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TRADE COMMITTEE**

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MODAL ESTIMATES OF SERVICES BARRIERS

OECD Trade Policy Working Paper No. 51

By Nora Dihel and Ben Shepherd

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ABSTRACT

This paper presents improved approaches to measurement of services barriers by using alternative weighting methods and improved econometric specifications; the data include barriers affecting each mode of services supply and additional sector-specific regulatory variables. We provide an illustration of these improvements for banking, insurance, telecom (fixed and mobile), professional (engineering) and distribution services in selected countries in Africa, Asia, Central and Eastern Europe, Latin America and the Middle East. We report sector-specific restrictiveness indices at aggregate and modal levels along with aggregate and modal tax equivalents. We also provide confidence intervals for each estimated tax equivalent to take into account the limitations in the estimation techniques. Indeed these limitations lead us to argue against a strict interpretation of the empirical results and in favor of a more flexible, qualitative interpretation, combined with rank ordering of countries for indicative purposes.

Keywords: services barriers/restrictions, trade restrictiveness index, tax equivalent, regulatory measures, banking, insurance, telecommunication, distribution, engineering.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	4
I. Introduction.....	5
II. Existing Restrictiveness Indices And Tax Equivalents - Strengths And Limitations	5
III. Methodological Improvements.....	7
IV. Conclusion.....	38
REFERENCES	39
ANNEX 1: METHODOLOGICAL LIMITATIONS AND PROPOSED IMPROVEMENTS.....	42
ANNEX 2: RESTRICTIVENESS INDICES COMPONENTS - WEIGHTS	44
ANNEX 3: CALCULATING TAX EQUIVALENTS	47

Tables

Table 1. Components Of The Banking Restrictiveness Index	10
Table 2. Components Of The Fixed And Mobile Telecom Restrictiveness Indices	14
Table 3. Components Of The Engineering Restrictiveness Index	16
Table 4. Components Of The Distribution Restrictiveness Index.....	18
Table 5. Aggregate And Modal Restrictiveness Indices - Banking	23
Table 6. Aggregate And Modal Restrictiveness Indices - Insurance	24
Table 7. Aggregate And Modal Restrictiveness Indices - Fixed Telecommunication	25
Table 8. Aggregate And Modal Restrictiveness Indices - Mobile Telecommunication	26
Table 9. Aggregate And Modal Restrictiveness Indices - Engineering	27
Table 10. Aggregate And Modal Restrictiveness Indices - Distribution.....	27
Table 11. Estimated Tax Equivalents, % Banking	30
Table 12. Estimated Tax Equivalents, % Insurance	31
Table 13. Estimated Aggregate Tax Equivalents, % Fixed Telecommunication	32
Table 14. Estimated Aggregate Tax Equivalents, % Mobile Telecommunication	33
Table 15. Estimated Tax Equivalents, % Engineering	34
Table 16. Estimated Tax Equivalents, % Distribution	34

Figures

Figure 1. Aggregate Trade Restrictiveness Index - Banking	20
Figure 2. Aggregate Trade Restrictiveness Index - Insurance	20
Figure 3. Aggregate Trade Restrictiveness Index - Fixed telecommunication	21
Figure 4. Aggregate Trade Restrictiveness Index - Mobile telecommunication.....	21
Figure 5. Aggregate Trade Restrictiveness Index - Engineering	22
Figure 6. Aggregate Trade Restrictiveness Index - Distribution.....	22

EXECUTIVE SUMMARY

The Trade Directorate's quantitative work on services barriers has two main objectives. The first is to assess the restrictiveness of services barriers, and their direct impact on prices, costs or some other measures of performance in the affected sectors; and the second objective aims at estimating the economy-wide welfare effects from their removal in selected countries. While this work has suggested several general and sectoral policy priorities for services liberalisation, it also called for further methodological improvements related to both the assessment of services barriers and the modelling of the impact of their removal.

The objective of the current project is to further develop existing approaches that will allow a more realistic assessment of services barriers and liberalisation effects. This basically involves improving estimation techniques by using alternative weighting methods and improved econometric specifications that include barriers affecting each mode of services supply and additional sector-specific regulatory variables.

The current paper illustrates the proposed methodological improvements for banking, insurance, telecom (fixed and mobile), professional (engineering) and distribution services. The countries included in this project are: selected transition economies (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Moldova, Romania, Serbia and Montenegro and Russia), selected countries in Asia (China, India, Malaysia and Thailand), Latin America (Argentina, Brazil, Bolivia, Chile, Columbia, Ecuador, Peru and Venezuela), Africa (Egypt, Morocco, Tunisia and Zambia) and the Middle East (Jordan).

The results, which are based on improved methodologies, give a more complete picture with regard to modal coverage by calculating not only aggregate sectoral indices but also separate modal restrictiveness indices and subsequently modal tax equivalents.

Given the extensive use of such indicators in empirical exercises that assess welfare gains from services liberalisation, an additional objective of the paper is to clearly identify the potential and limitations of services barriers estimation techniques in order to enable a more rigorous and critical interpretation of results.

It is important to highlight the fact that tax equivalents are estimated by statistical means, and are therefore inherently uncertain. In an effort to make the scope of that uncertainty apparent, in addition to the core tax equivalent estimates that are usually presented, this paper provides confidence intervals for each estimated tax equivalent. It can be seen that our estimates – like those presented in previous studies – are subject to uncertainty. We experiment with different combinations of variables (sectoral regulatory variables, MFN exemptions and regional trade agreements (RTA) variables) to gauge the robustness of our results to small changes in model structure. The results suggest that at this stage it is rather difficult to make a clear differentiation concerning the exact nature of barriers (*i.e.* cost-increasing versus rent-creating impact). As a result, rather than drawing detailed policy conclusions based on point estimates, we would favour a more flexible, qualitative interpretation of the quantitative results, combined with rank ordering of countries for indicative purposes. A similar approach would be recommended for empirical exercises that employ these tax equivalents as inputs.

Finally, given the limitations of this estimation technique as well as the problems related to the treatment of services barriers as *ad valorem* trade costs, future empirical work could explore the impact of various regulatory measures on the fixed costs of entering a market or the variable costs of servicing that market using alternative methods.

MODAL ESTIMATES OF SERVICES BARRIERS

I. Introduction

1. The Trade Directorate's quantitative work on services barriers assessed their restrictiveness, their direct impact on prices, costs or some other measures of performance in the affected sectors as well as the economy-wide welfare effects from their removal in selected developing countries. While this work has suggested several general and sectoral policy priorities for services liberalisation, it also called for further methodological improvements related to both the assessment of services barriers and the modelling of the impact of their removal.

2. The objective of the current project is to improve existing methodologies to allow a more realistic assessment of services barriers and liberalisation effects. This basically involves the implementation of improvements concerning the construction of modal restrictiveness indices and tax equivalents using alternative weighting methods and improved econometric specifications that include additional sector-specific variables.

3. This paper illustrates the proposed methodological advances for banking, insurance, telecom (fixed and mobile), distribution and professional (engineering) services.

4. The countries included in this project are: selected transition economies (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Moldova, Romania, Serbia and Montenegro and Russia), selected countries in Asia (China, India, Malaysia and Thailand), Latin America (Argentina, Brazil, Bolivia, Chile, Columbia, Ecuador, Peru and Venezuela), Africa (Egypt, Morocco, Tunisia and Zambia) and the Middle East (Jordan).

5. The paper is structured as follows. Section II briefly reviews the restrictiveness indices and tax equivalents employed in quantitative analyses, highlighting the main methodological improvements that need to be considered to increase the reliability of estimates. Section III illustrates these improvements with application on the enumerated services sectors. Section IV concludes. In addition, the Annexes contain details on the methodological limitations and proposed improvements (Annex 1), the weights of restrictiveness indices components (Annex 2) and the regressions that have been employed to produce the tax equivalents (Annex 3).

II. Existing restrictiveness indices and tax equivalents - Strengths and limitations

6. Given that restrictions to international services transactions typically take the form of non-tariff, non-price regulatory barriers, research on their measurement has focused on the application of general methods for quantifying the presence and size of non-tariff barriers affecting goods trade (such as frequency-type measures, price- and quantity-impact measures) to services barriers. There is now widespread acceptance that, in order to capture the special and diverse nature of services barriers, direct measure approaches are more appropriate than indirect measurement methods that attempt to infer the presence of a barrier based on divergence of some criterion from an established benchmark. The direct measure approaches involve two steps: during the first step, qualitative information about regulatory restrictions are converted into a quantitative index; and the second step involves developing an econometric model to estimate the effect of the services trade restrictiveness index on some measure of economic performance. Consequently, in the framework of its quantitative work on services barriers, the Trade Directorate has relied on the direct methodologies developed by the Australian Productivity Commission (APC). This methodology is briefly described below.

Overview of the methodology developed by the Australian Productivity Commission

7. The approach developed by APC consists of first determining the level of restrictions in services and then computing their economic impact. The necessary information on regulatory measures is first collected from extensive databases and then the barriers are classified following a sector-specific approach. Thus, for banking, distribution and professional services, restrictions are classified along the following lines:

- Restrictions affecting entry, including restrictions on licensing, direct investment, joint venture arrangements and the permanent movement of persons; and
- Restrictions affecting on-going operations, including restrictions on raising and lending of funds, restrictions on providing other business, expanding outlets and the temporary movement of persons.

8. For telecommunication services, restrictions affecting commercial presence are distinguished from restrictions on cross-border trade, while in the cases of maritime and air transport various sector-specific regulatory measures such as port efficiency or capacity and price regulations are explicitly considered.

9. The method differentiates between restrictions applied to all firms (domestic index) and restrictions relevant to foreign firms (foreign index). Finally, this qualitative information is converted into a quantitative index, using a priori judgements about the relative restrictiveness of different barriers. This gives the restrictiveness index of the services barriers.

10. Once barriers have been identified and classified, the effect of these restrictions on some measure of economic performance (typically price, cost, price-cost margin, quantity or productivity) is then computed using an econometric model while controlling for specific factors that might affect performance in that particular sector. This gives the tax equivalents of the services barriers.

11. The methodology developed by the Australian Productivity Commission on sectoral restrictiveness indices and tax equivalents for barriers in specific services sectors such as banking, distribution services, professional services (engineering, legal, architectural, etc.) and telecommunication services was applied by the Trade Directorate to a number of non-OECD economies¹.

12. Notwithstanding the use of these sophisticated methods to quantify the magnitude of services barriers, some caveats need to be kept in mind when interpreting the results. Despite important improvements concerning the quantification of services barriers, a number of limitations still constrain the reliability of various estimates. Some of these limits are due to the availability of data on existing restrictions, and others reflect certain shortcomings in currently used methodologies such as the subjective allocation of weights to the various components that are included in the restrictiveness indices. Furthermore, it has been observed that the classification systems of barriers employed in the construction of the indices are not always compatible and useful from a GATS perspective as they do not systematically take into account the four modes of supply.

13. To address these limitations, researchers need to envisage methodological improvements concerning the construction of modal restrictiveness indices and tax equivalents using alternative weighting methods, combined with improved econometric specifications that include additional sector-specific variables. These limitations and proposals for improvement are discussed in detail in Annex 1. The implementation of the above proposals in the selected services sectors is outlined in the next section.

¹ See OECD, 2005a, and OECD, 2004.

III. Methodological improvements

14. Below we explain the methodological improvements that have been introduced in this paper that concern in the first stage the construction of aggregate and modal restrictiveness indices along with devising an appropriate weighting methodology, and, in a second stage calculating their tax equivalents.

Stage 1: Restrictiveness indices

- Aggregate and modal restrictiveness indices
- Weighting methodology

Stage 2: Tax equivalents

- Aggregate and modal tax equivalents and impact of regulatory measures and other sector-specific variables on sectoral performance.

Stage 1: Restrictiveness indices

Aggregate and modal restrictiveness indices

15. In order to make the index more suitable for services negotiations, it would be useful to develop indices that cover all modes of services supply at the sectoral level. Therefore, in addition to aggregate restrictiveness indices (calculated in all previous studies), separate modal indices are proposed in this paper. The trade restrictiveness indices (TRIs) cover the following barriers:

Banking and Insurance:

- *Mode 1 and 2*: restrictions on subsidies, establishment or residency/recognition requirements to provide cross-border services, requirement to co-operate with local organisations, geographical limitations, authorisation requirements;
- *Mode 3*: foreign equity limits, limitations on the form of establishment, including joint venture requirements, screening and approval, limitations on business activities; and
- *Mode 4*: limits on the duration of stay, on number of work permits, issues related to licensing/recognition requirements, limitations on the board of directors.

Telecommunication:

- *Mode 1*: restrictions on leased line or network provision, connections of leased lines and private networks to the PSTN, international simple resale and IP telephony;
- *Mode 2*: call back services;
- *Mode 3*: foreign equity limits, level of competition, including joint venture requirements, screening and approval, limitations on business activities, licensing restrictions; and
- *Mode 4*: limits on the duration of stay, on number of work permits, issues related to licensing/recognition requirements, limitations on the board of directors.

Professional services (engineering):

- *Mode 1*: restrictions on servicing the market on a cross-border basis (*i.e.* establishment requirements);
- *Mode 2*: restrictions on consumers purchasing business services abroad;
- *Mode 3*: foreign equity limits, Foreign partnership/joint venture/association, Investment and ownership by foreign professionals, Multidisciplinary practices level of competition, including joint venture requirements, screening and approval, limitations on business activities, licensing restrictions; and
- *Mode 4*: limits on the duration of stay, on number of work permits, limitations on the board of directors, licensing and accreditation of foreign professionals BOD, residency and local presence.

Distribution:

- *Mode 1*: restrictions on servicing the market on a cross-border basis (*i.e.* establishment requirements);
- *Mode 2*: restrictions on consumers purchasing distribution services abroad;
- *Mode 3*: foreign equity limits, restrictions on commercial land, restrictions on large scale stores, wholesale importing licensing, promotion of retail products, state monopolies – product exclusions, protection of intellectual property rights; and
- *Mode 4*: limits on the duration of stay, on number of work permits, licensing requirements on management.

16. Tables 1 to 4 describe in more detail the modal components of the restrictiveness indices for banking, insurance, telecommunications (fixed and mobile), professional services (engineering) and distribution services. In each case, column 1 indicates the general components that are covered in all sectors, while column 2 lists the sector-specific questions².

² We have attempted to include a large number of measures that can impede trade in services via various modes of supply. However, additional components such as restrictions on long-time lease of land or exclusions for special territories in distribution, or specific quotas, existence of discriminatory/non-discriminatory ENTs or exclusive rights in engineering could be included depending on the availability of data. On the other hand, there remain a number of uncertainties related to the economic impact of regulatory measures (*i.e.* it is necessary to determine whether regulations actually constitute barriers, as one cannot simply equate regulations with barriers. Further, given that regulations on services are generally designed to serve a range of policy objectives, it might also be relevant to consider whether the regulation is more burdensome than necessary to achieve its policy objective and whether other, equally effective but less trade restrictive, measures might be available) In addition, it is important to note that, at this stage, the study considers a combination of formal and actual barriers. A country can have regulatory measures in place which restrict trade, but these may not be applied in practice. Moreover, even if restrictions are applied, their effect depends on how they are applied in practice. Given all these caveats, the proposed lists of restrictions and the results should be treated with caution.

17. As indicated in Annex 1, given the subjective selection of components that are relevant for the domestic and foreign indices, the paper proposes a single index that contains all identified modal barriers (rather than arbitrarily selecting which barriers are relevant for the domestic and foreign indices)³.

18. The qualitative information was collected on the basis of the questions presented in Tables 1 to 4. Qualitative information is coded by assigning a numerical value to each of the possible responses to a given question while quantitative information is subdivided into classes using a system of thresholds. The coded information is normalised over a zero to one scale, reflecting increasing restrictiveness of regulatory measures. Equal weights are assigned to each component at this stage of the analysis.

19. The qualitative data on regulatory measures in transition economies have been gathered within the framework of the projects on trade in services in these countries carried out by the Trade Directorate in 2002-2003. Therefore, the restrictiveness indices and the impact of the barriers reflect the situation before 2003 (in the Baltic States) and at the end of 2002 - beginning of 2003 in most of the South Eastern European (SEE) countries. However, given that Bulgaria and Romania have experienced significant regulatory changes since 2002, more recent information for 2004 was used for the analysis. Regulatory information on Russia is available from a World Bank study that employed the questionnaires used for the assessment of the SEE countries.

20. For Latin American countries, the information comes from the Organisation of American States (OAS), which employed similar questionnaires to those used for the assessment of the SEE countries. The answers to the questionnaires were collected by the OAS between 2002 and 2004. With respect to China, the information was collected jointly by Chinese experts and the OECD Secretariat. The collected information reflects the situation in 2004.

21. For all remaining non-OECD countries, the Secretariat employed the following sources: the World Bank Regulatory Database on Banking Services (2003 version), WTO Trade Policy Reviews, National Trade Estimate Reports on Foreign Trade Barriers from the Office of the US Trade Representative, GATS schedules of commitments, various reports and studies produced by national and international organisations, etc.

22. In addition, a number of OECD countries were included in the analysis for comparative purposes. The information for the OECD countries comes mainly from the OECD Product Market Regulations Database and GATS schedules of commitments.

³ We have constructed a domestic index that included the components proposed by the APC; however, as with the studies produced by the APC, the estimation using this domestic index did not generate meaningful results. In fact, APC uses the coefficient estimate for the foreign index as a proxy to calculate the domestic tax equivalent – see Kalirajan et al., 2000.

Table 1. Components of the banking and insurance restrictiveness indices

Modal allocation of components	Summary description and first level coding	
	Banking	Insurance
Mode 1: Cross-border trade	<p>Are the following allowed to borrow cross-border from foreign banks? <i>Banks, Corporation and Households</i></p> <ul style="list-style-type: none"> • 1.00 Banks, corporations and households (in the analysed country) are not permitted to borrow cross-border from a foreign bank situated abroad • 0.66 Banks, corporations and households (in the analysed country) are permitted to borrow cross-border from foreign banks situated abroad with a specific ceiling amount (specify the amount) • 0.33 Banks, corporations and households (in the analysed country) are permitted to borrow cross-border from foreign banks situated abroad without a specific ceiling amount but with licenses subject to specific qualifications • 0.00 Banks, corporations and households (in the analysed country) are permitted to borrow cross-border from a foreign bank situated abroad without restrictions <p>Are the following allowed to make cross-border deposits with foreign banks? <i>Banks</i></p> <ul style="list-style-type: none"> • 1.00 Banks, corporations and households (in the analysed country) are not permitted to make cross-border deposits with a foreign bank situated abroad • 0.66 Banks, corporations and households (in the analysed country) are permitted to make cross-border deposits with foreign banks situated abroad with a specific ceiling amount (specify the amount) • 0.33 Banks, corporations and households (in the analysed country) are permitted to make cross-border deposits with foreign banks situated abroad without a specific ceiling amount but with licenses subject to specific qualifications • 0.00 Banks, corporations and households (in the analysed country) are permitted to make cross-border deposits with a foreign bank situated abroad without restrictions 	<p><i>Cross-border insurance supply by insurance companies</i></p> <ul style="list-style-type: none"> • 1.00 Insurance companies are not permitted to provide residents with any type of cross-border insurance services • 0.66 Insurance companies are permitted to provide residents with certain types of cross-border insurance services • 0.33 Insurance companies are permitted to provide residents with any type of cross-border insurance services but with certain limitations (purchases are subject to limits, foreign insurance suppliers are not allowed to solicit business through advertising, etc.) • 0.00 Insurance companies are permitted to provide residents with any type of cross-border insurance services
Mode 2: Consumption abroad:	<p><i>Consumption abroad</i></p> <ul style="list-style-type: none"> • 1.00 Residents are not authorised to purchase financial services abroad • 0.66 Quotas related to the value of transaction, number of operations between banks in the country of destination and domestic consumers travelling abroad or number of nationals travelling abroad (visas) • 0.33 Taxes or registration/authorisation requirements on consumers travelling abroad • 0.00 No restrictions 	<p><i>Limitations on foreign suppliers (or consumers travelling abroad)</i></p> <ul style="list-style-type: none"> • 1.00 Residents are not authorised to purchase insurance services abroad • 0.66 Quotas related to the value of transaction, type of insurance service to be provided by the insurance company in the country of destination to the domestic consumers travelling abroad or number of nationals travelling abroad (visas) • 0.33 Taxes or registration/authorisation requirements on consumers travelling abroad • 0.00 No restrictions

Modal allocation of components	Summary description and first level coding	
	Banking	Insurance
Mode 3: Commercial presence <i>Foreign Equity Limits</i>	<ul style="list-style-type: none"> • 1.00 Foreign ownership not permitted • 0.00 No restrictions on foreign ownership <p>The score is inversely proportional with the maximum foreign equity participation permitted in a domestic bank, with or without approval.</p>	<ul style="list-style-type: none"> • 1.00 Foreign ownership not permitted • 0.00 No restrictions on foreign ownership <p>The score is inversely proportional with the maximum foreign equity participation permitted in a domestic Insurance company, with or without approval.</p>
<i>Forms of Commercial Presence</i>	<ul style="list-style-type: none"> • 1.00 No commercial presence permitted (effectively a notional case) • 0.66 Only representative offices permitted • 0.33 Some legal forms of establishment (subsidiaries and/or branches) are allowed in addition to representative offices • 0.00 All legal forms of establishment (subsidiaries, branches, representative offices) for foreign banks are allowed 	<ul style="list-style-type: none"> • 1.00 No commercial presence permitted (effectively a notional case) • 0.66 Only representative offices permitted • 0.33 Some legal forms of establishment (subsidiaries and/or branches) are allowed in addition to representative offices • 0.00 All legal forms of establishment (subsidiaries, branches, representative offices) for foreign Insurance companies' are allowed
<i>Joint Venture arrangements</i>	<ul style="list-style-type: none"> • 1.00 Foreign bank entry is allowed only through joint ventures with domestic subsidiary banks • 0.00 No requirement for a foreign bank to enter through a joint venture with a domestic subsidiary bank 	<ul style="list-style-type: none"> • 1.00 Foreign insurance entry is allowed only through joint ventures with domestic insurance subsidiaries • 0.00 No requirement for a foreign insurance company to enter through a joint venture with a domestic insurance subsidiary
<i>Licensing - separate for domestic and foreign bank subsidiaries to determine the NT restrictions</i>	<ul style="list-style-type: none"> • 1.00 Issues no new banking licenses • 0.75 Issues up to 4 new banking licenses to banks with only prudential restrictions/ Licenses are issued through complicated and costly procedures • 0.5/0.20 Issues up to 8 new banking licenses to banks with only prudential restrictions/ Licenses are issued with application fee and several requirements • 0.25/0.10 Issues up to 12 new banking licenses to banks with only prudential restrictions/ Licenses are generally issued with application fees • 0.00 Issues new banking licenses to banks with only prudential restrictions and Licenses are automatically issued upon application without any cost 	<ul style="list-style-type: none"> • 1.00 Issues no new insurance licenses • 0.75 Issues up to 4 new insurance licenses to insurance companies with only prudential restrictions / Licenses are issued through complicated and costly procedures • 0.5/0.20 Issues up to 8 new insurance licenses to insurance companies with only prudential restrictions / Licenses are issued with application fee and several requirements • 0.25/0.10 Issues up to 12 new insurance licenses to insurance companies with only prudential restrictions/ Licenses are generally issued with application fees • 0.00 Issues new insurance licenses to Insurance companies with only prudential restrictions and Licenses are automatically issued upon application without any cost
<i>Business scope</i>	<i>Raising funds</i> <ul style="list-style-type: none"> 1.00 Banks are not permitted to raise funds from domestic sources • 0.75 Banks are restricted from raising funds from domestic capital markets • 0.50 Banks are restricted in accepting deposits from the public • 0.00 Banks can raise funds from any source with only prudential restrictions 	<i>General scope of domestic and foreign Insurance companies</i> <ul style="list-style-type: none"> • 1.00 Insurance companies can only provide one or two Insurance services • 0.50 Insurance companies can provide more than 3 insurance services • 0.00 Insurances have no restrictions on conducting any type of insurance services

