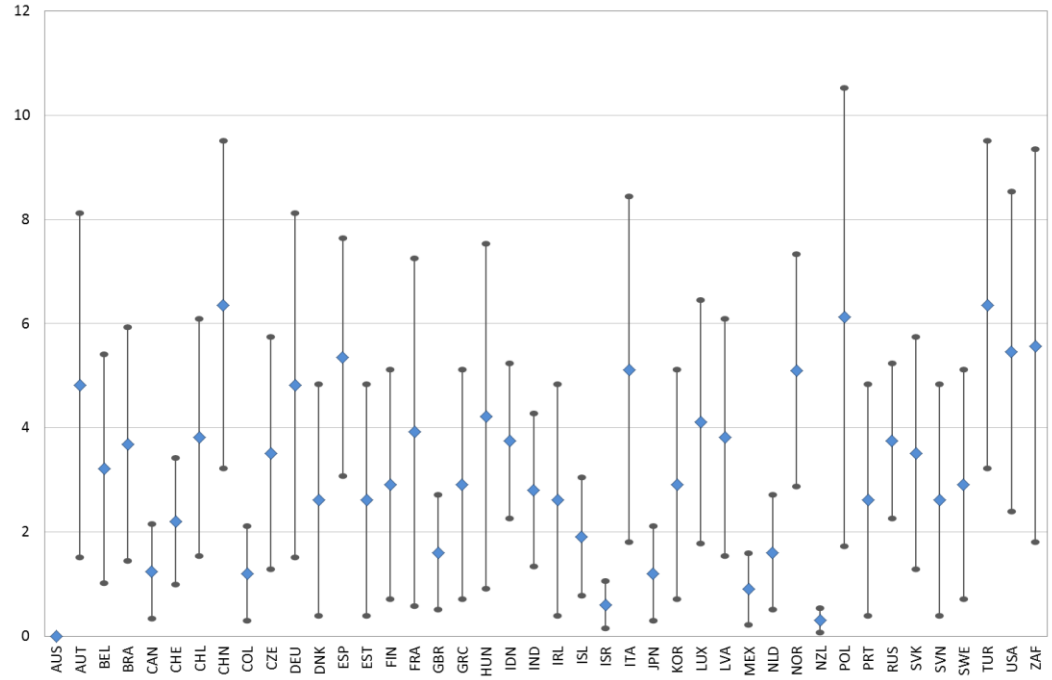
(a) Air transport



(b) Maritime freight transport

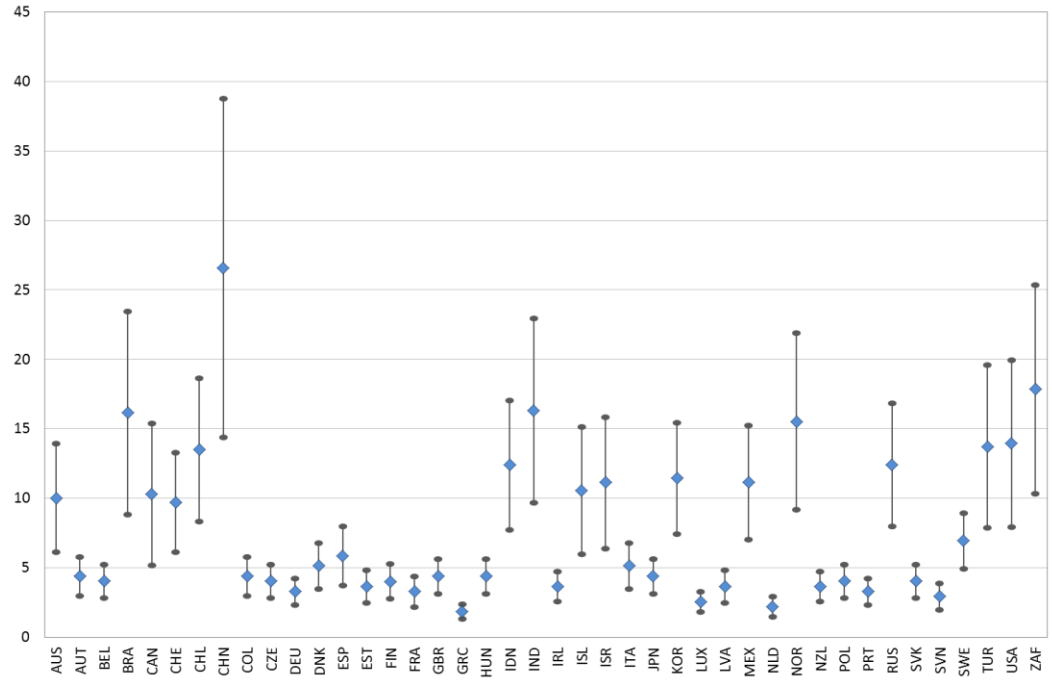


(c) Road freight transport



Source: Own calculations of point estimates and 