Modal allocation of components	Summary description and first level coding	
	<p><i>Lending</i></p> <p>1.00 Banks are not permitted to lend to domestic clients</p> <ul style="list-style-type: none"> • 0.75 Banks are restricted to a specified lending size and or lending to government projects • 0.50 Banks are restricted in providing certain lending services such as leasing, credit card services or consumer finance • 0.25 Banks are directed to lend to housing, small business, natural persons and or businesses in certain regions • 0.00 Banks can lend to any source with only prudential restrictions 	
	<p><i>Other business of domestic and foreign bank subsidiaries - insurance and securities services</i></p> <ul style="list-style-type: none"> • 1.00 Banks can only provide banking services • 0.50 Banks can provide banking services plus one other line of business - insurance or securities services • 0.00 Banks have no restrictions on conducting other lines of business 	
	<p><i>Expanding the number of banking outlets s</i></p> <ul style="list-style-type: none"> • 1.00 One banking outlet with no new banking outlets is permitted • 0.75 Number of banking outlets is limited in number and location • 0.25 Expansion of banking outlets is subject to non-prudential regulatory approval • 0.00 No restrictions on banks expanding operations 	<p><i>Expanding the number of Insurance outlets</i></p> <ul style="list-style-type: none"> • 1.00 One insurance outlet with no new insurance outlets is permitted • 0.75 Number of insurance outlets is limited in number and location • 0.25 Expansion of insurance outlets is subject to non-prudential regulatory approval • 0.00 No restrictions on insurances expanding operations
	<p><i>Screening and approval</i></p> <ul style="list-style-type: none"> • 1.00 Investors must show economic benefits • 0.66 Approval unless contrary to national interest • 0.33 Notification (pre -or post) requirements • 0.00 No screening or approval requirements 	<p><i>Screening and approval</i></p> <ul style="list-style-type: none"> • 1.00 Investors must show economic benefits • 0.66 Approval unless contrary to national interest • 0.33 Notification (pre -or post) requirements • 0.00 No screening or approval requirements
<p>Mode 4: Presence of natural persons <i>Temporary Movement of people - Shorter stay (mainly business visitors and employees)</i></p>	<p>Banking service supplied by nationals of one country in the territory of another country</p> <ul style="list-style-type: none"> • 1.00 No temporary entry of executives, senior managers or specialists • 0.75 Temporary entry of executives, senior managers or specialists up to 30 days • 0.50 Temporary entry of executives, senior managers or specialists up to 60 days • 0.25 Temporary entry of executives, senior managers or specialists up to 90 days • 0.00 Temporary entry of executives, senior managers or specialists over 120 days 	<ul style="list-style-type: none"> • 1.00 No temporary entry of executives, senior managers or specialists • 0.75 Temporary entry of executives, senior managers or specialists up to 30 days • 0.50 Temporary entry of executives, senior managers or specialists up to 60 days • 0.25 Temporary entry of executives, senior managers or specialists up to 90 days • 0.00 Temporary entry of executives, senior managers or specialists over 120 days

Modal allocation of components	Summary description and first level coding	
<i>Temporary Movement of people - Board of Directors</i>	<ul style="list-style-type: none"> • 1.00 Board cannot comprise foreigners • 0.66 Majority must be nationals • 0.33 At least 1 must be national, or they must be residents or locally licensed • 0.00 No restrictions on the composition of the board of directors 	<ul style="list-style-type: none"> • 1.00 Board cannot comprise foreigners • 0.66 Majority must be nationals • 0.33 At least 1 must be national, or they must be residents or locally licensed • 0.00 No restrictions on the composition of the board of directors
<i>Temporary Movement of people - Longer stay</i>	<ul style="list-style-type: none"> • 1.00 No temporary entry of executives, senior managers or specialists • 0.80 Temporary entry of executives, senior managers or specialists up to 1 year • 0.60 Temporary entry of executives, senior managers or specialists between 1 and 2 years • 0.40 Temporary entry of executives, senior managers or specialists between 3 and 4 years • 0.20 Temporary entry of executives, senior managers or specialists between 4 and 5 years • 0.00 Temporary entry of executives, senior managers or specialists over 5 years 	<ul style="list-style-type: none"> • 1.00 No temporary entry of executives, senior managers or specialists • 0.80 Temporary entry of executives, senior managers or specialists up to 1 year • 0.60 Temporary entry of executives, senior managers or specialists between 1 and 2 years • 0.40 Temporary entry of executives, senior managers or specialists between 3 and 4 years • 0.20 Temporary entry of executives, senior managers or specialists between 4 and 5 years • 0.00 Temporary entry of executives, senior managers or specialists over 5 years
<i>Work permits - Issuing working permits or visas is subject to recognition or professional qualifications</i>	<ul style="list-style-type: none"> • 1.00 No work permits • 0.75 Numerical limits subject to Economic Needs Tests (ENT) • 0.50 Numerical limits subject to recognition or professional qualifications • 0.25 Approval and/or pre-employment criteria + Limits on the lengths of work permits • 0.00 No restrictions 	<ul style="list-style-type: none"> • 1.00 No work permits • 0.75 Numerical limits subject to Economic Needs Tests (ENT) • 0.50 Numerical limits subject to recognition or professional qualifications • 0.25 Approval and/or pre-employment criteria + Limits on the lengths of work permits • 0.00 No restrictions

Source: Adapted from McGuire and Schuele (2000)

Table 2. Components of the fixed and mobile telecom restrictiveness indices

Modal allocation of components	Summary description and first level coding	
	Fixed	Mobile
Mode 1: Cross-border trade <i>Lease line or provide network</i>	<ul style="list-style-type: none"> • 1.00 Not permitted • 0.00 Permitted 	<ul style="list-style-type: none"> • 1.00 Not permitted • 0.00 Permitted
<i>Connections of leased lines and private networks to the PSN</i>	<ul style="list-style-type: none"> • 1.00 Not permitted • 0.00 Permitted 	
<i>ISR (International Simple Resale) and IP (Internet Protocol) telephony</i>	<ul style="list-style-type: none"> • 1.00 Not permitted • 0.00 Permitted 	
Mode 2: Consumption abroad <i>Call back services</i>	<ul style="list-style-type: none"> • 1.00 Not permitted • 0.00 Permitted 	<ul style="list-style-type: none"> • 1.00 Not permitted • 0.00 Permitted
Mode 3: Commercial Presence <i>Foreign Equity Limits</i>	<ul style="list-style-type: none"> • 1.00 Foreign ownership not permitted • 0.00 No restrictions on foreign ownership <p>The score is inversely proportional with the maximum foreign equity participation permitted in a domestic firm, with or without approval.</p>	<ul style="list-style-type: none"> • 1.00 Foreign ownership not permitted • 0.00 No restrictions on foreign ownership <p>The score is inversely proportional with the maximum foreign equity participation permitted in a domestic firm, with or without approval.</p>
<i>Level of competition</i>	<ul style="list-style-type: none"> • 1.00 Monopoly • 0.50 Partial competition • 0.00 Full competition 	<ul style="list-style-type: none"> • 1.00 Monopoly • 0.50 Partial competition • 0.00 Full competition
<i>Joint venture arrangements</i>	<ul style="list-style-type: none"> • 1.00 Foreign company entry is allowed only through joint ventures with domestic company • 0.00 No requirement for a foreign company to enter through a joint venture with a domestic company 	<ul style="list-style-type: none"> • 1.00 Foreign company entry is allowed only through joint ventures with domestic company • 0.00 No requirement for a foreign company to enter through a joint venture with a domestic company
<i>Licensing - separate for domestic and foreign bank subsidiaries to determine the NT restrictions</i>	<ul style="list-style-type: none"> • 1.00 Issues no new licenses • 0.75 Licenses are issued through complicated and costly procedures • 0.5/0.20 Licenses are issued with application fee and several requirements • 0.25/0.10 Licenses are generally issued with application fees • 0.00 Licenses are automatically issued upon application without any cost 	<ul style="list-style-type: none"> • 1.00 Issues no new licenses • 0.75 Licenses are issued through complicated and costly procedures • 0.5/0.20 Licenses are issued with application fee and several requirements • 0.25/0.10 Licenses are generally issued with application fees • 0.00 Licenses are automatically issued upon application without any cost
<i>Restrictions on some types of services</i>	<ul style="list-style-type: none"> • 1.00 Restrictions on providing some types of telephone services • 0.00 No restriction on providing any type of telephone services 	
<i>Screening and approval - separate for domestic and foreign companies to determine the NT restrictions</i>	<ul style="list-style-type: none"> • 1.00 Investors must show economic benefits • 0.66 Approval unless contrary to national interest • 0.33 Notification (pre -or post) requirements • 0.00 No screening or approval requirements 	<ul style="list-style-type: none"> • 1.00 Investors must show economic benefits • 0.66 Approval unless contrary to national interest • 0.33 Notification (pre -or post) requirements • 0.00 No screening or approval requirements

Modal allocation of components	Summary description and first level coding	
	Fixed	Mobile
Mode 4: Presence of natural persons <i>Temporary Movement of people - Shorter stay (mainly business visitors and employees)</i>	<ul style="list-style-type: none"> • 1.00 No temporary entry of executives, senior managers or specialists • 0.75 Temporary entry of executives, senior managers or specialists up to 30 days • 0.50 Temporary entry of executives, senior managers or specialists up to 60 days • 0.25 Temporary entry of executives, senior managers or specialists up to 90 days • 0.00 Temporary entry of executives, senior managers or specialists over 120 days 	<ul style="list-style-type: none"> • 1.00 No temporary entry of executives, senior managers or specialists • 0.75 Temporary entry of executives, senior managers or specialists up to 30 days • 0.50 Temporary entry of executives, senior managers or specialists up to 60 days • 0.25 Temporary entry of executives, senior managers or specialists up to 90 days • 0.00 Temporary entry of executives, senior managers or specialists over 120 days
<i>Temporary Movement of people - Board of Directors</i>	<ul style="list-style-type: none"> • 1.00 Board cannot comprise of foreigners • 0.66 Majority must be nationals • 0.33 At least 1 must be national, or they must be residents or locally licensed • 0.00 No restrictions on the composition of the board of directors <p>The score is inversely proportional with the percentage of the board that can comprise foreigners</p>	<ul style="list-style-type: none"> • 1.00 Board cannot comprise of foreigners • 0.66 Majority must be nationals • 0.33 At least 1 must be national, or they must be residents or locally licensed • 0.00 No restrictions on the composition of the board of directors <p>The score is inversely proportional with the percentage of the board that can comprise foreigners</p>
<i>Temporary Movement of people - Longer stay</i>	<ul style="list-style-type: none"> • 1.00 No temporary entry of executives, senior managers or specialists • 0.80 Temporary entry of executives, senior managers or specialists up to 1 year • 0.60 Temporary entry of executives, senior managers or specialists between 1 and 2 years • 0.40 Temporary entry of executives, senior managers or specialists between 3 and 4 years • 0.20 Temporary entry of executives, senior managers or specialists between 4 and 5 years • 0.00 Temporary entry of executives, senior managers or specialists over 5 years 	<ul style="list-style-type: none"> • 1.00 No temporary entry of executives, senior managers or specialists • 0.80 Temporary entry of executives, senior managers or specialists up to 1 year • 0.60 Temporary entry of executives, senior managers or specialists between 1 and 2 years • 0.40 Temporary entry of executives, senior managers or specialists between 3 and 4 years • 0.20 Temporary entry of executives, senior managers or specialists between 4 and 5 years • 0.00 Temporary entry of executives, senior managers or specialists over 5 years
<i>Work permits - Issuing working permits or visas is subject to recognition or professional qualifications</i>	<ul style="list-style-type: none"> • 1.00 No work permits • 0.75 Numerical limits subject to Economic Needs Tests (ENT) • 0.50 Numerical limits subject to recognition or professional qualifications • 0.25 Approval and/or pre-employment criteria + Limits on the lengths of work permits • 0.00 No restrictions 	<ul style="list-style-type: none"> • 1.00 No work permits • 0.75 Numerical limits subject to Economic Needs Tests (ENT) • 0.50 Numerical limits subject to recognition or professional qualifications • 0.25 Approval and/or pre-employment criteria + Limits on the lengths of work permits • 0.00 No restrictions

Source: Adapted from McGuire and Schuele (2000)

Table 3. Components of the Engineering Restrictiveness Index

Modal allocation of components	Summary description and first level coding
Mode 1: Cross-border trade	Are there restrictions on cross-border trade (i.e. establishment requirements) <ul style="list-style-type: none"> • 1.00 Yes • 0.00 No
Mode 2: Consumption abroad	Are there any restrictions on consumers purchasing distribution business services abroad? <ul style="list-style-type: none"> • 1.00 Yes • 0.00 No
Mode 3: Commercial presence Forms of establishment	Forms of establishment <ul style="list-style-type: none"> • 1.00 Prohibition on incorporation • 0.50 Some forms of incorporation permitted • 0.00 No restrictions
Foreign partnership or Joint Venture arrangements*	Foreign partnership or Joint Venture arrangements <ul style="list-style-type: none"> • 1.00 Prohibition on partnership with foreign professionals • 0.50 Partnership or joint venture with local businesses required • 0.00 No restriction
Investment and ownership by foreign professionals*	Firms must be owned or controlled by local professionals. The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm. For example, equity participation to a maximum of 75 per cent in an existing firm receives a score of 0.25
Investment and ownership by non-professional investors*	Investment and ownership by non-professional investors. Firms must be owned or controlled by professionals. The score is inversely proportional to the non-professional equity participation permitted in a professional firm. For example, equity participation to a maximum of 75 per cent in an existing firm receives a score of 0.25.
Screening and approval	<ul style="list-style-type: none"> • 1.00 Investors must show economic benefits • 0.66 Approval unless contrary to national interest • 0.33 Notification (pre -or post) requirements • 0.00 No screening or approval requirements
Mode 4: Presence of natural persons Licensing and accreditation of foreign professionals	<ul style="list-style-type: none"> • 1.00 Local retraining required for full license • 0.75 Local examination required in all cases • 0.50 Case-by-case assessment of foreign licence and qualifications • 0.25 Aptitude test • 0.00 Foreign licence and qualifications sufficient to practice
Temporary Movement of people - Shorter stay (<i>mainly business visitors and employees</i>)	<ul style="list-style-type: none"> • 1.00 No temporary entry of executives, senior managers or specialists • 0.75 Temporary entry of executives, senior managers or specialists up to 30 days • 0.50 Temporary entry of executives, senior managers or specialists up to 60 days • 0.25 Temporary entry of executives, senior managers or specialists up to 90 days • 0.00 Temporary entry of executives, senior managers or specialists over 120 days
Temporary Movement of people - Board of Directors	<ul style="list-style-type: none"> • 1.00 Board cannot comprise of foreigners • 0.66 Majority must be nationals • 0.33 At least 1 must be national, or they must be residents or locally licensed • 0.00 No restrictions on the composition of the board of directors
Temporary Movement of people - Longer stay	<ul style="list-style-type: none"> • 1.00 No temporary entry of executives, senior managers or specialists • 0.80 Temporary entry of executives, senior managers or specialists up to 1 year • 0.60 Temporary entry of executives, senior managers or specialists between 1 and 2 years • 0.40 Temporary entry of executives, senior managers or specialists between 3 and 4 years • 0.20 Temporary entry of executives, senior managers or specialists between 4 and 5 years • 0.00 Temporary entry of executives, senior managers or specialists over 5 years
Work permits - Issuing working permits or visas is subject to recognition or professional qualifications	<ul style="list-style-type: none"> • 1.00 No work permits • 0.75 Numerical limits subject to Economic Needs Tests (ENT) • 0.50 Numerical limits subject to recognition or professional qualifications • 0.25 Approval and/or pre-employment criteria + Limits on the lengths of work permits • 0.00 No restrictions

Modal allocation of components	Summary description and first level coding
Regulatory issues affecting on-going operations	
Multidisciplinary practices	<ul style="list-style-type: none"> • 1.00 Prohibition on partnership or association with other professions • 0.50 Majority partnership required • 0.00 No restrictions
Activities reserved by law to the profession	<ul style="list-style-type: none"> • 1.00 4 core activities and over • 0.75 3 core activities • 0.50 2 core activities • 0.25 1 core activity • 0.00 None
Fee setting	<ul style="list-style-type: none"> • 1.00 Minimum and maximum fees for all groups in the profession • 0.50 Restrictions apply to some groups or activities • 0.00 Setting fee freely
Advertising, marketing and solicitation	<ul style="list-style-type: none"> • 1.00 Prohibition of advertising, marketing or solicitation • 0.50 Restrictions apply to some groups of activities • 0.00 General legal requirements
Other restrictions (additive categories)	<ul style="list-style-type: none"> • 0.33 Restrictions on hiring local professionals • 0.33 Restrictions on the use of firm's international names • 0.33 Government procurement - restrictions towards foreign suppliers • 0.00 No restrictions

Source: Adapted from Nguyen Hong (2000) Note: * An alternative scoring that combines the components 'Foreign Partnership or Joint Venture arrangements', 'Investment and ownership by foreign professionals' and 'Investment and ownership by non-professional investors' could be developed along the following lines: 1 if Joint Venture or partnership is required; 0.75 if incorporation is required (i.e. branches are not allowed); 0.5 if there is a Prohibition to enter into partnership with locals; 0.25 if non-discriminatory limits on multidisciplinary practices are in place; and 0 if there are No restrictions.

Table 4. Components of the Distribution Restrictiveness Index

Mode 1: Cross-border trade	Can non-resident suppliers of distribution services serve the market on a cross-border basis? <ul style="list-style-type: none"> • 1.00 No • 0.00 Yes
Mode 2: Consumption Abroad	Are there restrictions on consumers distribution business services abroad? <ul style="list-style-type: none"> • 1.00 Yes • 0.00 No
Mode 3: Commercial presence Restrictions on commercial land	<ul style="list-style-type: none"> • 1.00 Acquisition of commercial land is not permitted • 0.50 Acquisition of commercial land is permitted, but is restricted to a certain size • 0.00 No restriction on the acquisition of land
Direct investment	The score will be inversely proportional to maximum foreign equity participation permitted in a domestic distribution enterprise, with or without approval. For example, ownership to a maximum of 49% would receive a score of 0.51.
Restrictions on large-scale stores	<ul style="list-style-type: none"> • 1.00 National legislation prohibits large-scale stores • 0.50 Regional and local authorities restrict large-scale stores • 0.00 No restrictions on large scale stores
Factors affecting investment (ADDITION CATEGORY)	<ul style="list-style-type: none"> • 0.30 Law to protect against takeovers by foreigners • 0.30 Performance requirements for foreign investors • 0.20 Screening of foreign investment *sub-category of economic needs test • 0.20 Foreign establishment subject to an economic needs test
Factors affecting local establishment (ADDITION CATEGORY)	<ul style="list-style-type: none"> • 0.40 Establishment subject to a local environmental impact assessment (zoning) • 0.40 Local employments requirements • 0.20 Restrictions on operating hours
Wholesale import licensing	<ul style="list-style-type: none"> • 1.00 No new import licences are available for wholesalers • 0.50 A limited number of new import licences are available for wholesalers • 0.00 There are no limits on the issuing import licences
Promotion of retail products	<ul style="list-style-type: none"> • 1.00 Foreigners are prohibited from using promotional tools to market retail products • 0.50 Foreigners are limited in their use of promotional tools to market retail products • 0.00 No restrictions on promotion of retail products
State Monopolies - Product exclusions	The score for an economy is taken from the presence of statutory government monopolies in 16 product categories codes areas.
Protection of intellectual property rights	<ul style="list-style-type: none"> • 1.00 Intellectual property rights - economy on priority 301 watch list • 0.50 Intellectual property rights - economy on general 301 watch list • 0.00 Intellectual property rights are not on watch lists
Mode 4: Presence of natural persons Licensing requirements on management	<ul style="list-style-type: none"> • 1.00 All directors/managers or at least a majority of them must be nationals or residents • 0.75 At least one director/managers must be nationals or residents • 0.50 Directors and managers must be locally licensed • 0.25 Directors and managers must be domiciled • 0.00 No restrictions
Temporary Movement of people - Shorter stay (mainly business visitors and employees)	<ul style="list-style-type: none"> • 1.00 No temporary entry of executives, senior managers or specialists • 0.75 Temporary entry of executives, senior managers or specialists up to 30 days • 0.50 Temporary entry of executives, senior managers or specialists up to 60 days • 0.25 Temporary entry of executives, senior managers or specialists up to 90 day • 0.00 Temporary entry of executives, senior managers or specialists over 120 days
Temporary Movement of people - Longer stay	<ul style="list-style-type: none"> • 1.00 No temporary entry of executives, senior managers or specialists • 0.80 Temporary entry of executives, senior managers or specialists up to 1 year • 0.60 Temporary entry of executives, senior managers or specialists between 1 and 2 years • 0.40 Temporary entry of executives, senior managers or specialists between 3 and 4 years • 0.20 Temporary entry of executives, senior managers or specialists between 4 and 5 years • 0.00 Temporary entry of executives, senior managers or specialists over 5 years

Source: Adapted from Kalirajan (2000)

Weighting methodology

23. A statistical approach based on factor analysis, in which each component of the regulatory framework is weighted according to its contribution to the overall variance in the data, was employed to calculate the weights used to construct the aggregate and modal indices.

24. In broad terms, factor analysis (FA)⁴ refers to a family of statistical techniques in which a large number of variables are analysed in terms of a smaller number of underlying common elements, known as “factors”. Each factor is conceptualised as a linear combination of the observed variables. The aim of FA is often said to be twofold: data reduction (*i.e.* the “compression” of a set of many variables into a much smaller number of factors) and data synthesis (*i.e.* the identification and interpretation of a small number of common elements that effectively characterise a much larger set of observed variables).