80% confidence intervals based on Tables A.13 to A.16, column 3.

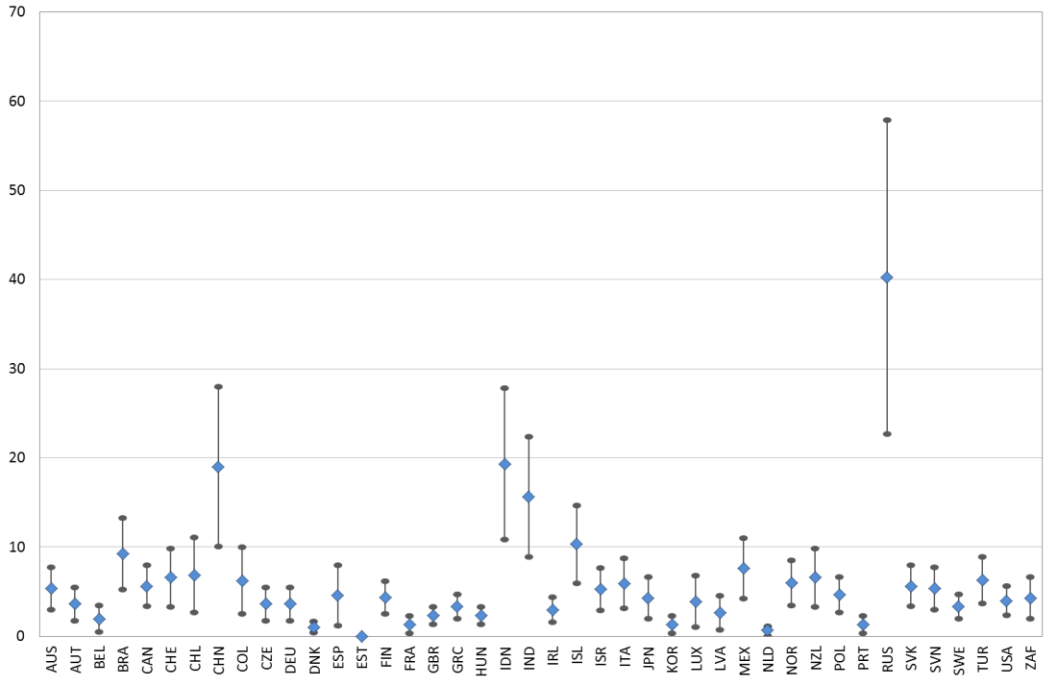
Figure A.8. Tax equivalents of the STRIs in Courier services, point estimates and confidence intervals (%)