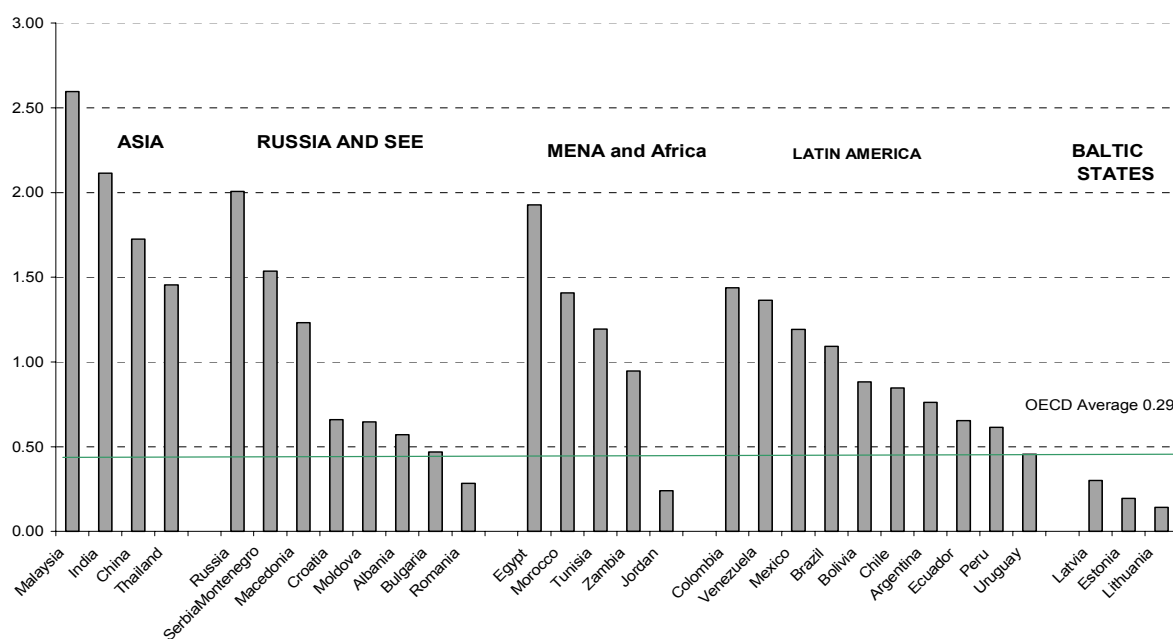
25. The present study primarily makes use of the reductive aspect of FA. This is because FA effectively provides us with a weighting scheme for the trade policy indicators in which the weights are chosen so as to maximise the amount of the variance explained by the resulting aggregate TRI. As noted in other recent papers that have applied FA to questions very close to the present one (*e.g.* Boylaud & Nicoletti, 2000; Copenhagen Economics, 2005), the advantage of such an approach is that the weighting scheme is driven much more by the data than is the case with purely subjective weights. The tables in Annex 2 present the scores used to construct the restrictiveness indices.

26. After being computed using the variant of FA known as principal components analysis, the aggregate and modal TRIs are then scaled so as to place a country—real or hypothetical—that is “liberal” (*i.e.* which receives 0.00 for each question in Tables 1 to 4) at the zero point of the scale. The sample of countries varies from sector to sector depending on the data availability on regulatory measures. The results on aggregate and modal indices are reported in Tables 5 to 10. In line with the applied methodology, the countries with the highest score on the restrictiveness index have the most restrictive trade regime. In addition, Figures 1 to 6 reproduce in graphical form the aggregate TRI results for selected countries; the horizontal line represents the OECD sample average (*i.e.* the selected OECD countries included in our sample).

27. It is worth noting that a high number of non-OECD countries record restrictiveness indices well above the OECD average. Asian non-OECD countries such as Malaysia, China, India and Thailand, are the most restrictive in banking, insurance, mobile telecom, engineering and distribution. The analysed countries in the Middle East represent the most restrictive group in fixed telecom services. The analysis confirms that among the selected non-OECD countries, transition economies are leading the process of liberalisation in almost all sectors. Russia, however, is in general the most restrictive of the analysed transition economies. In most analysed sectors, Latin American countries record rather moderate restrictiveness indices as compared to the analysed Asian countries or Russia.

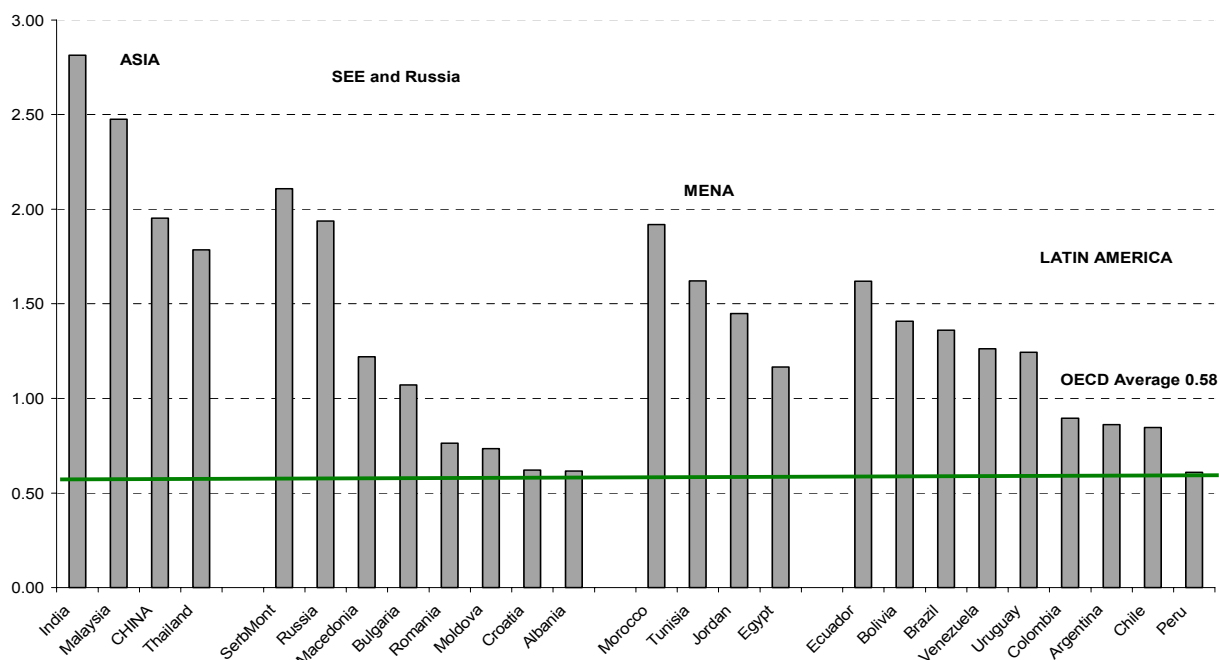
⁴ FA is used as a general heading to include related methods, such as principal components analysis.

Figure 1. Aggregate Trade Restrictiveness Index - Banking



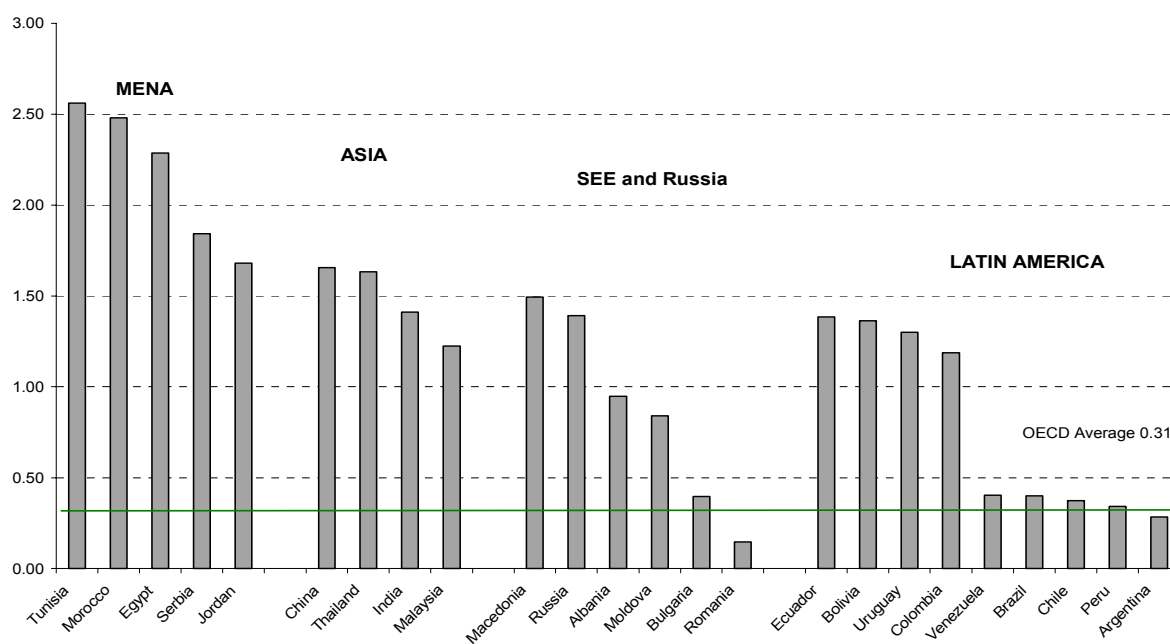
Source: Own calculations. Note: For comparative purposes, the average TRI across all available OECD countries is represented by a horizontal line

Figure 2. Aggregate Trade Restrictiveness Index - Insurance



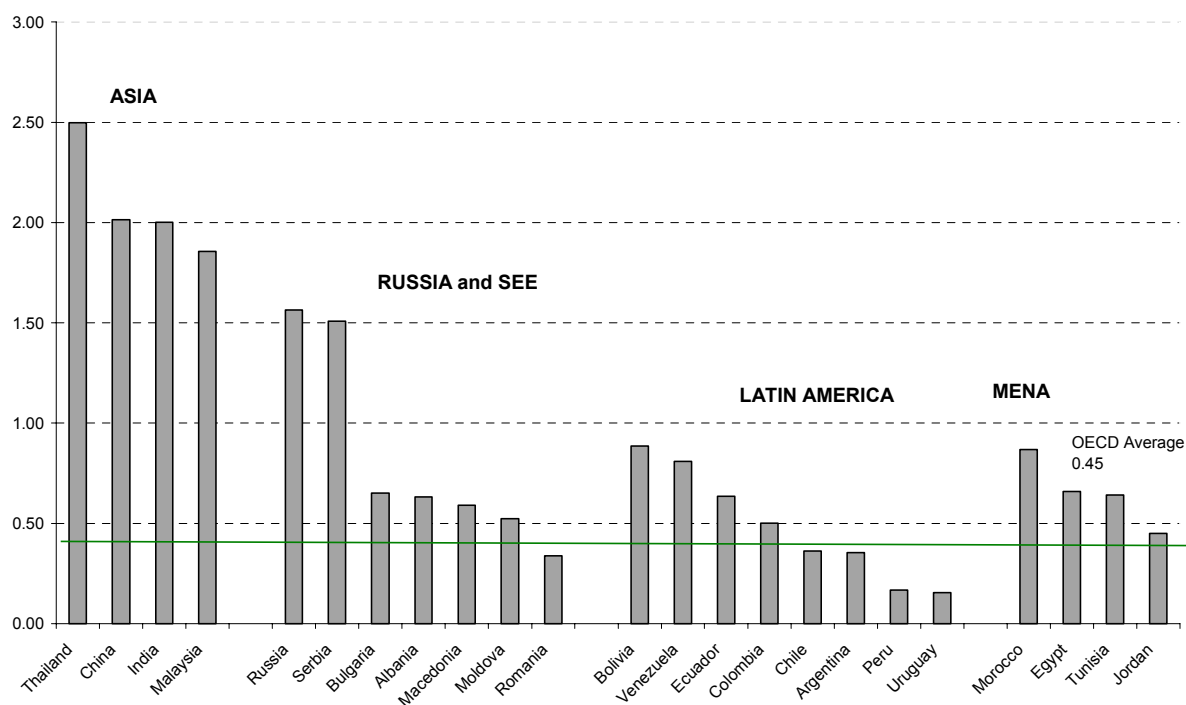
Source: Own calculations. Note: For comparative purposes, the average TRI across all available OECD countries is represented by a horizontal line

Figure 3. Aggregate Trade Restrictiveness Index – Fixed Telecommunication



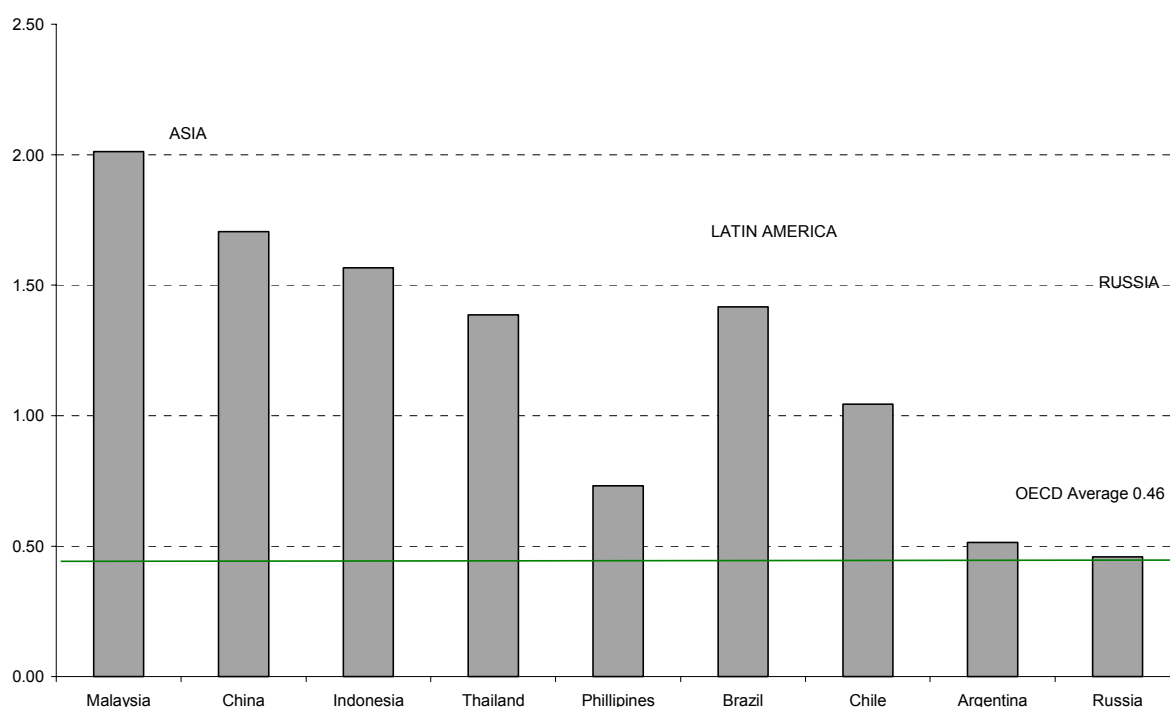
Source: Own calculations. Note: For comparative purposes, the average TRI across all available OECD countries is represented by a horizontal line

Figure 4. Aggregate Trade Restrictiveness Index – Mobile Telecommunication



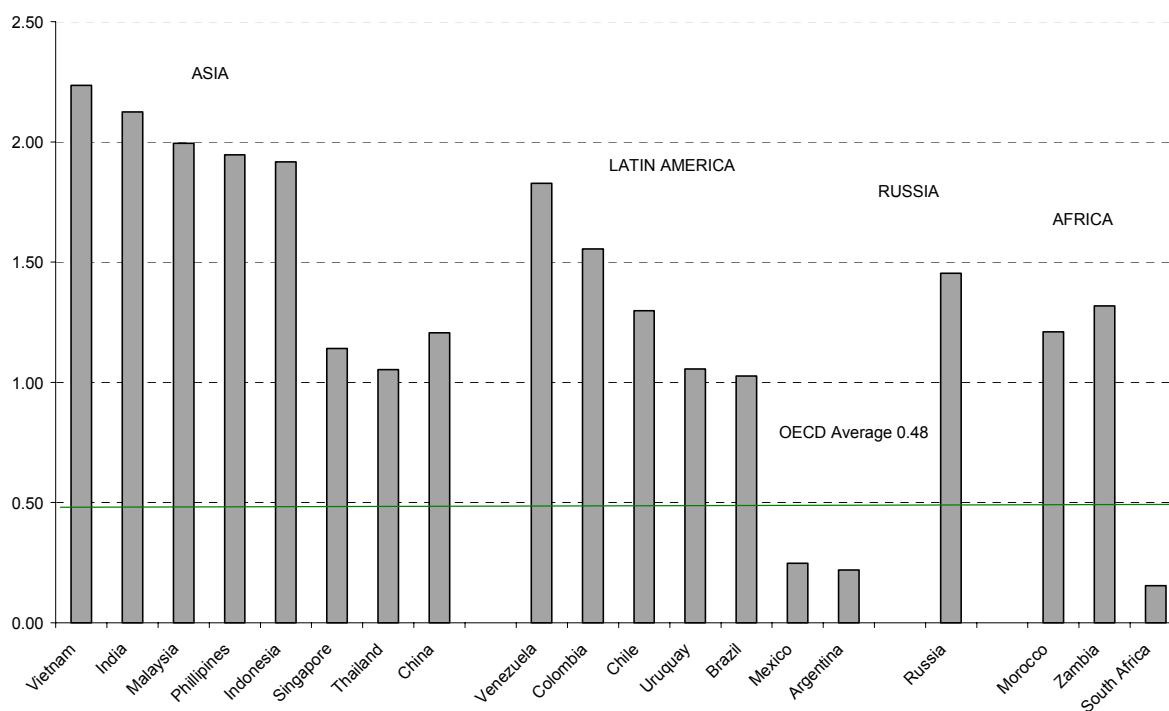
Source: Own calculations. Note: For comparative purposes, the average TRI across all available OECD countries is represented by a horizontal line

Figure 5. Aggregate Trade Restrictiveness Index – Engineering



Source: Own calculations. Note: For comparative purposes, the average TRI across all available OECD countries is represented by a horizontal line

Figure 6. Aggregate Trade Restrictiveness Index – Distribution



Source: Own calculations. Note: For comparative purposes, the average TRI across all available OECD countries is represented by a horizontal line

Table 5. Aggregate and Modal Restrictiveness Indices - Banking

	Aggregate Restrictiveness Index	Mode 1 Restrictiveness Index	Mode 2 Restrictiveness Index	Mode 3 Restrictiveness Index	Mode 4 Restrictiveness Index
Malaysia	2.60	2.18	2.29	1.64	0.99
India	2.11	2.18	2.29	1.34	0.83
Russia	2.01	2.18	2.29	1.27	2.54
Egypt	1.93	2.18	2.29	1.33	1.58
China	1.73	2.18	2.29	1.15	0.61
Serbia and Montenegro	1.54	3.27	3.47	0.85	0.40
Thailand	1.46	2.18	2.29	1.06	1.39
Colombia	1.44	1.13	2.29	1.06	1.97
Morocco	1.41	2.18	2.29	1.03	0.61
Venezuela	1.36	1.35	2.29	0.96	2.47
Macedonia	1.23	3.27	2.29	0.75	0.25
Tunisia	1.19	2.18	2.29	0.90	2.75
Brazil	1.09	0.07	0.00	1.26	1.38
Zambia	0.95	1.13	1.15	0.95	0.18
Bolivia	0.88	0.90	1.15	0.84	2.51
Chile	0.85	0.52	1.15	1.02	1.21
Argentina	0.76	2.41	0.00	0.80	0.59
Croatia	0.66	1.51	1.15	0.75	0.63
Ecuador	0.66	1.73	0.00	0.81	2.13
Moldova	0.65	1.13	1.15	0.80	0.25
Peru	0.61	0.90	1.15	0.80	1.16
Albania	0.57	1.23	1.15	0.70	0.59
Bulgaria	0.47	1.13	1.15	0.70	1.04
Uruguay	0.46	0.07	0.00	0.91	0.64
Latvia	0.30	0.07	0.00	0.85	0.25
Romania	0.28	0.22	1.15	0.70	0.18
Jordan	0.24	0.52	0.00	0.74	1.79
Estonia	0.19	0.29	0.00	0.75	0.43
Lithuania	0.14	0.07	0.00	0.75	1.41

Source: Own calculations

Table 6. Aggregate and Modal Restrictiveness Indices - Insurance

	Aggregate Restrictiveness Index	Mode 1 Restrictiveness Index	Mode 2 Restrictiveness Index	Mode 3 Restrictiveness Index	Mode 4 Restrictiveness Index
India	2.81	3.05	2.77	2.85	0.87
Malaysia	2.48	3.05	2.77	2.31	1.46
Serbia and Montenegro	2.11	3.16	2.87	1.48	0.51
China	1.95	2.94	0.42	2.03	1.56
Russia	1.94	2.69	2.44	1.79	2.19
Morocco	1.92	3.16	2.87	1.30	1.11
Thailand	1.78	1.18	0.33	2.27	1.68
Tunisia	1.62	3.16	1.63	1.11	2.97
Ecuador	1.62	3.16	2.87	1.06	2.04
Jordan	1.45	2.26	2.05	0.95	2.16
Bolivia	1.41	2.69	2.44	0.63	2.27
Brazil	1.36	1.36	1.24	1.42	1.28
Venezuela	1.26	0.90	0.81	1.22	2.74
Uruguay	1.24	2.69	2.44	0.70	0.60
Macedonia	1.22	1.43	1.30	1.08	0.32
Egypt	1.16	1.00	0.42	1.09	1.78
Bulgaria	1.07	2.51	2.28	0.40	0.88
Colombia	0.90	0.47	0.42	0.88	2.05
Argentina	0.86	2.33	2.12	0.26	0.68
Chile	0.85	1.00	0.91	0.57	1.25
Romania	0.76	0.47	0.42	0.83	0.30
Moldova	0.73	1.61	0.00	0.71	0.32
Croatia	0.62	1.61	1.47	0.17	0.64
Albania	0.62	1.61	0.00	0.53	0.69
Peru	0.61	0.54	0.42	0.61	1.86

Source: Own calculations

Table 7. Aggregate and Modal Restrictiveness Indices – Fixed Telecommunication

	Aggregate Restrictiveness Index	Mode 1 Restrictiveness Index	Mode 2 Restrictiveness Index	Mode 3 Restrictiveness Index	Mode 4 Restrictiveness Index
Tunisia	2.56	2.05	2.05	2.68	3.08
Morocco	2.48	2.05	2.05	2.68	0.67
Egypt	2.29	0.78	2.05	2.68	1.20
Serbia	1.84	0.78	2.05	1.92	0.35
Jordan	1.68	1.41	0.00	1.84	1.91
China	1.66	1.80	2.05	1.58	1.19
Thailand	1.63	2.04	2.05	1.74	1.49
Macedonia	1.49	1.17	2.05	1.53	0.26
India	1.41	0.78	2.05	1.41	0.85
Russia	1.39	0.78	1.02	1.46	1.87
Ecuador	1.38	0.63	2.05	1.41	2.11
Bolivia	1.36	1.56	0.00	1.20	2.43
Uruguay	1.30	0.00	0.00	1.82	0.67
Malaysia	1.22	0.00	2.05	1.51	0.99
Colombia	1.19	2.43	2.05	0.75	1.93
Albania	0.95	1.27	2.05	0.72	0.23
Moldova	0.84	0.00	2.05	0.86	0.26
Venezuela	0.40	0.78	2.05	0.18	2.50
Brazil	0.40	0.00	2.05	0.22	1.37
Bulgaria	0.40	0.78	0.00	0.09	1.08
Chile	0.37	0.00	0.00	0.45	1.29
Peru	0.34	0.78	2.05	0.09	1.49
Argentina	0.28	0.00	0.00	0.36	0.55
Romania	0.15	0.00	0.00	0.21	0.21