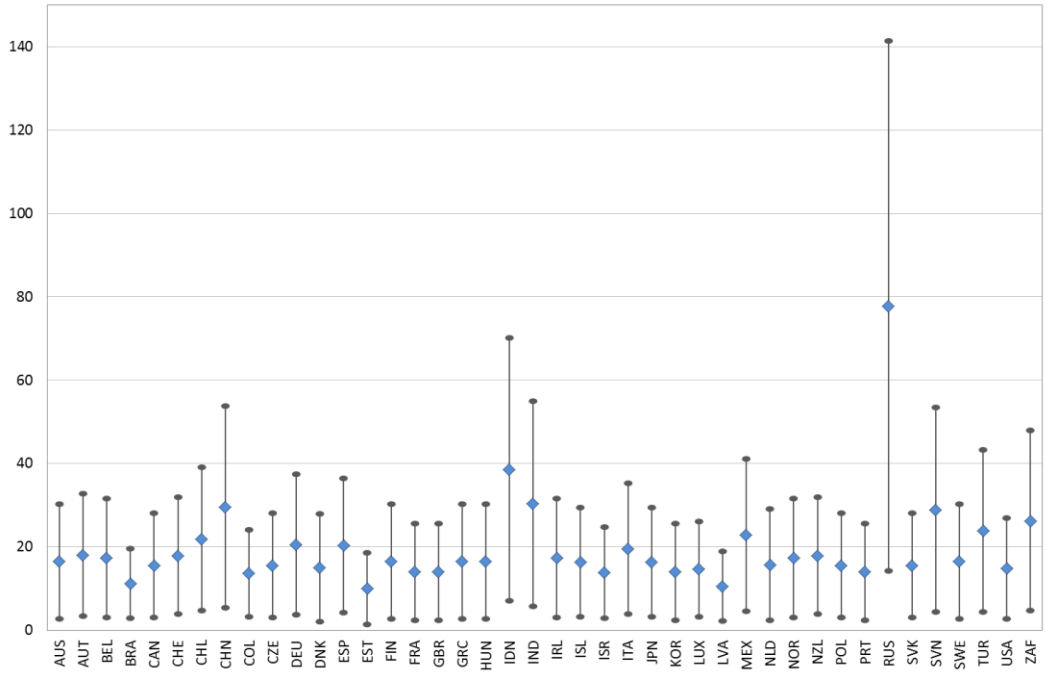
Source: Own calculations of point estimates and 80% confidence intervals based on Table A.17, column 3.

Figure A.9. Tax equivalents of the STRIs in Logistics, point estimates and confidence intervals (%)