Source: Own calculations

Table 8. Aggregate and Modal Restrictiveness Indices – Mobile Telecommunication

	Aggregate Restrictiveness Index	Mode 1 Restrictiveness Index	Mode 2 Restrictiveness Index	Mode 3 Restrictiveness Index	Mode 4 Restrictiveness Index
Thailand	2.50	1.53	2.31	2.85	1.49
China	2.01	1.53	0.00	2.53	1.19
India	2.00	1.53	2.31	2.20	0.85
Malaysia	1.86	0.00	0.00	2.43	0.99
Russia	1.56	1.53	2.31	1.41	1.87
Serbia	1.51	3.06	4.62	0.38	0.35
Brazil	0.94	1.53	0.00	0.87	1.37
Bolivia	0.89	3.06	0.00	0.12	2.43
Morocco	0.87	3.06	0.00	0.32	0.67
Venezuela	0.81	3.06	2.31	0.07	2.50
Egypt	0.66	1.53	0.00	0.51	1.20
Bulgaria	0.65	1.53	2.31	0.09	1.08
Tunisia	0.64	1.53	0.00	0.26	3.08
Ecuador	0.64	1.53	0.00	0.41	2.11
Albania	0.63	0.00	0.00	0.95	0.23
Macedonia	0.59	0.00	0.00	0.88	0.26
Moldova	0.52	0.00	0.00	0.64	0.26
Colombia	0.50	0.00	0.00	0.57	1.93
Jordan	0.45	0.00	0.00	0.51	1.91
Chile	0.36	0.00	0.00	0.26	1.29
Argentina	0.35	0.00	0.00	0.32	0.55
Romania	0.34	0.00	2.31	0.13	0.21
Peru	0.17	0.00	0.00	0.17	1.49
Uruguay	0.15	0.00	0.00	0.06	0.67

Source: Own calculations

Table 9. Aggregate and Modal Restrictiveness Indices – Engineering

	Aggregate Restrictiveness Index	Mode 1 Restrictiveness Index	Mode 2 Restrictiveness Index	Mode 3 Restrictiveness Index	Mode 4 Restrictiveness Index
Malaysia	2.01	1.07	1.28	2.72	0.53
China	1.71	2.15	0.00	1.64	1.53
Indonesia	1.57	2.15	2.57	0.96	1.60
Brazil	1.42	2.15	2.57	1.01	1.21
Thailand	1.39	2.15	0.00	1.73	0.72
Chile	1.04	2.15	2.57	0.16	1.56
Philippines	0.73	2.15	2.57	0.10	1.59
Singapore	0.56	2.15	0.00	0.10	0.88
Argentina	0.51	0.00	0.00	0.10	0.65
Russia	0.46	1.07	0.00	0.10	0.82

Source: Own calculations

Table 10. Aggregate and Modal Restrictiveness Indices – Distribution

	Aggregate Restrictiveness Index	Mode 1 Restrictiveness Index	Mode 2 Restrictiveness Index	Mode 3 Restrictiveness Index	Mode 4 Restrictiveness Index
Vietnam	2.24	2.22	2.16	2.03	2.01
India	2.13	2.22	2.16	1.02	1.46
Malaysia	1.99	2.22	2.16	1.56	1.46
Philippines	1.95	2.22	2.16	1.40	2.21
Indonesia	1.92	2.22	2.16	1.25	2.68
Venezuela	1.83	2.22	2.16	0.93	2.21
Colombia	1.56	2.22	2.16	0.96	2.01
Russia	1.45	2.22	2.16	0.77	2.17
Zambia	1.32	2.22	2.16	0.80	0.79
Chile	1.30	2.22	2.16	0.48	2.38
Morocco	1.21	2.22	2.16	0.35	0.67
China	1.21	1.11	0.00	1.54	0.87
Singapore	1.14	2.22	2.16	0.01	1.26
Uruguay	1.06	2.22	2.16	0.27	1.61
Thailand	1.05	1.11	0.00	1.17	2.21
Brazil	1.03	1.11	1.08	0.91	3.51
Hong Kong	0.47	1.11	0.54	0.01	0.87
Argentina	0.22	0.00	0.00	0.01	1.61
South Africa	0.15	0.00	0.00	0.01	1.61

Source: Own calculations

Stage 2 Tax Equivalents

Tax equivalents and impact of regulatory measures on sectoral performance

Estimation strategy

28. To calculate the effects of existing barriers on the performance of the selected services sectors, as measured by price-cost margins (net interest margins for banks), a two-stage method⁵ is applied:

- In the first stage, price-cost margins are “corrected” for the influence of key firm-level factors. In other words, we use a firm-level regression to “explain” price-cost margins using detailed data on the determinants of individual firm performance.
- In the second stage, we examine the influence on corrected price-cost margins of the relevant trade restrictions at the aggregate and modal levels, controlling for regulatory measures and other cross-country differences. In other words, we use a country-level regression to “explain” each country’s corrected price cost margin in terms of detailed data on the determinants of sectoral performance.

The method is described in detail in Annex 3, which also contains a full description of the firm- and country-level datasets used for each sector, and the significance and robustness of the results obtained.

29. There have been a number of previous applications of similar, or related, methodologies to directly estimate the impact of trade barriers on price-cost margins. Sectors covered include banking (Kalirajan et al., 2000), distribution (Kalirajan, 2000) and engineering (Nguyen-Hong, 2000). Dee (2004a, 2004b) covered all three sectors, while Copenhagen Economics (2005) analysed accountancy, retail and wholesale distribution, and information technology. As noted above, the present paper represents an extension of this previous work in the sense that it applies a different weighting scheme, uses newer data, and makes an explicit link to the modes of supplying services.

30. Our departure from previous work is sharper in relation to the other sectors considered, namely insurance and telecom. To our knowledge, there is no existing quantitative assessment of the impact of trade barriers on margins in the insurance sector, so our paper represents a first contribution in that area. On the other hand, trade barriers affecting telecom have been analysed by Warren, 2000; Trewin, 2000; Brown and Feinberg, 2004; and Dee, 2004a and 2004b, while Boylaud & Nicoletti, 2000 and Doove et al., 2001 investigated the price effects of sectoral regulations more broadly (i.e., not limited to trade policy). The difference between this paper and previous telecom papers is in the choice of performance variable. Previous work generally used quantity-based measures of performance, which then had to be converted into price-based tax equivalents (Warren, 2000; Trewin, 2000; Brown and Feinberg, 2004, Dee, 2004a and 2004b). When price measures were used (Boylaud & Nicoletti, 2000), they could only be regarded as indicative given the wide variety of services on offer in this sector; i.e., it is not really possible to speak of a single “market price” for telecom services. The present paper attempts to avoid such difficulties by using, as for other sectors, a more general measure of price-cost margins. At the same time, such an approach should facilitate cross-sectoral comparisons.

31. An additional innovation of this paper is the increased attention given to sector-level determinants of firm performance, be they in terms of the level of a sector’s development in a given

⁵ Some previous studies (e.g., Kalirajan et al., 2000; Kalirajan, 2000; Dee, 2004a and 2004b) have adopted a two-stage econometric approach, while others (Nguyen Hong, 2000; Copenhagen Economics, 2005) have used a single-stage approach. There is no hard and fast rule as to which is better. The answer can vary from dataset to dataset and from sector to sector. In this paper, a two-stage approach is preferred simply because the dataset being used suggested that such an approach would be superior from a statistical point of view.

country, or in terms of the regulatory institutions that have grown up around it. For instance, we take explicit account of the impact of prudential regulations and financial sector development on firm profitability in the banking sector, while for engineering services we examine the impact of general sectoral regulations, along with some possible indicators of the level of development of the domestic engineering sector.

32. Using the results from this two-stage method across sectors, and incorporating both the aggregate and modal TRIs, it is possible to calculate “tax equivalents” of restrictions in the selected sectors in individual countries. Tax equivalents have been calculated by comparing the levels of price cost margins under current policy settings with the values that we would expect to observe if trade barriers were to be removed, but all other influential factors were to remain constant. The “core” tax equivalents are reported in Tables 11 to 16. The figures in the first column of each table indicate the percentage by which either prices or costs are inflated as a result of sectoral aggregate restrictions in the selected economies, while the figures in the next four columns report the sector-specific modal tax equivalents.

33. These exercises also produce confidence intervals⁶ for each estimated tax equivalent. These are reported in Annex 3 (all tables in section 5 of Annex 3). While our intention in providing confidence intervals is to highlight the uncertainty that surrounds the estimation of tax equivalents using this methodology—in particular in light of the very small effective samples used for the second-stage regressions—it must be noted that the intervals we present should nonetheless be taken as being on the narrow side. This is because they are based exclusively on coefficient uncertainty and do not consider, for example, uncertainty surrounding the appropriate index weights or measurement error. With this caveat in mind, it can be seen that our estimates - like those presented in previous studies - are subject to a certain level of uncertainty. As a result, rather than drawing detailed policy conclusions based on point estimates, we would favour a more flexible, qualitative interpretation of the quantitative results, along with rank ordering of countries.

⁶ We use a simulation methodology based on a statistical technique known as “bootstrapping” to produce confidence intervals that can be expected to be more accurate than those based on large-sample theory (for reviews, see Horowitz, 2001; and Brownstone & Valletta, 2001).

Table 11. Estimated Tax Equivalents, % Banking

	Aggregate (% on price)	Mode 1 (% on cost)	Mode 2 (% on cost)	Mode 3 (% on price)	Mode 4 (% on price)
Malaysia	34.17	1.99	4.77	31.82	0.95
India	27.04	1.99	4.77	25.40	0.80
Russia	25.51	1.99	4.77	23.90	2.45
Egypt	24.38	1.99	4.77	25.20	1.52
China	21.58	1.99	4.77	21.46	0.59
Serbia and Montenegro	19.01	3.00	7.32	15.44	0.38
Thailand	17.92	1.99	4.77	19.61	1.34
Colombia	17.69	1.02	4.77	19.54	1.90
Morocco	17.28	1.99	4.77	18.91	0.59
Venezuela	16.69	1.23	4.77	17.64	2.38
Macedonia	14.97	3.00	4.77	13.50	0.24
Tunisia	14.47	1.99	4.77	16.31	2.66
Brazil	13.17	0.06	0.00	23.64	1.32
Zambia	11.32	1.02	2.36	17.34	0.17
Bolivia	10.51	0.82	2.36	15.22	2.42
Chile	10.08	0.47	2.36	18.80	1.16
Argentina	9.02	2.20	0.00	14.50	0.57
Croatia	7.75	1.37	2.36	13.42	0.60
Ecuador	7.70	1.58	0.00	14.61	2.05
Moldova	7.61	1.02	2.36	14.42	0.24
Peru	7.19	0.82	2.36	14.37	1.12
Albania	6.67	1.11	2.36	12.50	0.57
Bulgaria	5.46	1.02	2.36	12.50	0.99
Latvia	3.48	0.06	0.00	15.44	0.24
Jordan	2.76	0.47	0.00	13.33	1.72
Estonia	2.23	0.27	0.00	13.42	0.41
Lithuania	1.64	0.06	0.00	13.42	1.36

Source: Own calculations

Table 12. Estimated Tax Equivalents, % Insurance

	Aggregate (% on price)	Mode 1 (% on cost)	Mode 2 (% on cost)	Mode 3 (% on price)	Mode 4 (% on cost)
India	112.96	137.43	78.43	142.72	37.88
Malaysia	94.48	137.43	78.43	105.04	71.25
Serbia and Montenegro	76.18	144.79	82.11	58.40	20.74
China	68.98	130.29	9.26	88.19	77.94
Russia	68.29	114.46	66.68	74.67	124.56
Morocco	67.42	144.79	82.11	49.82	50.80
Thailand	61.53	39.89	7.05	102.43	85.95
Tunisia	54.56	144.79	40.58	41.47	199.40
Ecuador	54.51	144.79	82.11	39.21	112.34
Jordan	47.53	89.82	53.59	34.40	121.76
Bolivia	45.93	114.46	66.68	21.84	131.35
Brazil	44.14	47.19	29.54	55.42	60.36
Venezuela	40.35	28.96	18.57	46.31	174.59
Uruguay	39.69	114.46	66.68	24.35	24.74
Macedonia	38.81	50.22	31.32	40.00	12.33
Egypt	36.76	32.96	9.26	40.22	92.94
Bulgaria	33.30	103.83	61.09	13.14	38.52
Colombia	27.20	14.14	9.26	31.44	113.02
Argentina	26.01	93.72	55.70	8.43	28.26
Chile	25.51	32.96	21.01	19.55	58.66
Romania	22.73	14.14	9.26	29.63	11.52
Moldova	21.77	58.06	0.00	24.78	12.33
Croatia	18.17	58.06	35.87	5.58	26.84
Albania	18.00	58.06	0.00	17.99	29.00
Peru	17.74	16.49	9.26	20.99	98.17

Source: Own calculations

Table 13. Estimated Aggregate Tax Equivalents, % Fixed Telecommunication

Country	Aggregate (%)	Mode 1 (%)	Mode 2 (%)	Mode 3 (%)	Mode 4 (%)
Tunisia	10.54	20.71	36.11	132.24	110.07
Morocco	10.19	20.71	36.11	132.24	17.6
Egypt	9.36	7.43	36.11	132.24	33.4
Serbia	7.47	7.43	36.11	83.15	8.77
China	6.7	18.03	36.11	64.45	33.11
Thailand	6.6	20.7	36.11	72.72	43.38
Macedonia	6.02	11.34	36.11	61.87	6.35
India	5.68	7.43	36.11	55.89	22.87
Russia	5.59	7.43	16.67	58.12	57.16
Ecuador	5.56	6	36.11	55.95	66.23
Bolivia	5.48	15.41	0	45.87	79.7
Uruguay	5.22	0	0	77.18	17.43
Malaysia	4.9	0	36.11	60.96	27.04
Colombia	4.76	25.11	36.11	26.78	59.12
Albania	3.78	12.36	36.11	25.36	5.73
Moldova	3.35	0	36.11	31.05	6.35
Venezuela	1.59	7.42	36.11	5.71	82.69
Brazil	1.58	0	36.11	7.26	39.25
Bulgaria	1.56	7.43	0	3	29.66
Chile	1.48	0	0	15.38	36.35
Peru	1.35	7.42	36.11	3	43.27
Argentina	1.11	0	0	11.83	14.22
Romania	0.58	0	0	6.91	5.16

Source: Own calculations

Table 14. Estimated Aggregate Tax Equivalents, % Mobile Telecommunication

Country	Aggregate (%)	Mode 1 (%)	Mode 2 (%)	Mode 3 (%)	Mode 4 (%)
Thailand	23.5	13.43	42.41	13.75	42.13
China	18.56	13.43	0	12.12	32.19
India	18.44	13.43	42.41	10.45	22.25
Malaysia	16.98	0	0	11.58	26.31
Russia	14.13	13.43	42.41	6.59	55.44
Serbia	13.6	28.66	102.8	1.75	8.55
Brazil	8.3	13.43	0	4.03	38.14
Bolivia	7.77	28.66	0	0.56	77.16
Morocco	7.61	28.66	0	1.46	17.14
Venezuela	7.07	28.66	42.41	0.31	80.03
Egypt	5.73	13.43	0	2.34	32.47
Bulgaria	5.65	13.43	42.41	0.42	28.85
Tunisia	5.57	13.43	0	1.18	106.31
Ecuador	5.52	13.43	0	1.87	64.19
Albania	5.49	0	0	4.38	5.59
Macedonia	5.12	0	0	4.07	6.19
Moldova	4.52	0	0	2.92	6.19
Colombia	4.32	0	0	2.63	57.33
Jordan	3.88	0	0	2.34	56.56
Chile	3.11	0	0	1.18	35.33
Argentina	3.03	0	0	1.46	13.85
Romania	2.9	0	42.41	0.59	5.03
Peru	1.42	0	0	0.76	42.02
Uruguay	1.32	0	0	0.28	16.97

Source: Own calculations

Table 15. Estimated Tax Equivalents, % Engineering

	Aggregate (% on price)	Mode 1 (% on cost)	Mode 2 (% on price or cost)	Mode 3 (% on price or cost)	Mode 4 (% on cost)
Malaysia	3.72	38.52	8.07	8.41	2.04
China	3.14	91.88	0.00	4.99	5.96
Indonesia	2.88	91.88	16.78	2.89	6.24
Brazil	2.61	91.88	16.78	3.05	4.69
Thailand	2.55	91.88	0.00	5.28	2.78
Chile	1.91	91.88	16.78	0.47	6.07
Philippines	1.34	91.88	16.78	0.31	6.19
Singapore	1.02	91.88	0.00	0.31	3.37
Argentina	0.94	0.00	0.00	0.31	2.49
Russia	0.84	38.52	0.00	0.31	3.14

Source: Own calculations

Table 16. Estimated Tax Equivalents, % Distribution

	Aggregate (% on cost)	Mode 1 (% on cost)	Mode 2 (% on cost)	Mode 3 (% on cost)	Mode 4 (% on cost)
Vietnam	82.75	0.00	0.00	9.66	30.40
India	77.44	29.23	16.82	4.74	21.26
Malaysia	71.23	29.23	16.82	7.31	21.26
Philippines	69.05	29.23	16.82	6.56	33.84
Indonesia	67.70	29.23	16.82	5.83	42.47
Venezuela	63.74	0.00	0.00	4.30	33.84
Colombia	52.12	29.23	16.82	4.47	30.40
Russia	48.05	29.23	16.82	3.55	33.11
Zambia	42.69	0.00	0.00	3.69	10.98
Chile	41.94	29.23	16.82	2.18	36.99
Morocco	38.60	29.23	16.82	1.61	9.26
China	38.43	13.68	0.00	7.24	12.14
Singapore	36.04	29.23	16.82	0.03	18.14
Uruguay	32.96	21.21	12.37	1.22	23.78
Thailand	32.83	13.68	0.00	5.47	33.84
Brazil	31.92	13.68	8.08	4.19	58.90
Hong Kong	13.37	13.68	3.96	0.03	12.14
Argentina	6.10	0.00	0.00	0.05	23.78
South Africa	4.26	0.00	0.00	0.03	23.78

Source: Own calculations

34. Mirroring the ranking of trade restrictiveness indices, the tables show that, the highest tax equivalents are recorded by the analysed Asian countries; while in general, tax equivalents are the lowest for most transition economies.

35. As can be seen from Annex 3, we experiment with a considerable number of different model specifications—in all, around 200 regressions were run. The reason for this is to ensure that our results are robust to small changes in model structure. The main findings of this process are summarised below, in non-technical language.

Banking

36. From a statistical point of view, the first- and second-stage banking regressions appear to be appropriately specified.⁷ The interpretation of the Aggregate TRI coefficient is consistent across second-stage models: it suggests that the aggregate effect of trade restrictions in the banking sector is rent-creating, rather than cost-increasing. Although the estimated magnitudes are quite robust to alternative model specifications, the Aggregate TRI coefficients are generally not statistically significant, unless interacted with the dummy variable for MFN exemptions. We interpret this as indicating that trade barriers combined with MFN exemptions—*i.e.* discriminatory barriers—tend to have an economically and statistically significant impact on costs (pushing them upwards), which accords with basic theory. This latter point also applies to the second-stage regressions using modal indices,⁸ which also display considerably more sensitivity to model specification than do the regressions using aggregate data. The modal TRI coefficients vary in sign according to the mode of supply: restrictions in modes 1 and 2 appear to be cost increasing, whereas those in modes 3 and 4 appear to be rent creating.

37. Prudential and other regulations are found to have a very small (and statistically insignificant) upwards impact on costs. Both the magnitude and sign accord with theory, as although the objective of such regulations is not to increase firm costs but to safeguard financial system stability, we can reasonably expect that they will nonetheless affect firm cost structures.

38. The estimated coefficients on interest rate variance and concentration also carry the expected positive signs. Their magnitudes are quite consistent across different specifications, but only interest rate variation is statistically significant (at the 5% level).

Insurance

39. Both the first- and second-stage models for the insurance sector appear acceptably well specified from a statistical point of view.⁹ While the Aggregate TRI variable consistently has economically reasonable and significant magnitudes that remain reasonably stable across models, it is not statistically significant—even at the 20% level—in any of the five models reported. While this means that it would be dangerous to put too much emphasis on the numerical results we present, it is nonetheless reassuring that the qualitative interpretation of the Aggregate TRI coefficient is consistent across models: it suggests that

⁷ All three first-stage models display R2 around 0.8, meaning that they account for 80 percent or so of the movement in the dependent variable. While all three models suffer from residual heteroskedasticity and non-normality, there is no evidence to suggest that the estimates we are most interested in—the fixed effects, which will be used as the dependent variable in the second-stage regression—are seriously affected by these problems. By comparison with the first-stage regressions, we find that R2s for the second-stage regressions are much lower (just under 0.25) but that the regression specification tests are largely satisfied (*i.e.*, they fail to reject the null at the 10% level). Model F-tests reject the null at the 10% and 5% levels, and at least some of the estimated parameters are statistically significant at the 20% level.

⁸ The R2s of the modal regressions are around 0.2, though the diagnostics are generally quite sound (*i.e.* the diagnostic tests usually do not reject the null).

⁹ All first-stage models display R2 of at least 0.7, meaning that they account for 70% or so of the movement in the dependent variable. The models seem quite free of residual non-normality and heteroskedasticity. By comparison with the first-stage regressions, we find that the R2s for the second-stage regressions are somewhat lower (between 0.5 and 0.6) but that the regression specification tests are largely satisfied (*i.e.*, they fail to reject the null at the 10% level). Model F-tests reject the null at the 10% and sometimes 5% levels, and at least some of the estimated parameters are highly statistically significant—this is notably the case for prudential regulations and other sectoral regulations.

the effect of trade restrictions in the insurance sector is cost-increasing, rather than rent-creating, the opposite of what was found in the banking sector.

40. As was the case for the banking sector, we find that prudential and other regulations have a statistically significant upwards impact on costs. The estimated coefficient on insurance penetration carries the expected negative sign—i.e., greater penetration is associated with lower margins—but is statistically insignificant. The estimated density coefficient seems, on the other hand, to have no observable impact on margins. Finally, recent industry growth is weakly negatively associated with price-cost margins.

41. In terms of the signs and magnitudes of the estimated modal coefficients¹⁰, we find considerable variability. Penetration and density only have the expected negative sign for modes 1 and 2, while recent industry growth has the expected sign only in the mode 1 regression. The prudential and regulatory variables are found to be robustly cost-increasing, in all regressions. In all cases, the TRIs interacted with the MFN exemptions dummy carry a negative sign, suggesting that they tend to increase costs. On the other hand, the TRIs themselves vary in sign according to the mode of supply: restrictions in modes 1, 2 and 4 appear to be cost increasing—although this interpretation is less clear in the last case—whereas those in modes 3 appear to be rent creating.

Fixed and mobile telecommunication

42. Both the first- and second-stage regressions in these sectors perform reasonably well in an aggregate sense. In particular, regulatory and environmental variables are quite stable in terms of magnitude and sign across the different specifications.¹¹ We find that both regulatory variables and sectoral development tend to be associated with lower price-cost margins, as expected. At the aggregate level in both sectors, we find evidence that trade barriers combined with RTAs tend to have rent-creating effects, while in combination with MFN exemptions, they tend to have cost-increasing effects.

43. Interpretation of our results concerning the aggregate TRI is rendered more difficult than for other sectors by the fact that the sign of the TRI coefficient is quite sensitive to model specification, meaning that it is difficult to draw any firm conclusions as to the rent-creating or cost-increasing effects of trade barriers in these sectors. Our conclusion to the effect that barriers appear in the aggregate to be cost-increasing must therefore be regarded as tentative, in particular in the light of evidence from other studies that goes in the opposite direction (Warren, 2000; Dee, 2004a and 2004b). Similar comments apply to the modal regressions, from which we again tentatively conclude as follows: barriers in mode 1 appear to be cost-increasing, while those in the other three modes appear to be rent-creating.

¹⁰ From a statistical point of view, the quality of the regressions is broadly comparable as between the aggregate and model cases. For the latter, R2s are around 0.5-0.6, the diagnostics are sound (with the possible exception of some heteroskedasticity in Modes 3 and 4) and most models soundly reject the F-test.

¹¹ Concerning first-stage estimates, although estimated parameters display some degree of sensitivity to model specification there is some evidence that the models are fairly well-specified. R2 in all cases is reasonably strong suggesting that between 60% and 70% of the price-cost margin variable is “explained” by the models. By comparison with the first-stage regressions, we find that the R2s for the second-stage are somewhat lower (around 0.4 or 0.5) but that the regression specification tests are satisfied in all cases. All model F-tests reject the null at the 20% level, but only one model rejects it at the 10% level. Some, but not all, of the estimated parameters are statistically significant, up to the 5% level.

Professional services - Engineering

44. First- and second-stage regressions for the engineering sector again appear overall to be reasonably well specified¹². The proxy variables designed to capture the level of sectoral development are in many cases statistically significant, while regulatory variables are again found to increase firm costs but to a statistically insignificant extent. The estimated signs and magnitudes of both regulatory variables and sectoral development indicators are quite robust to changes in model structure. Similar comments apply to the modal regressions.¹³

45. Again, the main difficulty of interpretation in respect of this sector relates to the aggregate TRI coefficient, which varies across models both in magnitude and sign. We tentatively conclude that it trade barriers in the engineering sector have, in the aggregate, cost-increasing effects. However, we again highlight the uncertainty surrounding this conclusion, in particular in light of the fact that previous work has disclosed both cost-increasing and rent-creating effects (Nguyen Hong, 2000).

46. Turning to each mode separately we can see that interpretation of the TRI coefficient and interaction terms is clearest for mode 1: the TRI's cost-increasing impact is statistically and economically significant, and quite robust to different specifications, while the interaction terms suggest that RTAs combined with protection can be rent-creating, while MFN exemptions tend to be cost-increasing. The mode 2 regressions are more difficult to interpret, as the estimated magnitudes and signs vary considerably. While there is reasonable evidence to support the same interpretation of RTAs and MFEs that flows from the mode 1 regressions, it is quite unclear as to whether the trade barriers themselves are cost-increasing or rent-creating. Mode 3 suffers from similar difficulties, although the results are again suggestive of a similar impact for RTAs. By contrast, the interaction term between mode 3 barriers and MFN exemptions suggests a rent-creating, rather than a cost-increasing effect. The same is true when we turn to the mode 4 regressions. Mode 4 barriers themselves (*i.e.* without interaction terms) are cost-increasing in all but one regression.

Distribution services

47. Although the first-stage regressions for this sector appear well-specified, their second-stage counterparts are much less satisfactory from a statistical point of view.¹⁴ Subject to that caveat, it is apparent that the estimated aggregate TRI coefficient is quite stable across different specifications, both in magnitude and sign, and it is highly statistically significant. We therefore tentatively conclude that, in the aggregate, trade barriers in this sector tend to have cost-increasing effects. Our conclusion is strengthened somewhat by previous work in this area, which has arrived at similar results (Kalirajan, 2000).

¹² With respect to the first stage regressions, R2s are fairly low (around 20%) and there is strong evidence of residual non-normality, probably stemming from outlying observations. In all but Models 1 and 5, the country fixed effects are statistically significant at the 5% level. By comparison with the first-stage regressions, we find that the R2s are considerably better (between 0.5 and 0.6) in all but one case. Moreover, the regression specification tests are satisfied by all but two models that show some minor evidence of specification error, rejecting the RESET test at the 20% and 10% levels respectively. Model F-tests are significant at the 5% level for all but one model.

¹³ Interestingly, the overall explanatory power of the modal regressions, as measured by their R2s, is generally higher than for the aggregate regressions. The modal models generally reject the F-test at the 5% level and contain a number of statistically significant coefficients amongst the control variables. Very few of the modal regressions present evidence of empirical misspecification or other statistical problems.

¹⁴ R2s for the first-stage regressions are moderate to good, at around 50%. Although there is strong evidence of residual non-normality, this is linked to the presence of one or two outliers and should not pose any major problems for statistical inference. By contrast, R2s for the second-stage regressions are around 0.15, while most models do not reject the F-test null hypothesis, which suggests that they fit the data quite poorly.

48. Similar statistical difficulties are apparent in the modal TRI regressions.¹⁵ But once again, the modal TRI coefficients tend to be quite stable in terms of sign and magnitude across the various model specifications tested. The TRIs for modes 1, 2 and 4 are found to be statistically significant, with restrictions in modes 1 and 2 having cost-increasing effects, while those in mode 4 tend to have rent-creating impacts. The mode 3 TRI coefficient is more difficult to interpret, since it is not statistically significant and is unstable across different model specifications. Given the weakness of the mode 3 results, we do not at this stage draw any firm conclusion as to whether such trade barriers have cost-increasing or rent-creating effects.

IV. Conclusion

49. The methodology applied in this paper constitutes a variation of the approach taken by the Australian Productivity Commission in a series of papers that attempt to quantify the impact of barriers to services trade. The proposed improvements give a more complete picture with regard to modal coverage by calculating not only aggregate sectoral indices but also separate modal restrictiveness indices and subsequently modal tax equivalents.

50. Given the extensive use of such indicators in empirical exercises that assess welfare gains from services liberalisation, an additional objective of the paper is to clearly identify the potential and limitations of services barriers estimation techniques in order to enable a more rigorous and critical interpretation of results.

51. It is important to highlight the fact that tax equivalents are estimated by statistical means, and are therefore inherently uncertain. In an effort to make the scope of that uncertainty apparent, in addition to the core tax equivalents estimates that are presented in general in such type of studies, this paper provides confidence intervals for each estimated tax equivalent. It can be seen that our estimates – like those presented in previous studies - are subject to uncertainty. We experiment with different combinations of variables (sectoral regulatory variables, MFN exemptions and RTA variables) to gauge the robustness of our results to small changes in the modal estimates. The results suggest that at this stage it is rather difficult in some sectors to make a clear differentiation concerning the exact nature of barriers (*i.e.* cost-increasing versus rent-creating). As a result, rather than drawing detailed policy conclusions based on point estimates, we would favour a more flexible, qualitative interpretation of the quantitative results and rank ordering of countries. A similar approach would be recommended for empirical exercises that employ these tax equivalents as inputs. Furthermore, our approach highlights the needs for such exercises to take explicit account of statistical uncertainty when performing their welfare calculations (Hertel *et al.* 2004). For example, while these indicators and the corresponding tax equivalents were employed in the OECD study on the impact of China's liberalisation on OECD countries and the Russian Federation (OECD, 2006), the conclusions conveyed systematically a sense of how results can vary depending on what goes into the model.

52. Finally, given the limitations of the tax equivalents estimation technique as well as the problems related to the treatment of services barriers as *ad valorem* trade costs, future empirical work could explore the impact of various regulatory measures on the fixed costs of entering a market or the variable costs of servicing that market using alternative methods.

¹⁵ R2s are again very low (0.1) and models do not reject the F-test. There is some evidence of residual non-normality, again due to one or two outliers that do not exert a particularly strong influence on final results.

REFERENCES

- BARTH, J.R., CAPRIO, G., and LEVINE, R. (2002), *Bank Regulation and Supervision: What Works Best?*, Mimeo, World Bank, Washington D.C., January.
- BOYLAUD, O. and NICOLETTI, G. (2000), *Regulation, Market Structure and Performance in Telecommunications*, Working Paper No. 237, ECO/WKP(2000)10, Economics Department, OECD, Paris, 12 April.
- BORN, P.H. (2001), Insurer Profitability in Different Regulatory and Legal Environments, *Journal of Regulatory Economics*, Volume 19, Number 3, 2001, pages 211-237.
- BROWN, R.W. and FEINBERG, R.W. (2004), The Measurement and Effects of Barriers to Trade in Basic Telecommunication Services: The Role of Negotiations, *World Trade Review*, 3:2, 225-237.
- BROWNSTONE, D. and VALLETTA, R. (2001), The Bootstrap and Multiple Imputations: Harnessing Increased Computing Power for Improved Statistical Tests, *The Journal of Economic Perspectives*, Volume 15, No. 4, pages 129-141.
- COPENHAGEN ECONOMICS. (2005), *Economic Assessment of the Barriers to the Internal Market for Services: Final Report*, Copenhagen, January.
- CUMMINS, J.D. and WEISS, M.A. (1998), Analysing Firm Performance in the Insurance Industry using Frontier Efficiency Methods, *Working Paper 98-22*, Wharton Financial Institutions Centre, University of Pennsylvania.
- DEARDORFF, A. and R. STERN (2004), Empirical Analysis of Barriers to International Services Transaction and the Consequences of Liberalisation”, Discussion Paper No. 505, The University of Michigan, Ann Arbor, Michigan.
- DEE, P. (2004a), *Services Trade Liberalisation in South East European Countries*, Background Paper, OECD, Paris, January.
- DEE, P. (2004b), *Services Trade Liberalisation in Russia and the Baltic States*, Background Paper, OECD, Paris, January.
- DEMIRGUC-KUNT, A., and H. HUIZINGA, H. (1999), Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence, *The World Bank Economic Review*, Volume 13, Number 2, pages 379-408.
- DOOVE, S., O. GABITAS, D. NGUYEN-HONG and J. OWEN (2001), “Price Effects of Regulation: Telecommunications, Air Passenger Transport and Electricity Supply”, Productivity Commission Staff Research Paper, AusInfo, Canberra.
- GONENC, R. and NICOLETTI, G. (2000), *Regulation, Market Structure and Performance in Air Passenger Transport*, Working Paper No. 254, ECO/WKP(2000)27, Economics Department, OECD, Paris, 3 August.
- HARDIN, A. and L. HOLMES (1997), “Service Trade and Foreign Direct Investment”, Australian Productivity Commission, available at: <http://www.pc.gov.au/ic/research/information/servtrade/index/html>

- HERTEL, T., HUMMELS, D., IVANIC, M. and KEENEY, R. (2004), *How Confident can we be in CGE-Based Assessments of Free Trade Agreements?*, Working Paper 10477, NBER, Cambridge, MA, May.
- HOROWITZ, J. (2001), The Bootstrap, in LEAMER, E. and HECKMAN, J. (eds). (2001), *Handbook of Econometrics, Volume V*, Amsterdam, Elsevier Press.
- KALIRAJAN, K. (2000), *Restrictions on Trade in Distribution Services*, Productivity Commission Staff Research Paper, AusInfo, Canberra, August.
- KALIRAJAN, K., MCGUIRE, G., NGUYEN-HONG, D. and SCHUELE, M. (2000), The Price Impact of Restrictions on Banking Services in FINDLAY, C. and WARREN, T. (eds). (2000), *Impediments to Trade in Services: Measurement and Policy Implications*, Routledge, London.
- KIMURA, F, M. ANDO and T. FUJI, Estimating the Ad Valorem Equivalent of barriers to FDI in Financial Services sectors in Russia., January 2004.
- MCGUIRE, G. and SCHUELE, M. (2000), ‘Restrictiveness of international trade in banking services’, in C. Findlay and T. Warren (eds), *Impediments to Trade in Services, Measurement and Policy Implications*, Routledge, London and New York, pp. 201–214.
- MOULTON, B.R. (1990), An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units, *The Review of Economics and Statistics, Volume 72, Number 2, May 1990, pages 334-338*.
- NGUYEN-HONG, D. (2000), *Restrictions on Trade in Professional Services*, Productivity Commission Staff Research Paper, AusInfo, Canberra, August.
- OECD (2006), “China’s Trade and Growth: Impact on Selected OECD countries”, OECD Trade Working Paper No.44, OECD Paris.
- OECD (2005a), *The Economy-Wide Effects of Services Trade Barriers*, TD/TC/WP(2005)7, OECD, Paris.
- OECD (2005b), *Product Market Regulation in OECD Countries: 1998 to 2003*, Working Paper No. 237, ECO/WKP(2000)10, Economics Department, OECD, Paris.
- OECD (2004), *Services Barriers and their Economic Impact: Examples of Banking and Telecommunication Services in Selected Transition Economies*, OECD Trade Working Paper No.7, OECD Paris.
- OECD (2001), *Insurance Regulation and Supervision in Asia and Latin America*, OECD, Paris.
- SAUNDERS, A. and SCHUMACHER, L. (2000), The Determinants of Bank Interest Rate Margins: An International Study, *Journal of International Money and Finance, Volume 19, 2000, pages 813-832*.
- STEINER, F. (2000), *Regulation, Industry Structure and Performance in the Electricity Supply Industry*, Working Paper No. 238, ECO/WKP(2000)11, Economics Department, OECD, Paris, 12 April.
- TREWIN, R. (2000), A Price Impact Measure of Impediments to Trade in Telecommunications Services, in FINDLAY, C. and WARREN, T. (eds). (2000), *Impediments to Trade in Services: Measurement and Policy Implications*, Routledge, London.

- VALCX, N. (2004), WTO Financial Services Commitments: Determinants and Impact on Financial Stability, *International Review of Financial Analysis*, 13 (2004), pages 517-541.
- WARREN, T. (2000), The Impact on Output of Impediments to Trade in Telecommunications Services, in FINDLAY, C. and WARREN, T. (eds). (2000), *Impediments to Trade in Services: Measurement and Policy Implications*, Routledge, London.

ANNEX 1: METHODOLOGICAL LIMITATIONS AND PROPOSED IMPROVEMENTS

Stage 1: Restrictiveness indices

1. Limitations concerning the classification systems of barriers employed in the construction of the indices

- Modes of supply

In general, the indices consider separately restrictions on entry/establishment and on-going operations, or restrictions affecting commercial presence and cross-border trade. In terms of the modal classification adopted in GATS, this categorisation covers only a combination of restrictions affecting mode 3 and selected restrictions affecting mode 1 or mode 4¹⁶. Consequently, there is an absence of information on barriers according to the four modes of supply. This affects the estimation of the restrictiveness index and the subsequent computation of tariff equivalents that are calculated only on the basis of the total restrictiveness index without analysing the impact of the different modal components on economic performance. Thus, while these indices (and tax equivalents) represent an improvement in terms of gathering information and estimation techniques, they offer a less complete picture with regard to modal coverage.

In order to make the index more suitable for services negotiations, it would be useful to develop indices that cover all modes of services supply at the sectoral level.

- Foreign versus domestic index

The indicators developed by the APC distinguish between foreign and domestic restrictions in an attempt to include the main categories of restrictions that are considered in the context of scheduling commitments under the GATS. It is assumed that market access restrictions apply in a non-discriminatory way to incumbents in a particular market and to possible entrants (whether domestic or foreign). In principle, this categorisation facilitates the computation of trade barrier estimates in accordance with the market access and national treatment category impediments addressed by the agreement. However, some potential problems relate to the subjective selection of components that are relevant for the domestic and the foreign index. For example, restrictions on the movement of people are considered to affect only the on-going operations of foreign suppliers. While one could question the relative impact of mode 4 restrictions on the activity of foreign and domestic services firms, a total neglect of their effect on domestic firms seems less plausible. In fact, a recent paper on services barriers in the EU commissioned by the EC¹⁷ assumes that restrictions on the temporary movement of people equally affect domestic and foreign services providers.

¹⁶ For example, mainly mode 3 and mode 4 limitations are considered in the construction of indices for banking, distribution and professional services, while mode 1 and mode 3 limitations are accounted for in the telecommunication index.

¹⁷ See Copenhagen Economics, 2005.

Therefore, rather than arbitrarily selecting which barriers are relevant for the domestic and foreign indices, it is proposed to develop a single index (or set of modal indices) that contains all identified modal barriers. The distinct impact on foreign and domestic firms could be determined in the subsequent econometric exercise, by separately identifying those two groups of firms based on some pre-determined criterion of ownership or control.

2. Limitations concerning the weighting of different components of the restrictiveness indices.

The quantification approach developed by the Australian Productivity Commission employs sophisticated weighting methods to assess the restrictiveness of different measures¹⁸. The classification and assessment of weights take into account information on types of barrier and their likely relative economic impact, reflecting a judgement about the importance of each type of barriers. Despite sensitivity tests that were conducted to examine the extent of variation of the computed index in response to alternative weights¹⁹, this method is often criticised for the high degree of subjectivity in allocating the weights. While such an approach is simple and intuitively appealing, it contains a tautological element: the weights are generally set up to reflect analysts' judgements as to the likely economic impact of different measures, yet the weighted indices themselves are later employed in econometric exercises designed specifically to determine the economic incidence of different measures.

To overcome these problems, OECD pioneered the use of factor analysis in its work on product market indicators²⁰. This statistical method groups index components into linear combinations that are similar to each other, but different from other groups, and examines the effects of these linear combinations on economic outcomes. Despite criticism²¹, this methodology is becoming increasingly popular in the applied literature, primarily because it is data-driven²².

Consequently, in order to address the subjectivity of allocating weights to the different restrictions, it is proposed to apply alternative techniques (such as factor analysis) to compute the weighting scores of the different components of the indices.

¹⁸ For more details, see McGuire and Schuele, 2000; McGuire *et al.*, 2000; Nguyen-Hong, 2000.

¹⁹ See Hardin and Holmes, 1999.

²⁰ See for example Gonenc and Nicoletti, 2000; Boylaud and Nicoletti, 2000; and Steiner, 2000.

²¹ Some authors (Doove *et al.*, 2001 and Deardorf and Stern, 2004) consider that this purely statistical technique does not represent a major improvement on the use of judgemental weights because this approach selects components that explain most of the variation in the original data on regulatory restrictions based on little or no relationship with true economic importance of those factors.

²² For example, OECD employs this method in its current work that summarise the main features of the regulatory framework in the product market of each country (OECD, 2005b). A recent study on services barriers in the EU produced by the Copenhagen Economics Institute (Copenhagen Economics, 2005) uses the same method: while keeping subjective weighting scores for the various components of the restrictiveness index, factor analysis is employed to reduce the number of restrictiveness indicators and determine their impact on firms' performance. The initial categories of barriers on establishment, use of inputs, distribution, promotion, sales of services and non-legal barriers (for which both domestic and foreign restrictiveness indices are computed) are transformed into two main factors. Finally, instead of using predetermined weighting scheme in its analysis of financial services commitments, Valckx, 2004, employs factor analysis to determine the importance of modes of supply more objectively.

ANNEX 2: RESTRICTIVENESS INDICES COMPONENTS - WEIGHTS**Table A2.1: Banking Restrictiveness Index Components - Weights**

Components		Aggregate TRI	Mode1_TRI	Mode3_TRI	Mode4_TRI
Borrowing	M1_BOR	0.14	0.50		
Deposits	M1_DEP	0.08	0.50		
Consumption abroad	M2	0.14			
Foreign equity limits	M3_FEL	0.08		0.12	
Form of commercial presence	M3_FC	0.08		0.09	
Joint venture	M3_JV	0.03		0.07	
Licensing	M3_LIC	0.09		0.19	
Raising funds	M3_RAISF	0.10		0.15	
Lending	M3_LENDF	0.07		0.13	
Other business	M3_OTHB	0.02		0.01	
Expanding number of outlets	M3_EXP	0.10		0.20	
Screening	M3_SCREE				
Movement of people - short term stay	N	0.03		0.04	
Board of directors	M4_SHORT	0.01			0.04
Movement of people - long term stay	M4_BOD	0.02			0.32
Work permits	M4_LONG	0.00			0.47
	M4_WKP	0.00			0.17
		1.00	1.00	1.00	0.00

Table A2.2: Insurance Restrictiveness Index Components - Weights

Components		Aggregate TRI	Mode 3 TRI	Mode 4 TRI
Cross-border trade	M1	0.15		
Consumption abroad	M2	0.13		
Foreign equity limits	M3_FEL	0.09	0.16	
Form of commercial presence	M3_FC	0.12	0.13	
Joint venture	M3_JV	0.11	0.17	
Licensing	M3_LIC	0.08	0.15	
Business scope	M3_BSC	0.11	0.15	
Expanding number of outlets	M3_EXP	0.08	0.15	
Screening	M3_SCREEN	0.08	0.10	
Movement of people - short term stay	M4_SHOR	0.01		0.01
Board of directors	M4_BOD	0.01		0.30
Movement of people - long term stay	M4_LONG	0.00		0.35
Work permits	M4_WKP	0.03		0.34
		1.00	1.00	1.00

Table A2.3: Fixed Telecom Restrictiveness Index Components - Weights

Components		Aggregate TRI	Mode 1 TRI	Mode 3 TRI	Mode 4 TRI
Lease line	M1_LEASEL	0.11	0.32		
Connection to PSTN	M1_CONPSTN	0.01	0.27		
IP telephony	M1_IP	0.07	0.41		
Consumption abroad	M2_CB	0.09			
Foreign equity limits	M3_FEL	0.11		0.18	
Competition	M3_COMP	0.13		0.18	
Joint ventures	M3_JV	0.09		0.17	
Licensing and accreditation of foreign professionals	M3_LIC	0.12		0.18	
Screening	M3_TYPES	0.15		0.20	
Board of directors	M3_SCREEN	0.06		0.10	
Movement of people - short term stay	M4_BOD	0.01			0.28
Movement of people - long term stay	M4_SHORT	0.02			0.03
Work permits	M4_LONG	0.01			0.50
	M4_WKP	0.00			0.19
		1.00	1.00	1.00	1.00

Table A2.4: Mobile Restrictiveness Index Components - Weights

Components		Aggregate TRI	Mode 3 TRI	Mode 4 TRI
Cross border trade	M1	0.16		
Consumption abroad	M2	0.09		
Foreign equity limits	M3_FEL	0.23	0.35	
Competition	M3_COMP	0.07	0.16	
Joint ventures	M3_JV	0.25	0.35	
Licensing and accreditation of foreign professionals	M3_LIC	0.08	0.08	
Screening	M3_SCREEN	0.06	0.06	0.28
Board of directors	M4_BOD	0.00		0.03
Movement of people - short term stay	M4_SHORT	0.04		0.50
Movement of people - long term stay	M4_LONG	0.02		0.19
Work permits	M4_WKP	0.00		
		1.00	1.00	1.00

Table A2.5: Engineering Restrictiveness Index Components - Weights

Components		Aggregate TRI	Mode 3 TRI	Mode 4 TRI
Cross border trade	M_1	0.07		
Consumption abroad	M_2	0.06		
Form of establishment	M3_FEL	0.12	0.16	
Foreign partnership/joint venture/association	M3_FPJV	0.10	0.25	
Investment and ownership by foreign professionals	M3_INVPRF	0.06	0.30	
Investment and ownership by non-professional investors	M3_INVNPRF	0.10	0.23	
Screening	M3_SCRN	0.12	0.06	
BOD/ Licensing requirements on management	M4_BOD	0.00		0.12
Movement of people - Temporary	M4_SHRT	0.02		0.16
Movement of people - permanent	M4_LONG	0.00		0.17
Quotas/economic tests on the number of foreign professionals and firms	M4_WK PQ	0.11		0.08
Nationality/citizenship requirements	M4_NAT	0.01		0.19
Residency and local presence	M4_RES	0.00		0.15
Licensing and accreditation of foreign professionals	M4_LIC	0.05		0.12
Multidisciplinary practices	R_MULTPRCT	0.05		
Addition categories	R_ADDCATG	0.06		
Activities reserved by law to the profession	R_ACTRS	0.03		
Fee setting	R_FEE	0.01		
Advertising, marketing and solicitation	R_ADV	0.01		
		1.00	1.00	1.00

Table A2.6: Distribution Restrictiveness Index Components - Weights

Components		Aggregate TRI	Mode 3 TRI	Mode 4 TRI
Cross border trade	M1	0.21		
Consumption abroad	M2	0.20		
Restrictions on commercial land	M3_RCL	0.03	0.04	
Direct investment	M3_DI	0.11	0.09	
Restrictions on large-scale stores	M3_LSS	0.01	0.11	
Factors affecting investment ADDITION CATEGORY - Factors affecting local establishment ADDITION CATEGORY -	M3_FAI	0.04	0.17	
Wholesale import licensing	M3_FALE	0.07	0.28	
Promotion of retail products	M3_WIL	0.12	0.10	
State Monopolies - Product exclusions	M3_PRP	0.01	0.10	
Protection of intellectual property rights	M3_SM	0.06	0.11	
Movement of people - Temporary	M3_IPR	0.05	0.00	
Licensing requirements on management	M4_SHRT	0.00		0.32
Movement of People - Permanent	M4_LMGM	0.09		0.28
	M4_PRM	0.01		0.40
		1.00	1.00	1.00

Source: For all tables in Annex 2, own calculations.