(a) Cargo-handling



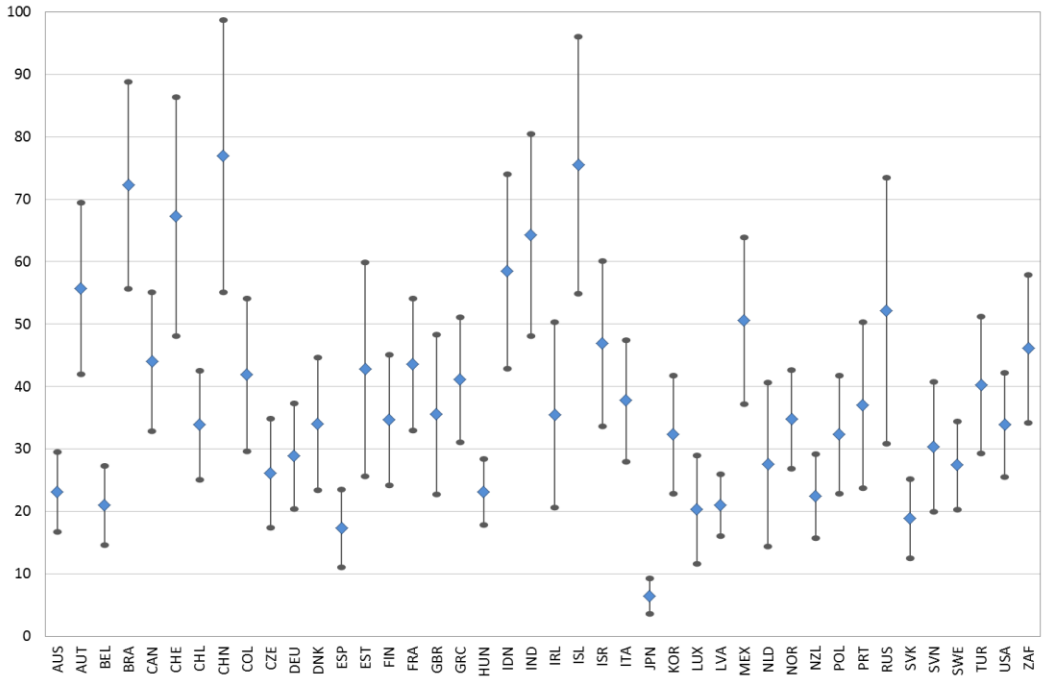
(b) Storage and warehousing



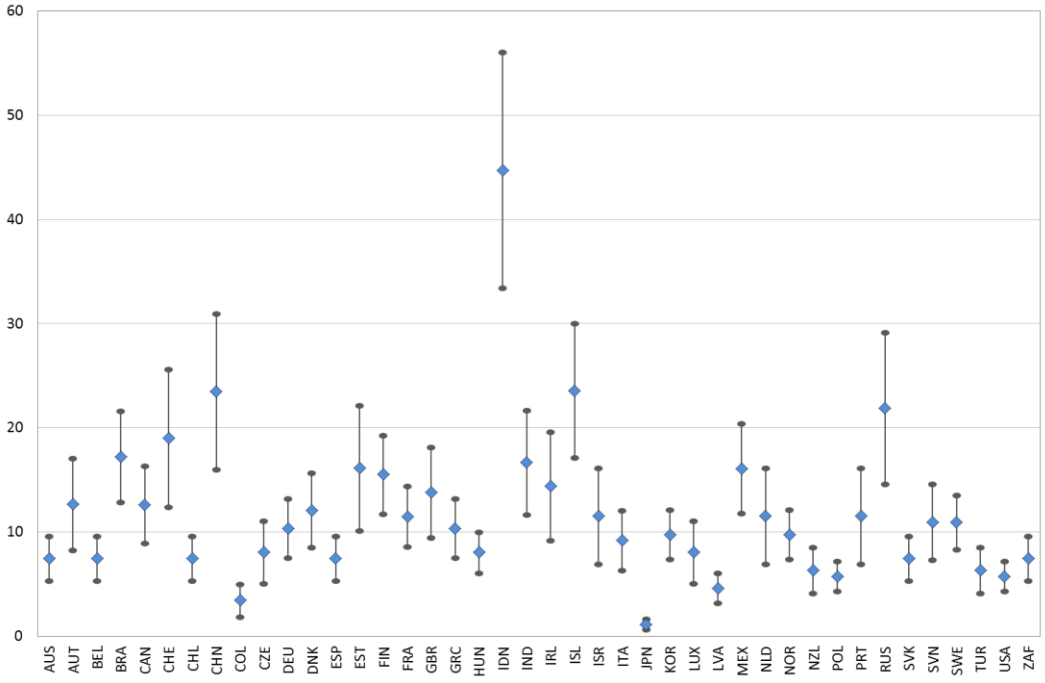
Source: Own calculations of point estimates and 80% confidence intervals based on Tables A.18 and A.19, column 2.

Figure A.10. Tax equivalents of the STRIs in Audio-visual services, point estimates and confidence intervals (%)