ANNEX 3: CALCULATING TAX EQUIVALENTS

The purpose of this Annex is to explain in greater detail the way in which regression analysis has been applied to produce estimated tax equivalents of barriers to trade in banking services. We highlight the fact that although our results are economically sensible and in line with others in the literature, they must nonetheless be interpreted with caution due to a number of technical problems encountered.

The Annex is structured as follows. Section 1 presents the general principles underlying the econometric techniques employed in this paper. Section 2 describes the two-stage approach that was used to determine the tax equivalents. Section 3 contains the detailed sectoral model specifications. Section 4 presents the detailed sectoral results and their robustness. Finally, section 5 presents the confidence intervals for each estimated sectoral aggregate and modal tax equivalents.

1. General Principles

Following the general direction taken by the Australian Productivity Commission, one possible approach to measuring the economic impact of barriers to services trade is to use econometric techniques to estimate an equation of the following form:

$$(1) \quad PCM_{ij} = c + B[\text{controls}_{ij}] + X.TRI_j + \varepsilon_{ij}$$

The price-cost margin for firms (subscript i) in a given sector across countries (subscript j) is “explained” by a constant, a set of country and firm level control variables, the aggregate TRI calculated as set out in the text and a white noise error term. The particular implementation of this base specification depends primarily on two additional choices: the variables to be included in the control set, and the type of TRI to be used (aggregate or modal).

The substantive interest of this formulation comes from the interpretation that can be given to X, the coefficient on the TRI. The greater its magnitude, the greater the economic impact of the trade barriers captured by the TRI. By making appropriate conversions, it is possible to derive a tax equivalent directly from the estimate of X.

The sign of the X coefficient is also important. If it is positive—meaning that a higher TRI is associated with bigger margins—it is interpreted as indicating the presence of “rent-creating” barriers that tend to increase prices but do not affect costs. On the other hand, a negative X—meaning that a higher TRI is associated with smaller margins—is interpreted as indicating the presence of “cost-creating” barriers that tend to increase costs for firms, but do not affect prices. It is important to stress that both interpretations rely on a very strong assumption to the effect that trade barriers impact either on prices or on costs, but not on both simultaneously. This is a significant limitation to the methodology, but one that arises primarily from data restrictions: while information on firm-level margins is relatively freely available, data on prices and costs is not.

2. Two-Stage Approach

One way of implementing the above approach would be to conduct a single-stage Ordinary Least Squares (OLS) regression in the above form. While examples of this can be found in the literature on

barriers to services trade (e.g., Copenhagen Economics, 2005; Nguyen-Hong, 2000), there are also examples of a different approach (Kalirajan et al., 2000; Dee 2004a & 2004b). Following Saunders & Schumacher (2000) for the banking sector, this second group of papers has conducted their regressions in two stages. The following equations illustrate the general specifications.

Firstly, “adjusted” price-cost margins are estimated as country-level fixed effects (c_j), after controlling for firm level differences:

$$(2) \quad \log(PCM_{ij}) = \sum_{p=1}^N c_j + B[\text{firm} - \text{controls}_{ij}] + \varepsilon_{ij}$$

The second stage regression seeks to explain the adjusted margins from the first stage in terms of the TRI and a selection of country-level control variables.

$$(3) \quad \hat{c}_j = a + D[\text{country} - \text{controls}_j] + X.TRI_j + \varepsilon_{ij}$$

The motivation for the two-stage approach is that the combined presence of firm- and country-level variables can, in some cases, lead to incorrect statistical inferences being drawn on the basis of a one-stage model (see e.g., Moulton, 1990). But ultimately, choosing between the one- and two-stage approaches is an empirical question that relies both on the analyst’s judgment and on the characteristics of the particular dataset being used. In the present case, we found strong evidence in favour of the existence of the country-level fixed effects postulated by the two-stage model. We have therefore systematically preferred the two-stage approach.

The major disadvantage of the two-stage approach is that it tends to produce an extremely small effective sample for the second-stage regressions (i.e., one observation per country). As a result, our results need to be treated with caution, in particular before being generalised to other countries, sectors and/or time periods. It must be kept in mind that the inferences we draw regarding trade barriers are, in reality, based on a very small number of observations. Nonetheless, they represent our best attempt at drawing appropriate conclusions given the current state of the data.

Tax Equivalents and Confidence Intervals

Tax equivalents can be calculated directly from equation (3). For the aggregate TRI, the formula is:

$$(4) \quad t \equiv 100 \left(\frac{PCM_{ij} - PCM_{0j}}{PCM_{0j}} \right) = 100 \left(e^{\hat{X}.TRI_j} - 1 \right), \text{ where } PCM_{0j} \text{ refers to the price-cost margin that}$$

would pertain in country j if it were to have a TRI of zero, but all other factors were to remain the same. To make the same calculation for the modal TRIs, all that is necessary is to substitute (one by one) the relevant modal coefficients for the estimated aggregate coefficient.²³

²³ In calculating tax equivalents, we focus exclusively on the impact of the trade barriers captured by the various TRIs. We abstract from any additional effects due to MFN exemptions or RTAs.

The APC has made extensive use of the above approach (see e.g., Warren, 2000). One of the novel elements of this paper by comparison with the APC's work is the inclusion of estimated 70% confidence intervals for the tax equivalents (cf. Copenhagen Economics, 2005). We build up an approximate distribution of the tax equivalent for each country and sector by repeatedly re-estimating the second-stage regressions after "shuffling" the residuals and adjusting them for OLS bias, then using them to create synthetic left-hand side values. The process is repeated 2000 times, with each set of results recorded and used to produce approximate quantiles. This technique is known as "bootstrapping" (for reviews, see Horowitz, 2001; and Brownstone & Valletta, 2001). We modify the standard bootstrap methodology by imposing a strong prior to the effect that TRI coefficient estimates from the synthetic regressions cannot have a different sign from that of the "real" regression. When this occurs, a zero is entered. This reflects the strong interpretation that we are required to put on the sign of the TRI coefficient due to the fact that we are using price-cost margin data.

3. Regression Specifications

It now remains to specify the firm- and country-level control variables that will be included in the regression models. Tables A3.1 to A3.6 describe these variables in detail.

Table A3.1 : Banking sector dataset

Variable	Description	Year	Source
C5	Five-firm concentration ratio = Fraction of deposits held by the 5 largest banks	2001 (year-end)	World Bank, Bank Regulation & Supervision Database, 2003
CAP	Capital Ratio = Total share capital and reserves / Total assets	2002-2004 (average)	Datastream, Banker's Almanac and own calculations
GNI	Recent growth of net interest income = $((NII04 - NII02)/NII02) * 100$	2002-2004	Datastream, Banker's Almanac and own calculations
INTVAR	Interest rate variation = Variance of annualised quarterly deposit rates	2002q1-2004q4	IMF, International Financial Statistics; Central Bank websites
LIQ	Liquidity Ratio = Total cash & equivalent / Total assets	2002-2004 (average)	Datastream, Banker's Almanac and own calculations
MFE	Dummy variable = 1 if a country has at least one MFN exemption for the banking sector, else 0	GATS schedules	GATS
NIE	Net non-interest expenses = NIM - Pre-tax profits/Total assets	2002-2004 (average)	Datastream, Banker's Almanac and own calculations
NIM	Net interest margin = Net interest income / Total assets	2002-2004 (average)	Datastream, Banker's Almanac and own calculations
PRUDVARSPC1	Proxy for prudential regulations, calculated as the first principal component of the following set of indicators: capital adequacy (3.1), existence of explicit diversification requirements (7.1), liquidity reserves (7.3.1), compulsory deposit insurance (8.10) and a formal definition of non-performing loan (9.1).	2001	World Bank survey (question numbers indicated in brackets) and own calculations
REGVARSPC1	Proxy for sectoral regulations, calculated as the first principal component of the following indicators: signature of the Understanding on Commitments in Financial Services, independence and single/multiple supervisors.	2003	GATS, Sectoral questionnaires, World Bank, Bank Regulation & Supervision Database, 2003 and Own calculations
RTA	Dummy variable = 1 if a country has signed at least one RTA covering the banking sector, else 0	2002-2004	GATS /RTAs
SHARE	Market Share = Total assets / Total sector assets	2002-2004 (average)	Datastream, Banker's Almanac and own calculations
TRI_Agg, TRI_M1, TRI_M2, TRI_M3, TRI_M4	Aggregate and modal trade restrictiveness indices	See Paras 19 - 22 main text	Own calculations

Table A3.2: Insurance sector dataset

Variable	Description	Year	Source
CAPAVE0203	Capital Ratio = Total capital / Total assets	2002-2003 (average)	Datastream and own calculations
DENSITY	Non-life premiums / Population	2003	International Insurance Factbook and own calculations
EXPAVE0203	Expenses ratio = General, selling & administrative expenses / Total assets	2002-2003 (average)	Datastream and own calculations
GIND0203	Recent growth in industry premiums earned = (Industry premiums 2003 – Industry premiums 2002) / Industry Premiums 2002	2002-2003	Datastream and own calculations
GPREM0203	Recent growth of premiums earned = (Prem03-Prem02)/Prem02	2002-2003	Datastream and own calculations
LIQAVE0203	Liquidity Ratio = Total cash / Total assets	2002-2003 (average)	Datastream and own calculations
MFE	Dummy variable = 1 if a country has at least one MFN exemption for the insurance sector, else 0	GATS schedules	GATS and own calculations
PCMAVE0203	Price-cost margin = EBIT / Net Sales	2002-2003 (average)	Datastream and own calculations
PENETRATION	Non-life premiums / GDP	2003	International Insurance Factbook and own calculations
PRUDVARSPC1	Proxy for prudential regulations, calculated as the first principal component of the following set of indicators: existence of an insolvency guarantee fund, liquidity reserve requirements and minimum capital requirements. (1 = does not exist, else 0.)	2002	OECD and own calculations.
REGVARSPC1	Proxy for sectoral regulations, calculated as the first principal component of the following indicators: signature of the Understanding on Commitments in Financial Services, and single/multiple supervisors. (1 = not signed / multiple supervisor, else 0.)	2001-2004	GATS, Sectoral questionnaires, OECD (2001) “Insurance Regulation and Supervision in Asia and Latin America”, and own calculations.
RTA	Dummy variable = 1 if a country has signed at least one RTA covering the insurance sector, else 0	2002-2004	GATS /RTAs
SHAREAVE0203	Market Share = Total assets / Total sector assets	2002-2003 (average)	Datastream and own calculations
TRI_Agg, TRI_M1, TRI_M2, TRI_M3, TRI_M4	Aggregate and modal trade restrictiveness indices	See Paras 19 – 22 main text	Own calculations

Table A3.3: Fixed telecom sector dataset

Variable	Description	Year	Source
CAPINT0204	Capital intensity of production = Total capital / Net Sales	2002-2004 (average)	Datastream and own calculations
DSHARE0203	Percentage of digital mainlines	2002-2003 (average)	ITU World Telecommunication Indicators and own calculations
GREV0203	Recent growth in industry revenue = (Industry revenue 2003 – Industry revenue 2002) / Industry revenue 2002	2002-2003	ITU World Telecommunication Indicators and own calculations
GROWTH0204	Recent growth of firm sales = (Net Sales04 – Net Sales02)/Net Sales02	2002-2004	Datastream and own calculations
MFE	Dummy variable = 1 if a country has at least one MFN exemption for the fixed-line telecommunications sector, else 0	GATS schedules	GATS and own calculations
MLINES0203	No. of mainlines	2002-2003 (average)	ITU World Telecommunication Indicators and own calculations
MLINESPOP0203	Teledensity = No. of mainlines / Population	2002-2003 average	ITU World Telecommunication Indicators and own calculations
PCM0204	Price-cost margin = (EBIT + Depreciation) / Net Sales	2002-2004 (average)	Datastream and own calculations
REGVARSPC1	Proxy for sectoral regulations, calculated as the first principal component of the following indicators: existence of a universal service obligation, independence of the regulator, interconnection agreements made public, interconnection prices made public, licensing agreements made public, regulation of network interconnection and end user tariff.	2002-2004	GATS, Sectoral questionnaires, ITU World Telecommunication Indicators and own calculations.
RTA	Dummy variable = 1 if a country has signed at least one RTA covering the fixed-line telecommunications sector, else 0	2002-2004	GATS /RTAs
SALESUSD0204	Net Sales	2002-2004 (average)	Datastream and own calculations
SALESUSDEMP0204	Labour productivity = Net sales / No. of employees	2002-2004 (average)	Datastream and own calculations
SHARE0204	Market Share = Net sales / Total sector net sales	2002-2004 (average)	Datastream and own calculations
TRI_Agg, TRI_M1, TRI_M2, TRI_M3, TRI_M4	Aggregate and modal trade restrictiveness indices	See Paras 19-22 main text	Own calculations

Table A3.4: Mobile telecom sector dataset

Variable	Description	Year	Source
CAPINT0204	Capital intensity of production = Total capital / Net Sales	2002-2004 (average)	Datastream and own calculations
GREV0203	Recent growth in industry revenue = (Industry revenue 2003 – Industry revenue 2002) / Industry revenue 2002	2002-2003	ITU World Telecommunication Indicators and own calculations
GROWTH0204	Recent growth of firm sales = (Net Sales04 – Net Sales02)/Net Sales02	2002-2004	Datastream and own calculations
MFE	Dummy variable = 1 if a country has at least one MFN exemption for the mobile telecommunications sector, else 0	GATS schedules	GATS and own calculations
SUBS0203	No. of cellular phone subscribers	2002-2003 (average)	ITU World Telecommunication Indicators and own calculations
SUBSPOP0203	Teledensity = No. of cellular phone subscribers / Population	2002-2003 average	ITU World Telecommunication Indicators and own calculations
PCM0204	Price-cost margin = (EBIT + Depreciation) / Net Sales	2002-2004 (average)	Datastream and own calculations
REGVARSPC1	Proxy for sectoral regulations, calculated as the first principal component of the following indicators: existence of a universal service obligation, independence of the regulator, interconnection agreements made public, interconnection prices made public, licensing agreements made public, regulation of network interconnection and end user tariff.	2002-2004	GATS, Sectoral questionnaires, ITU World Telecommunication Indicators and own calculations.
RTA	Dummy variable = 1 if a country has signed at least one RTA covering the mobile telecommunications sector, else 0	2002-2004	GATS and RTAs
SALESUSD0204	Net Sales	2002-2004 (average)	Datastream and own calculations
SALESUSDEMP0204	Labour productivity = Net sales / No. of employees	2002-2004 (average)	Datastream and own calculations
SHARE0204	Market Share = Net sales / Total sector net sales	2002-2004 (average)	Datastream and own calculations
TRI_Agg, TRI_M1, TRI_M2, TRI_M3, TRI_M4	Aggregate and modal trade restrictiveness indices	See Paras 19-22	Own calculations

Table A3.5: Engineering sector dataset

Variable	Description	Year	Source
CAPINT0203	Capital intensity of production = Total capital / Net sales	2002-2003 (average)	Datastream and own calculations
SOLV0203	Solvency ratio = (Total debt / (Total capital + short-term debt))*100	2002-2003 (average)	Datastream and own calculations
INVSALLES0203	Efficiency of supply = Total inventories / Net sales	2002-2003 (average)	Datastream and own calculations
GINDSALLES0203	Recent growth in industry sales = (Industry net sales03 – Industry net sales02) / Industry net sales02	2002-2003	Datastream and own calculations
GROWTH0203	Recent growth of firm sales = (Net Sales03 – Net Sales02)/Net Sales02	2002-2003 (average)	Datastream and own calculations
SALESUSD0203	Labour productivity = Net sales / No. of employees	2002-2003 (average)	Datastream and own calculations
MFE	Dummy variable = 1 if a country has at least one MFN exemption for the engineering sector, else 0	GATS schedules	GATS and own calculations
PCMAVE0203	Price-cost margin = (EBIT + Depreciation) / Net Sales	2002-2003 (average)	Datastream and own calculations
RD0203	Research & development / Net sales	2002-2003 (average)	Datastream and own calculations
INDGDP0203	(Industry value-added / GDP)*100	2002-2003 (average)	World Development Indicators and own calculations
HITECH0203	(High technology exports / Total merchandise exports)*100	2002-2003 (average)	World Development Indicators and own calculations
SALESUSD0203	Net sales	2002-2003 (average)	Datastream and own calculations
REGVARSPC1	Proxy for sectoral regulations, calculated as the first principal component of the following indicators: multidisciplinary practices, additional categories, activities reserved by law, fee setting and advertising/marketing.	2000-2004	ECO Product Market Regulations Database, database employed in TD/TC/WP(2005)7
RTA	Dummy variable = 1 if a country has signed at least one RTA covering the engineering sector, else 0	2002-2004	GATS and RTAs
SHARE0203	Market Share = Net Sales / Total sector net sales	2002-2003 (average)	Datastream and own calculations
TRI_Agg, TRI_M1, TRI_M2, TRI_M3, TRI_M4	Aggregate and modal trade restrictiveness indices (aggregate index includes multidisciplinary practices, additional categories, activities reserved by law, fee setting and advertising/marketing.)	See Paras 19-22 main text	Own calculations

Table A3.6: Distribution sector dataset

Variable	Description	Year	Source
CAPINT0204	Capital intensity of production = Total capital / Net sales	2002-2004 (average)	Datastream and own calculations
GINDSALES0204	Recent growth in industry sales = (Industry net sales03 – Industry net sales02) / Industry net sales02	2002-2003	Datastream and own calculations
GROWTH0204	Recent growth of firm sales = (Net Sales03 – Net Sales02)/Net Sales02	2002-2004 (average)	Datastream and own calculations
INVSALES0204	Efficiency of supply = Total inventories / Net sales	2002-2004 (average)	Datastream and own calculations
MFE	Dummy variable = 1 if a country has at least one MFN exemption for the distribution sector, else 0	GATS schedules	GATS and own calculations
PCMAVE0204	Price-cost margin = (EBIT + Depreciation) / Net Sales	2002-2004 (average)	Datastream and own calculations
RTA	Dummy variable = 1 if a country has signed at least one RTA covering the distribution sector, else 0	2002-2004	GATS/RTAs and own calculations
SALES0204	Net sales	2002-2004 (average)	Datastream and own calculations
SALESEMP0204	Labour productivity = Net sales / No. of employees	2002-2004 (average)	Datastream and own calculations
SHARE0204	Market Share = Net Sales / Total sector net sales	2002-2004 (average)	Datastream and own calculations
SOLV0204	Solvency ratio = (Total debt / (Total capital + short-term debt))*100	2002-2004 (average)	Datastream and own calculations
TRI_Agg, TRI_M1, TRI_M2, TRI_M3, TRI_M4	Aggregate and modal trade restrictiveness indices	See Paras 19-22 main text	Own calculations

4. Results, Interpretation and Robustness

The robustness of results is discussed in the main text. Detailed sectoral regression results are reported below.

Banking

Table A3.7: First-stage regression results for the banking sector

Dependent Variable: Log(NIM)			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
LOG(CAP0204)	0.229 (0.034)***	0.193 (0.037)***	0.235 (0.034)***
LOG(LIQ0204)	0.078 (0.016)***	0.059 (0.016)***	0.076 (0.017)***
LOG(NIE0204)	0.247 (0.029)***	0.261 (0.035)***	0.255 (0.033)***
LOG(GNII0204)		-0.002 (0.006)	
LOG(SHARE)		0.008 (0.007)	0.005 (0.006)
Observations	817	580	817
R-squared	0.800	0.796	0.801
Adjusted R-squared	0.787	0.778	0.787
S.E. of regression	0.194	0.178	0.194
Jarque-Bera	463.963***	96.207***	470.492***
White	6.516***	6.759***	6.318***
RESET(2)	19.743***	8.163***	20.101***

Table A3.8: Second-stage regression results for the banking sector, using the Aggregate TRI

Dependent Variable: Adjusted Log(NIM)			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
TRI_AGG	0.115 (0.114)	0.119 (0.083)*	0.113 (0.082)*
TRI_AGG*RTA	0.007 (0.132)		
TRI_AGG*MFE	-0.279 (0.166)*	-0.276 (0.163)**	-0.274 (0.163)*
PRUDVARSPC1	-0.028 (0.040)	-0.028 (0.039)	-0.028 (0.039)
REGVARSPC1	-0.013 (0.044)	-0.013 (0.046)	-0.010 (0.047)
INTVAR	0.006 (0.002)***	0.006 (0.002)***	0.006 (0.002)***
C5	0.039 (0.257)	0.038 (0.254)	
C	-1.840 (0.200)***	-1.839 (0.197)***	-1.809 (0.078)***
Observations	46	46	46
R-squared	0.243	0.243	0.242
Adjusted R-squared	0.103	0.126	0.148
S.E. of regression	0.334	0.329	0.325
F-statistic	1.740	2.083	2.559
Prob(F-statistic)	0.129	0.077	0.042
Jarque-Bera	3.48*	3.283*	3.476*
White	2.729***	1.257	1.228
RESET(2)	1.934*	2.069*	1.837*

Table A3.9: Second-stage regression results for the banking sector, using the Mode 1 TRI

Dependent Variable: Adjusted Log(NIM)			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
TRI_M1	-0.028 (0.067)	-0.015 (0.055)	-0.009 (0.057)
TRI_M1*RTA	0.027 (0.076)		
TRI_M1*MFE	-0.219 (0.139)*	-0.208 (0.140)*	-0.209 (0.140)*
PRUDVARSPC1	-0.028 (0.038)	-0.029 (0.037)	-0.029 (0.037)
REGVARSPC1	0.030 (0.045)	0.028 (0.046)	0.021 (0.047)
INTVAR	0.006 (0.002)***	0.006 (0.002)***	0.006 (0.002)***
C5	-0.089 (0.247)	-0.088 (0.247)	
C	-1.661 (0.183)***	-1.658 (0.182)***	-1.724 (0.080)***
Observations	46	46	46
R-squared	0.241	0.239	0.237
Adjusted R-squared	0.101	0.122	0.142
S.E. of regression	0.334	0.330	0.326
F-statistic	1.725	2.040	2.484
Prob(F-statistic)	0.132	0.083	0.047
Jarque-Bera	2.918	2.129	1.811
White	2.528***	1.337	1.209
RESET(2)	0.000	0.023	0.144

Table A3.10: Second-stage regression results for the banking sector, using the Mode 2 TRI

Dependent Variable: Adjusted Log(NIM)			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
TRI_M2	-0.148 (0.305)	-0.130 (0.230)	-0.071 (0.218)
TRI_M2*RTA	0.029 (0.283)		
TRI_M2*MFE	-0.485 (0.443)	-0.474 (0.442)	-0.470 (0.446)
PRUDVARSPC1	-0.013 (0.043)	-0.013 (0.043)	-0.016 (0.042)
REGVARSPC1	0.051 (0.056)	0.050 (0.057)	0.034 (0.055)
INTVAR	0.005 (0.002)***	0.005 (0.002)***	0.006 (0.002)***
C5	-0.183 (0.286)	-0.182 (0.282)	
C	-1.583 (0.229)***	-1.584 (0.226)***	-1.724 (0.082)***
Observations	46	46	46
R-squared	0.209	0.209	0.202
Adjusted R-squared	0.064	0.087	0.102
S.E. of regression	0.341	0.337	0.334
F-statistic	1.437	1.718	2.021
Prob(F-statistic)	0.220	0.143	0.096
Jarque-Bera	2.661	2.383	1.913
White	2.178***	1.231	1.336
RESET(2)	11.328***	11.028***	3.443**

Table A3.11: Second-stage regression results for the banking sector, using the Mode 3 TRI

Dependent Variable: Adjusted Log(NIM)			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
TRI_M3	0.288 (0.322)	0.167 (0.277)	0.169 (0.259)
TRI_M3*RTA	-0.149 (0.216)		
TRI_M3*MFE	-0.180 (0.145)	-0.201 (0.142)*	-0.201 (0.141)*
PRUDVARSPC1	-0.020 (0.045)	-0.019 (0.042)	-0.019 (0.041)
REGVARSPC1	-0.015 (0.049)	0.001 (0.050)	0.001 (0.050)
INTVAR	0.005 (0.002)***	0.005 (0.002)***	0.005 (0.002)***
C5	0.007 (0.279)	-0.005 (0.268)	
C	-1.873 (0.353)***	-1.862 (0.339)***	-1.866 (0.226)***
Observations	46	46	46
R-squared	0.205	0.189	0.189
Adjusted R-squared	0.059	0.064	0.088
S.E. of regression	0.342	0.341	0.337
F-statistic	1.404	1.514	1.864
Prob(F-statistic)	0.232	0.199	0.122
Jarque-Bera	1.280	3.325*	3.306*
White	2.155***	1.150	1.006
RESET(2)	2.603*	0.574	0.606

Table A3.12: Second-stage regression results for the banking sector, using the Mode 4 TRI

Dependent Variable: Adjusted Log(NIM)			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
TRI_M4	0.055 (0.084)	0.010 (0.071)	0.010 (0.069)
TRI_M4*RTA	-0.049 (0.087)		
TRI_M4*MFE	-0.124 (0.087)*	-0.128 (0.087)*	-0.127 (0.085)*
PRUDVARSPC1	-0.028 (0.044)	-0.030 (0.042)	-0.030 (0.042)
REGVARSPC1	0.009 (0.037)	0.012 (0.037)	0.011 (0.038)
INTVAR	0.005 (0.002)***	0.005 (0.002)***	0.005 (0.002)***
C5	-0.022 (0.272)	-0.035 (0.263)	
C	-1.730 (0.183)***	-1.719 (0.179)***	-1.742 (0.111)***
Observations	46	46	46
R-squared	0.190	0.188	0.187
Adjusted R-squared	0.041	0.063	0.086
S.E. of regression	0.345	0.341	0.337
F-statistic	1.274	1.501	1.843
Prob(F-statistic)	0.289	0.204	0.126
Jarque-Bera	3.962*	4.040*	3.761*
White	0.846	0.755	0.784
RESET(2)	0.071	0.000	0.000

Table A3.13: Second-stage regression results for the banking sector, using all Modal TRIs

Dependent Variable: Adjusted Log(NIM)			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
TRI_M1	-0.017 (0.072)	-0.057 (0.086)	-0.021 (0.073)
TRI_M2	-0.259 (0.345)	-0.327 (0.360)	-0.201 (0.316)
TRI_M3	0.136 (0.284)	0.267 (0.286)	0.154 (0.276)
TRI_M4	0.005 (0.079)	0.039 (0.056)	-0.001 (0.075)
RTA		-0.266 (0.240)	
MFE		-0.071 (0.117)	
PRUDVARSPC1	0.004 (0.052)	0.013 (0.053)	0.002 (0.051)
REGVARSPC1	0.079 (0.081)	0.051 (0.072)	0.064 (0.073)
INTVAR	0.005 (0.002)**	0.005 (0.002)***	0.005 (0.002)**
C5	-0.160 (0.304)	-0.206 (0.305)	
C	-1.687 (0.382)***	-1.507 (0.439)***	-1.817 (0.266)***
Observations	46	46	46
R-squared	0.178	0.231	0.172
Adjusted R-squared	-0.000	0.011	0.020
S.E. of regression	0.352	0.350	0.349
F-statistic	0.999	1.049	1.128
Prob(F-statistic)	0.453	0.425	0.366
Jarque-Bera	4.346*	0.691	3.973*
White	0.894	0.964	0.730
RESET(2)	4.842***	0.057	3.629**

Insurance

Table A3.14: First-stage regression results for the insurance sector

Dependent Variable: LOG(PCMAVE0203)			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
LOG(CAPAVE0203)	0.922 (0.185)***	1.297 (0.210)***	0.842 (0.207)***
LOG(LIQAVE0203)	-0.042 (0.044)	-0.085 (0.043)**	-0.055 (0.042)*
LOG(EXPAVE0203)	-0.441 (0.098)***	-0.514 (0.139)***	-0.461 (0.114)***
LOG(GPREM0203)		-0.033 (0.076)	
LOG(SHAREAVE0203)		-0.03 (0.052)	-0.069 (0.053)*
Observations	108	75	108
R-squared	0.709	0.81	0.718
Adjusted R-squared	0.61	0.719	0.618
S.E. of regression	0.648	0.502	0.641
F-statistic	NA	NA	NA
Prob(F-statistic)	NA	NA	NA
Jarque-Bera	3.033	0.365	1.883
White	1.025	0.756	0.881
RESET(2)	0.101	1.347	2.058*

Table A3.15: Second-stage regression results for the insurance sector, using the Aggregate TRI

	Dependent Variable: ADPCM0203				
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
TRI_AGG	-0.301 (0.39)	-0.275 (0.34)	-0.269 (0.304)	-0.411 (0.428)	-0.376 (0.329)
TRI_AGG*MFE	-0.37 (0.367)	-0.377 (0.356)	-0.358 (0.351)	-0.372 (0.346)	-0.355 (0.342)
PRUDVARSPC1	0.311 (0.085)***	0.311 (0.083)***	0.311 (0.083)***	0.319 (0.084)***	0.321 (0.084)***
REGVARSPC1	0.317 (0.172)**	0.311 (0.162)**	0.328 (0.157)**	0.349 (0.152)***	0.368 (0.139)***
DENSITY	0 0	0 0		0 0	
PENETRATION	-0.389 (0.887)		-0.438 (1.039)	-0.679 (0.958)	-0.781 (1.218)
GIND0203	-0.556 (1.413)	-0.623 (1.341)	-0.597 (1.432)		
C	-1.825 (0.615)***	-1.856 (0.546)***	-1.882 (0.368)***	-1.723 (0.632)***	-1.795 (0.384)***
Observations	20	20	20	20	20
R-squared	0.574	0.574	0.573	0.569	0.567
Adjusted R-squared	0.326	0.377	0.377	0.37	0.412
S.E. of regression	0.607	0.584	0.584	0.587	0.567
F-statistic	2.313	2.914	2.912	2.86	3.667
Prob(F-statistic)	0.097	0.05	0.05	0.053	0.025
Jarque-Bera	0.49	0.544	0.619	0.522	0.672
White	1.324	2.220*	1.494	1.584	0.623
RESET(2)	1.513	1.741	2.030*	1.257	1.935*

Table A3.16: Second-stage regression results for the insurance sector, using the Mode 1 TRI

Dependent Variable: ADPCM0203					
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
TRI_M1	-1.193 (0.582)**	-1.142 (0.538)**	-1.017 (0.501)**	-1.128 (0.630)**	-0.996 (0.510)**
TRI_M1*MFE	-0.496 (0.551)	-0.529 (0.518)	-0.474 (0.519)	-0.499 (0.527)	-0.476 (0.502)
PRUDVARSPC1	0.343 (0.079)***	0.343 (0.077)***	0.344 (0.078)***	0.339 (0.070)***	0.342 (0.074)***
REGVARSPC1	0.272 (0.157)*	0.267 (0.151)**	0.322 (0.116)***	0.266 (0.138)**	0.319 (0.103)***
DENSITY	-0.000 (0.000)	-0.000 (0.000)		-0.000 (0.000)	
PENETRATION	-0.660 (0.580)		-0.873 (0.779)	-0.578 (0.692)	-0.838 (0.988)
GIND0203	0.209 (1.158)	0.122 (1.118)	0.077 (1.174)		
C	-1.587 (0.397)***	-1.619 (0.374)***	-1.746 (0.260)***	-1.614 (0.461)***	-1.754 (0.286)***
Observations	20	20	20	20	20
R-squared	0.654	0.652	0.644	0.653	0.644
Adjusted R-squared	0.452	0.491	0.480	0.493	0.517
S.E. of regression	0.547	0.528	0.533	0.526	0.514
F-statistic	3.243	4.051	3.918	4.084	5.060
Prob(F-statistic)	0.036	0.016	0.019	0.016	0.007
Jarque-Bera	0.416	0.432	0.729	0.475	0.747
White	1.044	1.745	1.466	1.192	1.258
RESET(2)	0.010	0.006	0.175	0.027	0.199

A3.17: Second-stage regression results for the insurance sector, using the Mode 2 TRI

Dependent Variable: ADPCM0203					
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
TRI_M2	-0.740 (0.465)*	-0.735 (0.438)*	-0.681 (0.394)*	-0.818 (0.516)*	-0.765 (0.435)*
TRI_M2*MFE	-0.688 (0.709)	-0.695 (0.661)	-0.661 (0.666)	-0.682 (0.696)	-0.652 (0.660)
PRUDVARSPC1	0.322 (0.076)***	0.322 (0.073)***	0.324 (0.074)***	0.327 (0.074)***	0.329 (0.075)***
REGVARSPC1	0.263 (0.169)*	0.262 (0.163)*	0.289 (0.123)***	0.273 (0.160)*	0.302 (0.114)***
DENSITY	-0.000 (0.000)	-0.000 (0.000)		-0.000 (0.000)	
PENETRATION	-0.094 (0.690)		-0.243 (0.913)	-0.191 (0.690)	-0.365 (0.972)
GIND0203	-0.288 (1.383)	-0.298 (1.313)	-0.323 (1.336)		
C	-1.849 (0.388)***	-1.852 (0.367)***	-1.913 (0.231)***	-1.822 (0.398)***	-1.889 (0.242)***
Observations	20	20	20	20	20
R-squared	0.611	0.611	0.609	0.609	0.607
Adjusted R-squared	0.384	0.432	0.428	0.429	0.466
S.E. of regression	0.580	0.557	0.559	0.558	0.540
F-statistic	2.694	3.404	3.369	3.382	4.316
Prob(F-statistic)	0.063	0.030	0.031	0.031	0.014
Jarque-Bera	0.611	0.614	0.820	0.554	0.755
White	1.705	1.908*	2.030*	1.592	1.008
RESET(2)	0.026	0.027	0.008	0.076	0.000

A3.18: Second-stage regression results for the insurance sector, using the Mode 3 TRI

Dependent Variable: ADPCM0203					
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
TRI_M3	0.381 (0.654)	0.337 (0.538)	0.311 (0.538)	0.108 (0.491)	0.048 (0.425)
TRI_M3*MFE	-0.258 (1.052)	-0.267 (0.997)	-0.322 (0.964)	-0.218 (1.118)	-0.275 (1.054)
PRUDVARSPC1	0.282 (0.103)***	0.281 (0.097)***	0.278 (0.100)***	0.293 (0.104)***	0.290 (0.103)***
REGVARSPC1	0.208 (0.249)	0.220 (0.220)	0.184 (0.247)	0.314 (0.208)*	0.291 (0.203)*
DENSITY	0.000 (0.000)	0.000 (0.000)		0.000 (0.000)	
PENETRATION	0.518 (1.323)		0.634 (1.471)	-0.295 (0.843)	-0.183 (1.079)
GIND0203	-1.511 (1.565)	-1.439 (1.394)	-1.492 (1.481)		
C	-2.435 (0.611)***	-2.395 (0.504)***	-2.321 (0.396)***	-2.284 (0.462)***	-2.184 (0.314)***
Observations	20	20	20	20	20
R-squared	0.553	0.552	0.548	0.504	0.499
Adjusted R-squared	0.293	0.345	0.339	0.275	0.320
S.E. of regression	0.622	0.598	0.601	0.630	0.609
F-statistic	2.122	2.666	2.622	2.200	2.792
Prob(F-statistic)	0.120	0.065	0.069	0.110	0.059
Jarque-Bera	0.187	0.226	0.182	0.508	0.565
White	5.091***	7.891***	3.340**	2.203*	1.559
RESET(2)	2.973*	3.691**	2.930*	8.437***	7.270***

A3.19: Second-stage regression results for the insurance sector, using the Mode 4 TRI

Dependent Variable: ADPCM0203					
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
TRI_M4	-0.378 (0.338)	-0.350 (0.317)	-0.369 (0.338)	-0.184 (0.283)	-0.169 (0.273)
TRI_M4*MFE	-0.061 (0.169)	-0.030 (0.150)	-0.073 (0.166)	-0.049 (0.208)	-0.065 (0.202)
PRUDVARSPC1	0.258 (0.088)***	0.255 (0.080)***	0.254 (0.085)***	0.279 (0.100)***	0.274 (0.101)***
REGVARSPC1	0.309 (0.171)**	0.317 (0.171)**	0.281 (0.123)***	0.356 (0.179)**	0.319 (0.130)***
DENSITY	0.000 (0.000)	0.000 (0.000)		0.000 (0.000)	
PENETRATION	1.186 (1.379)		1.414 (1.493)	0.228 (1.757)	0.520 (1.879)
GIND0203	-1.876 (1.523)	-1.732 (1.409)	-1.898 (1.465)		
C	-1.544 (0.635)***	-1.591 (0.593)***	-1.513 (0.593)***	-1.911 (0.477)***	-1.875 (0.477)***
Observations	20	20	20	20	20
R-squared	0.594	0.587	0.592	0.520	0.516
Adjusted R-squared	0.358	0.397	0.403	0.299	0.343
S.E. of regression	0.593	0.574	0.571	0.619	0.599
F-statistic	2.510	3.081	3.140	2.349	2.981
Prob(F-statistic)	0.077	0.042	0.040	0.093	0.049
Jarque-Bera	1.117	1.045	0.959	0.820	0.811
White	2.663*	4.857***	0.966	1.364	0.822
RESET(2)	0.178	0.114	0.086	3.194**	2.559*

Table A3.20: Second-stage regression results for the insurance sector, using all Modal TRIs

	Dependent Variable: ADPCM0203				
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
TRI_M1	-2.072 (1.399)*	-2.208 (1.227)*	-1.895 (1.290)*	-2.266 (1.294)*	-2.071 (1.157)*
TRI_M2	0.084 (1.437)	0.223 (1.262)	-0.032 (1.293)	0.140 (1.348)	0.002 (1.217)
TRI_M3	0.919 (0.700)	0.850 (0.685)	0.961 (0.633)*	0.892 (0.674)	0.941 (0.615)*
TRI_M4	-0.386 (0.369)	-0.363 (0.338)	-0.383 (0.349)	-0.343 (0.338)	-0.333 (0.326)
MFE	0.069 (0.292)	0.099 (0.263)	0.087 (0.273)	0.096 (0.269)	0.122 (0.259)
PRUDVARSPC1	0.325 (0.062)***	0.325 (0.059)***	0.327 (0.057)***	0.337 (0.057)***	0.340 (0.057)***
REGVARSPC1	0.143 (0.223)	0.162 (0.225)	0.163 (0.212)	0.163 (0.224)	0.189 (0.215)
DENSITY	-0.000 (0.000)	-0.000 (0.000)		-0.000 (0.000)	
PENETRATION	0.918 (1.238)		0.836 (1.172)	0.494 (1.047)	0.340 (0.998)
GIND0203	-0.638 (1.003)	-0.457 (0.896)	-0.702 (0.990)		
C	-1.251 (0.971)	-1.234 (0.958)	-1.365 (0.879)*	-1.254 (0.935)	-1.396 (0.859)*
Observations	20	20	20	20	20
R-squared	0.791	0.787	0.788	0.785	0.780
Adjusted R-squared	0.558	0.595	0.597	0.591	0.620
S.E. of regression	0.491	0.470	0.469	0.473	0.456
F-statistic	3.399	4.102	4.125	4.045	4.881
Prob(F-statistic)	0.040	0.019	0.019	0.020	0.009
Jarque-Bera	0.661	0.770	0.871	0.588	0.835
White	NA	1.009	0.626	1.403	1.004
RESET(2)	0.793	0.743	0.698	1.068	0.810

Telecom

Table A3.21: First-stage regression results for the fixed-line telecommunications sector

Dependent Variable: LOG(PCM0204)				
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
LOG(SALESUSD0204)	0.086 (0.472)	0.167 (0.416)	0.069 (0.035)**	0.043 (0.035)
LOG(GROWTH0204)	0.441 (0.295)*	0.212 (0.342)	0.145 (0.255)	0.416 (0.249)*
LOG(SHARE0204)	-0.044 (0.480)	-0.100 (0.424)		
LOG(CAPINT0204)	0.618 (0.158)***	0.560 (0.155)***	0.557 (0.145)***	0.618 (0.155)***
LOG(SALESUSDEMP0204)	0.077 (0.125)			0.082 (0.120)
Observations	73	80	80	73
R-squared	0.689	0.639	0.639	0.689
Adjusted R-squared	0.502	0.463	0.472	0.513
S.E. of regression	0.596	0.613	0.608	0.590
F-statistic	NA	NA	NA	NA
Prob(F-statistic)	NA	NA	NA	NA
Jarque-Bera	19.842***	14.957***	14.156***	19.555***
White	0.597	0.830	0.902	0.653
RESET(2)	2.235*	1.476	1.292	2.136*

Table A3.22: Second-stage regression results for the fixed-line telecommunications sector, using the Aggregate TRI

	Dependent Variable: ADPCM0204						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
TRI_AGG	0.076 (0.468)	0.195 (0.456)	-0.267 (0.233)	0.086 (0.289)	0.408 (0.242)*	-0.313 (0.249)	-0.039 (0.281)
TRI_AGG*RTA	0.522 (0.271)**	0.447 (0.281)*	0.882 (0.143)***	0.478 (0.281)*		0.884 (0.136)***	0.555 (0.258)***
TRI_AGG*MFE	0.089 (0.233)	-0.037 (0.217)	-0.046 (0.222)	-0.047 (0.215)	0.027 (0.225)	0.100 (0.227)	0.078 (0.231)
REGVARSPC1	0.078 (0.096)	0.125 (0.077)*	0.137 (0.079)*	0.129 (0.076)*	0.102 (0.077)	0.081 (0.097)	0.083 (0.097)
MLINESPOP0203	0.003 (0.008)	0.003 (0.008)	-0.000 (0.007)			0.001 (0.007)	
MLINES0203	-0.000 (0.000)	-0.000 (0.000)*		-0.000 (0.000)*	-0.000 (0.000)***		-0.000 (0.000)
DSHARE0203	-0.217 (0.102)**	-0.173 (0.110)*	-0.114 (0.082)*	-0.148 (0.053)***	-0.172 (0.074)***	-0.175 (0.082)**	-0.189 (0.060)***
GREV0203	0.827 (0.519)*					0.945 (0.503)**	0.821 (0.508)*
C	18.581 (9.672)**	14.319 (10.518)*	8.445 (7.813)	11.907 (5.244)***	14.453 (7.328)**	14.457 (7.786)**	15.986 (5.885)***
Observations	22	22	22	22	22	22	22
R-squared	0.520	0.466	0.410	0.461	0.423	0.482	0.514
Adjusted R-squared	0.224	0.199	0.175	0.246	0.242	0.224	0.271
S.E. of regression	0.406	0.412	0.419	0.400	0.401	0.406	0.393
F-statistic	1.759	1.747	1.740	2.140	2.343	1.864	2.116
Prob(F-statistic)	0.176	0.177	0.180	0.109	0.089	0.152	0.110
Jarque-Bera	0.990	1.471	0.984	1.342	1.328	0.495	0.809
White	0.617	0.588	0.852	0.520	0.490	0.816	0.679
RESET(2)	0.040	0.183	0.058	0.076	0.645	0.029	0.037

Table A3.23: First-stage regression results for the mobile telecommunications sector

Dependent Variable: LOG(PCM0204)				
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
LOG(SALESUSD0204)	0.900 (0.388)***	0.917 (0.342)***	0.052 (0.034)*	0.049 (0.037)*
LOG(GROWTH0204)	0.758 (0.231)***	0.697 (0.219)***	0.231 (0.273)	0.312 (0.274)
LOG(SHARE0204)	-0.890 (0.397)***	-0.907 (0.351)***		
LOG(CAPINT0204)	0.720 (0.203)***	0.682 (0.150)***	0.558 (0.145)***	0.593 (0.208)***
LOG(SALESUSDEMP0204)	0.075 (0.172)			0.096 (0.162)
Observations	63	69	69	63
R-squared	0.663	0.660	0.614	0.619
Adjusted R-squared	0.403	0.450	0.390	0.343
S.E. of regression	0.486	0.463	0.488	0.509
F-statistic	NA	NA	NA	NA
Prob(F-statistic)	NA	NA	NA	NA
Jarque-Bera	20.396***	19.323***	19.894***	21.721***
White	0.404	0.519	0.395	0.318
RESET(2)	4.126**	5.398***	5.980***	6.464***

Table A3.24: Second-stage regression results for the mobile telecommunications sector, using the Aggregate TRI