(a) Broadcasting



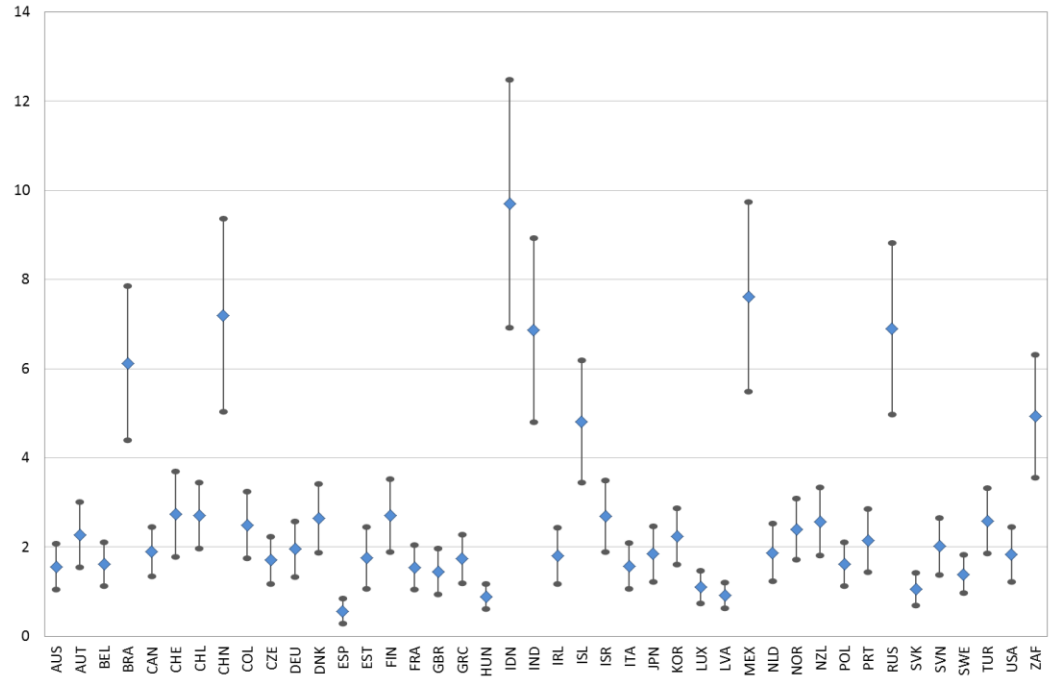
(b) Motion Pictures



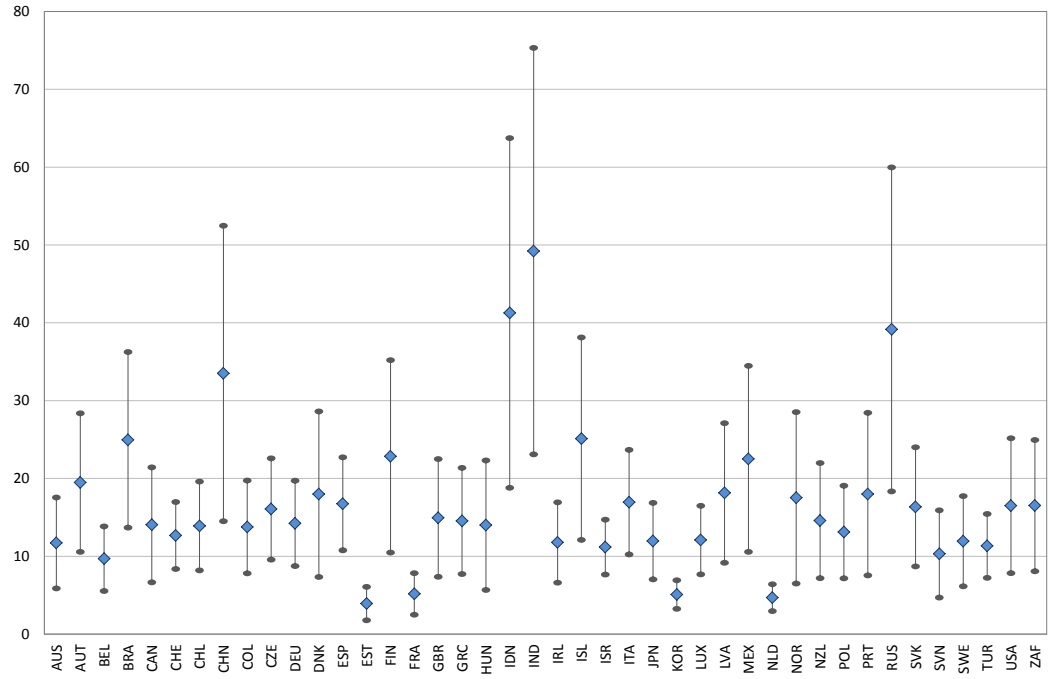
Source: Own calculations of point estimates and 80% confidence intervals based on Tables A.20 and A.21, column 2.

Figure A.11. Tax equivalents of the STRIs in Financial services, point estimates and confidence intervals (%)

(a) Commercial banking



(b) Insurance



Source: Own calculations of point estimates and 80% confidence intervals based on Tables A.22 and A.23, column 3.