	Dependent Variable: ADPCM0204						
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 6</i>	<i>Model 7</i>
TRI_AGG	-0.186 (0.245)	-0.071 (0.219)	-0.425 (0.120)***	-0.005 (0.226)	0.088 (0.139)	-0.505 (0.125)***	-0.085 (0.251)
TRI_AGG*RTA	0.236 (0.297)	0.130 (0.273)	0.594 (0.073)***	0.125 (0.291)		0.635 (0.058)***	0.210 (0.312)
TRI_AGG*MFE	-0.022 (0.151)	-0.049 (0.162)	-0.081 (0.198)	-0.046 (0.161)	-0.028 (0.153)	-0.036 (0.170)	-0.023 (0.151)
REGVARSPC1	-0.048 (0.097)	-0.029 (0.091)	0.018 (0.084)	-0.022 (0.092)	-0.033 (0.080)	-0.019 (0.091)	-0.036 (0.098)
SUBSPOP0203	-0.003 (0.003)	-0.003 (0.004)	-0.002 (0.003)			-0.003 (0.003)	
SUBS0203	-0.000 (0.000)*	-0.000 (0.000)*		-0.000 (0.000)*	-0.000 (0.000)***		-0.000 (0.000)
GREV0203	0.546 (0.516)					0.766 (0.451)*	0.443 (0.520)
C	-2.426 (0.304)** *	-2.415 (0.335)***	-2.649 (0.241)***	-2.621 (0.200)***	-2.581 (0.146)***	-2.611 (0.216)***	-2.672 (0.215)** *
Observations	22	22	22	22	22	22	
R-squared	0.410	0.381	0.289	0.363	0.359	0.351	0.383
Adjusted R-squared	0.115	0.134	0.067	0.164	0.208	0.091	0.136
S.E. of regression	0.405	0.401	0.416	0.394	0.384	0.411	0.401
F-statistic	1.391	1.540	1.302	1.824	2.378	1.352	1.551
Prob(F-statistic)	0.283	0.232	0.312	0.165	0.093	0.295	0.229
Jarque-Bera	1.180	1.371	0.788	1.753	1.759	0.669	1.927
White	0.528	0.455	0.953	0.511	0.538	0.835	0.664
RESET(2)	2.942*	0.948	0.097	1.909*	0.847	0.972	4.587**

Engineering

Table A3.25: First-stage regression results for the engineering sector

	Dependent Variable: LOG(PCM0203)					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
LOG(SALESUSD0203)	1.389 (4.147)	0.113 (0.052)***	0.119 (0.050)***	0.082 (0.034)***	0.117 (0.067)**	0.077 (0.054)*
LOG(GROWTH0203)	0.008 (0.042)	0.014 (0.036)	0.007 (0.035)		0.071 (0.056)	0.003 (0.035)
LOG(SHARE0203)	-1.278 (4.154)					
LOG(CAPINT0203)	0.523 (0.117) ***	0.521 (0.116)***	0.559 (0.096)***	0.453 (0.095)***	0.612 (0.275)***	0.540 (0.113)***
LOG(SALESUSDEMP0203)	-0.083 (0.097)	-0.082 (0.097)		-0.062 (0.090)	-0.300 (0.268)	-0.050 (0.090)
LOG(SOLV0203)	-0.049 (0.040)	-0.049 (0.040)	-0.038 (0.035)	-0.060 (0.034)**	-0.082 (0.071)	
LOG(INVSALES0203)	-0.052 (0.040) *	-0.053 (0.040)*	-0.071 (0.036)***	-0.033 (0.029)	-0.092 (0.058)*	-0.070 (0.042)**
LOG(RD0203)					-0.089 (0.084)	
Observations	342	342	366	516	159	355
R-squared	0.211	0.211	0.233	0.157	0.187	0.174
Adjusted R-squared	0.129	0.132	0.162	0.101	0.062	0.098
S.E. of regression	0.778	0.777	0.763	0.882	0.932	0.842
F-statistic	NA	NA	NA	NA	NA	NA
Prob(F-statistic)	NA	NA	NA	NA	NA	NA
Jarque-Bera	5249.94 9***	5243.345** *	6284.411** *	4795.608** *	1880.260** *	6530.245** *
White	0.609	0.627	0.448	0.726	0.802	0.751
RESET(2)	2.468*	2.290*	0.688	4.561***	0.067	3.073**

Table A3.26: Second-stage regression results for the engineering sector, using the Aggregate TRI

	Dependent Variable: ADPCM0203						
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 6</i>	<i>Model 7</i>
TRI_AGG	0.012 (0.238)	-0.018 (0.244)	-0.213 (0.216)	0.247 (0.174)*	0.194 (0.125)*	-0.306 (0.190)*	-0.046 (0.374)
TRI_AGG*RTA	0.158 (0.151)	0.191 (0.163)	0.262 (0.170)*	0.034 (0.119)		0.334 (0.176)**	0.040 (0.242)
TRI_AGG*MFE	0.143 (0.152)	0.100 (0.137)	0.205 (0.172)	0.005 (0.111)		0.153 (0.164)	0.097 (0.242)
REGVARSPC1	0.001 (0.026)	-0.014 (0.021)	0.002 (0.028)	-0.018 (0.026)	-0.018 (0.022)	-0.020 (0.026)	-0.038 (0.053)
INDGDP0203	-0.021 (0.012)*	-0.024 (0.012)**		-0.019 (0.012)*	-0.026 (0.009)** *		-0.023 (0.022)
HITECH0203	-0.006 (0.006)		-0.009 (0.007)	-0.007 (0.007)	-0.006 (0.005)		-0.003 (0.011)
INDSALES0203	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	
GINDSALES0203	1.378 (0.830)*	1.444 (0.875)*	1.301 (0.731)**		1.068 (0.630)*	1.384 (0.768)**	1.526 (1.033)*
C	-1.819 (0.315)** *	-1.831 (0.335)** *	-2.322 (0.145)** *	-1.814 (0.273)** *	-1.669 (0.211)** *	-2.448 (0.121)** *	-1.859 (0.526)** *
Observations	24	24	24	24	24	24	24
R-squared	0.639	0.623	0.590	0.565	0.620	0.555	0.257
Adjusted R-squared	0.447	0.458	0.411	0.374	0.486	0.398	-0.068
S.E. of regression	0.327	0.324	0.338	0.348	0.315	0.341	0.455
F-statistic	3.321	3.773	3.294	2.967	4.622	3.536	0.792
Prob(F-statistic)	0.022	0.013	0.023	0.034	0.006	0.019	0.605
Jarque-Bera	1.616	1.254	1.042	0.565	1.118	0.555	1.601
White	0.662	0.509	0.593	0.485	0.884	0.513	1.193
RESET(2)	0.827	0.705	2.041*	5.271**	1.786	1.185	0.143

Table A3.27: Second-stage regression results for the engineering sector, using the Mode 1 TRI

	Dependent Variable: ADPCM0203						
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 6</i>	<i>Model 7</i>
TRI_M1	-0.287 (0.208)*	-0.303 (0.213)*	-0.339 (0.128)** *	-0.041 (0.223)	-0.057 (0.091)	-0.378 (0.123)** *	-0.385 (0.274)*
TRI_M1*RTA	0.244 (0.152)*	0.265 (0.163)*	0.289 (0.122)** *	0.033 (0.164)		0.331 (0.125)** *	0.302 (0.233)
TRI_M1*MFE	-0.126 (0.055)** *	-0.137 (0.056)** *	-0.135 (0.073)**	-0.125 (0.070)**		-0.153 (0.076)**	-0.064 (0.111)
REGVARSPC1	-0.034 (0.021)*	-0.038 (0.020)**	-0.032 (0.019)*	-0.050 (0.040)	-0.034 (0.021)*	-0.036 (0.019)**	-0.044 (0.037)
INDGDP0203	-0.005 (0.018)	-0.006 (0.016)		-0.004 (0.020)	-0.015 (0.014)		-0.007 (0.026)
HITECH0203	-0.003 (0.004)		-0.003 (0.004)	-0.005 (0.006)	-0.005 (0.004)		-0.001 (0.009)
INDSALES0203	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	
GINDSALES0203	1.610 (0.836)**	1.660 (0.831)**	1.601 (0.773)**		1.353 (0.721)**	1.661 (0.776)** *	1.868 (0.979)**
C	-2.193 (0.487)** *	-2.203 (0.472)** *	-2.321 (0.116)** *	-2.135 (0.520)** *	-1.872 (0.361)** *	-2.376 (0.091)** *	-2.302 (0.644)** *
Observations	24	24	24	24	24	24	24
R-squared	0.636	0.633	0.634	0.525	0.604	0.629	0.313
Adjusted R-squared	0.442	0.472	0.474	0.317	0.465	0.498	0.012
S.E. of regression	0.328	0.319	0.319	0.364	0.322	0.312	0.437
F-statistic	3.281	3.943	3.961	2.524	4.329	4.807	1.040
Prob(F-statistic)	0.023	0.011	0.011	0.059	0.008	0.005	0.443
Jarque-Bera	1.828	1.668	1.261	1.132	1.538	0.952	1.485
White	1.317	0.481	0.855	0.689	0.747	0.335	1.444
RESET(2)	0.456	0.418	0.632	3.598**	0.316	0.595	0.001

Table A3.28: Second-stage regression results for the engineering sector, using the Mode 2 TRI

	Dependent Variable: ADPCM0203						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
TRI_M2	0.078 (0.264)	-0.060 (0.166)	-0.031 (0.297)	0.027 (0.269)	-0.047 (0.089)	-0.245 (0.166)*	0.230 (0.398)
TRI_M2*RTA	-0.098 (0.267)	0.059 (0.131)	0.027 (0.279)	-0.019 (0.258)		0.269 (0.051)** *	-0.351 (0.358)
TRI_M2*MFE	-0.088 (0.138)	-0.099 (0.119)	-0.128 (0.172)	-0.114 (0.163)		-0.148 (0.149)	0.027 (0.222)
REGVARSPC1	-0.037 (0.022)*	-0.044 (0.023)**	-0.035 (0.021)*	-0.050 (0.039)	-0.036 (0.021)**	-0.045 (0.025)**	-0.042 (0.034)
INDGDP0203	-0.017 (0.013)	-0.018 (0.012)*		-0.006 (0.009)	-0.018 (0.012)*		-0.025 (0.020)
HITECH0203	-0.005 (0.007)		-0.007 (0.008)	-0.005 (0.009)	-0.005 (0.004)		-0.008 (0.012)
INDSALES0203	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	
GINDSALES0203	1.286 (0.778)*	1.290 (0.771)*	0.843 (0.699)		1.303 (0.721)**	0.800 (0.728)	1.520 (0.884)*
C	-1.816 (0.388)** *	-1.870 (0.362)** *	-2.250 (0.150)** *	-2.077 (0.266)** *	-1.808 (0.327)** *	-2.377 (0.091)** *	-1.668 (0.503)** *
Observations	24	24	24	24	24	24	24
R-squared	0.610	0.601	0.565	0.524	0.602	0.548	0.300
Adjusted R-squared	0.401	0.427	0.375	0.316	0.461	0.388	-0.006
S.E. of regression	0.340	0.333	0.348	0.364	0.323	0.344	0.441
F-statistic	2.928	3.446	2.971	2.519	4.282	3.434	0.982
Prob(F-statistic)	0.035	0.019	0.034	0.060	0.008	0.021	0.478
Jarque-Bera	1.969	1.677	1.079	1.249	1.465	0.866	1.269
White	0.697	0.400	1.194	0.627	0.933	0.657	3.158***
RESET(2)	1.183	1.233	8.927***	6.188***	0.372	6.648***	0.456

Table A3.29: Second-stage regression results for the engineering sector, using the Mode 3 TRI

	Dependent Variable: ADPCM0203						
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 6</i>	<i>Model 7</i>
TRI_M3	0.068 (0.252)	-0.030 (0.250)	-0.213 (0.186)	0.320 (0.197)*	0.201 (0.078)** *	-0.316 (0.158)**	0.183 (0.382)
TRI_M3*RTA	0.148 (0.143)	0.218 (0.139)*	0.298 (0.136)** *	0.018 (0.113)		0.371 (0.111)** *	-0.055 (0.230)
TRI_M3*MFE	0.009 (0.143)	0.016 (0.146)	0.130 (0.140)	-0.143 (0.096)*		0.139 (0.145)	-0.157 (0.237)
REGVARSPC1	-0.023 (0.024)	-0.033 (0.021)*	-0.017 (0.021)	-0.038 (0.027)*	-0.023 (0.023)	-0.027 (0.019)*	-0.059 (0.045)
INDGDP0203	-0.022 (0.013)*	-0.022 (0.013)*		-0.021 (0.013)*	-0.027 (0.009)** *		-0.029 (0.023)
HITECH0203	-0.007 (0.006)		-0.007 (0.007)	-0.010 (0.007)*	-0.009 (0.005)**		-0.002 (0.012)
INDSALES0203	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	
GINDSALES0203	1.330 (0.820)*	1.467 (0.869)*	1.313 (0.694)**		1.198 (0.616)**	1.454 (0.744)**	1.125 (0.943)
C	-1.736 (0.353)** *	-1.835 (0.379)** *	-2.325 (0.143)** *	-1.661 (0.314)** *	-1.555 (0.238)** *	-2.433 (0.093)** *	-1.691 (0.542)** *
Observations	24	24	24	24	24	24	24
R-squared	0.679	0.663	0.633	0.608	0.665	0.617	0.267
Adjusted R-squared	0.508	0.516	0.473	0.437	0.547	0.482	-0.053
S.E. of regression	0.309	0.306	0.319	0.330	0.296	0.317	0.451
F-statistic	3.966	4.505	3.949	3.548	5.620	4.564	0.833
Prob(F-statistic)	0.010	0.006	0.011	0.017	0.002	0.006	0.575
Jarque-Bera	0.868	0.736	1.127	0.249	0.744	0.764	1.479
White	0.902	0.528	0.468	0.318	1.029	0.626	2.343*
RESET(2)	0.616	0.066	0.451	0.355	0.408	0.175	0.213

Table A3.30: Second-stage regression results for the engineering sector, using the Mode 4 TRI

	Dependent Variable: ADPCM0203						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
TRI_M4	-0.136 (0.305)	-0.038 (0.255)	-0.268 (0.266)	0.185 (0.286)	-0.100 (0.269)	-0.150 (0.317)	-0.343 (0.392)
TRI_M4*RTA	0.007 (0.207)	0.010 (0.212)	0.095 (0.234)	-0.100 (0.167)		0.165 (0.275)	-0.025 (0.259)
TRI_M4*MFE	0.115 (0.214)	0.103 (0.204)	0.168 (0.204)	0.078 (0.197)		0.181 (0.204)	0.161 (0.264)
REGVARSPC1	-0.030 (0.022)*	-0.040 (0.019)** *	-0.023 (0.021)	-0.044 (0.029)*	-0.036 (0.023)*	-0.039 (0.018)** *	-0.038 (0.037)
INDGDP0203	-0.015 (0.014)	-0.021 (0.011)**		-0.011 (0.015)	-0.017 (0.012)*		-0.018 (0.021)
HITECH0203	-0.006 (0.007)		-0.011 (0.005)** *	-0.004 (0.008)	-0.006 (0.006)		-0.008 (0.009)
INDSALES0203	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	-0.000 (0.000)** *	
GINDSALES0203	1.479 (0.825)**	1.388 (0.887)*	1.318 (0.699)**		1.427 (0.678)**	1.000 (0.786)	1.928 (1.006)**
C	-1.832 (0.428)** *	-1.857 (0.409)** *	-2.186 (0.289)** *	-2.060 (0.435)** *	-1.743 (0.327)** *	-2.504 (0.215)** *	-1.725 (0.554)** *
Observations	24	24	24	24	24	24	24
R-squared	0.607	0.591	0.574	0.528	0.597	0.514	0.313
Adjusted R-squared	0.397	0.412	0.388	0.321	0.455	0.343	0.012
S.E. of regression	0.342	0.337	0.344	0.363	0.325	0.357	0.437
F-statistic	2.895	3.301	3.079	2.552	4.197	2.998	1.041
Prob(F-statistic)	0.036	0.023	0.030	0.057	0.009	0.035	0.442
Jarque-Bera	1.367	1.154	0.191	0.194	1.866	0.569	1.375
White	0.571	0.552	1.026	0.619	0.424	0.438	1.572
RESET(2)	0.064	0.097	0.563	2.547*	1.029	0.542	0.004

Distribution**Table A3.31: First-stage regression results for the distribution sector**

Dependent Variable: LOG(PCM0204)					
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
LOG(SALES0204)	3.393 (5.564)	0.066 (0.020)***	0.050 (0.019)***	0.044 (0.022)***	0.068 (0.020)***
LOG(GROWTH0204)	0.180 (0.061)***	0.203 (0.039)***	0.192 (0.036)***		0.197 (0.036)***
LOG(SHARE0204)	-3.327 (5.559)				
LOG(CAPINT0204)	0.647 (0.055)***	0.655 (0.052)***	0.690 (0.046)***	0.668 (0.061)***	0.661 (0.050)***
LOG(SALESEMP0204)	-0.170 (0.052)***	-0.162 (0.050)***		-0.094 (0.048)***	-0.154 (0.046)***
LOG(SOLV0204)	-0.038 (0.023)**	-0.036 (0.023)*	-0.035 (0.022)*	-0.048 (0.024)***	
LOG(INVSALES0204)	-0.026 (0.036)	-0.020 (0.035)	-0.030 (0.031)	-0.038 (0.042)	-0.008 (0.035)
Observations	436	436	471	521	472
R-squared	0.536	0.536	0.520	0.412	0.515
Adjusted R-squared	0.496	0.496	0.480	0.371	0.479
S.E. of regression	0.609	0.609	0.613	0.728	0.611
F-statistic	NA	NA	NA	NA	NA
Prob(F-statistic)	NA	NA	NA	NA	NA
Jarque-Bera	1181.746***	1188.051***	1305.507***	1763.844***	1116.601***
White	1.264*	1.220*	1.212*	0.675	1.332**
RESET(2)	0.110	0.381	0.146	8.859***	0.177

Table A3.32: Second-stage regression results for the distribution sector, using the Aggregate TRI

Dependent Variable: ADPCM0204				
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
TRI_AGG	-0.270 (0.097)***	-0.276 (0.091)***	-0.273 (0.090)***	-0.161 (0.095)*
TRI_AGG*RTA	0.359 (0.127)***	0.386 (0.114)***	0.358 (0.122)***	
TRI_AGG*MFE	-0.164 (0.140)	-0.171 (0.134)	-0.162 (0.133)	
INDSALES0204	0.000 (0.000)	0.000 (0.000)		0.000 (0.000)
GINDSALES0204	-0.099 (0.134)		-0.104 (0.134)	-0.224 (0.126)**
C	-1.594 (0.096)***	-1.629 (0.111)***	-1.587 (0.085)***	-1.504 (0.084)***
Observations	23	23	23	26
R-squared	0.161	0.151	0.159	0.117
Adjusted R-squared	-0.085	-0.037	-0.027	-0.003
S.E. of regression	0.255	0.249	0.248	0.255
F-statistic	0.655	0.802	0.854	0.976
Prob(F-statistic)	0.662	0.540	0.510	0.422
Jarque-Bera	13.727***	15.646***	14.401***	5.753**
White	0.232	0.249	0.300	0.257
RESET(2)	0.725	0.044	0.416	0.055

Table A3.33: Second-stage regression results for the distribution sector, using the Mode 1 TRI

Dependent Variable: ADPCM0204			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
TRI_M1	-0.115 (0.051)***	-0.111 (0.052)***	-0.115 (0.048)***
INDSALES0204	-0.000 (0.000)	0.000 (0.000)	
GINDSALES0204	-0.169 (0.131)		-0.169 (0.132)
C	-1.555 (0.054)***	-1.601 (0.070)***	-1.555 (0.045)***
Observations	26	26	26
R-squared	0.167	0.138	0.167
Adjusted R-squared	0.054	0.063	0.095
S.E. of regression	0.248	0.247	0.242
F-statistic	1.474	1.841	2.311
Prob(F-statistic)	0.249	0.181	0.122
Jarque-Bera	11.107***	14.072***	11.036
White	0.230	0.225	0.251
RESET(2)	0.006	0.008	0.007

Table A3.34: Second-stage regression results for the distribution sector, using the Mode 2 TRI

Dependent Variable: ADPCM0204			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
TRI_M2	-0.072 (0.054)*	-0.067 (0.053)	-0.075 (0.051)*
INDSALES0204	0.000 (0.000)	0.000 (0.000)	
GINDSALES0204	-0.162 (0.131)		-0.167 (0.132)
C	-1.603 (0.054)***	-1.647 (0.065)***	-1.597 (0.047)***
Observations	26	26	26
R-squared	0.081	0.054	0.079
Adjusted R-squared	-0.044	-0.028	-0.001
S.E. of regression	0.260	0.258	0.255
F-statistic	0.647	0.658	0.987
Prob(F-statistic)	0.593	0.527	0.388
Jarque-Bera	3.810	5.065**	4.108*
White	0.453	0.468	0.503
RESET(2)	0.053	1.190	0.068

Table A3.35: Second-stage regression results for the distribution sector, using the Mode 3 TRI

Dependent Variable: ADPCM0204			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
TRI_M3	-0.045 (0.089)	0.008 (0.078)	-0.054 (0.082)
INDSALES0204	0.000 (0.000)	0.000 (0.000)	
GINDSALES0204	-0.210 (0.149)*		-0.228 (0.144)*
C	-1.591 (0.113)***	-1.686 (0.095)***	-1.575 (0.096)***
Observations	26	26	26
R-squared	0.039	0.011	0.035
Adjusted R-squared	-0.092	-0.075	-0.049
S.E. of regression	0.266	0.264	0.261
F-statistic	0.295	0.124	0.414
Prob(F-statistic)	0.828	0.884	0.666
Jarque-Bera	2.237	2.222	2.607
White	0.392	0.408	0.267
RESET(2)	0.001	0.027	0.010

Table A3.36: Second-stage regression results for the distribution sector, using the Mode 4 TRI

Dependent Variable: ADPCM0204			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
TRI_M4	0.132 (0.095)*	0.133 (0.096)*	0.122 (0.093)
INDSALES0204	0.000 (0.000)***	0.000 (0.000)***	
GINDSALES0204	-0.139 (0.152)		-0.151 (0.148)
C	-1.886 (0.161)***	-1.923 (0.171)***	-1.853 (0.153)***
Observations	26	26	26
R-squared	0.128	0.108	0.109
Adjusted R-squared	0.010	0.031	0.031
S.E. of regression	0.254	0.251	0.251
F-statistic	1.080	1.399	1.405
Prob(F-statistic)	0.378	0.267	0.266
Jarque-Bera	4.441*	4.975**	4.861**
White	0.354	0.35	0.363
RESET(2)	0.492	0.705	0.600

Table A3.37: Second-stage regression results for the distribution sector, using all Modal TRIs

Dependent Variable: ADPCM0204			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
TRI_M1	-0.200 (0.112)**	-0.222 (0.095)***	-0.203 (0.108)**
TRI_M2	0.068 (0.126)	0.091 (0.108)	0.068 (0.123)
TRI_M3	0.029 (0.075)	0.065 (0.068)	0.024 (0.065)
TRI_M4	0.160 (0.075)***	0.158 (0.072)***	0.157 (0.072)***
INDSALES0204	0.000 (0.000)		
GINDSALES0204	-0.123 (0.135)	0.000 (0.000)	-0.135 (0.139)
C	-1.855 (0.180)***	-1.906 (0.179)***	-1.838 (0.153)***
Observations	26	26	26
R-squared	0.334	0.326	0.332
Adjusted R-squared	0.124	0.157	0.165
S.E. of regression	0.239	0.234	0.233
F-statistic	1.588	1.930	1.988
Prob(F-statistic)	0.205	0.134	0.124
Jarque-Bera	25.880***	26.431***	27.526***
White	0.067	0.088	0.067
RESET(2)	1.059	0.879	0.982

5. Confidence intervals

This section contains the confidence intervals for each estimated sectoral aggregate and modal tax equivalents.

Table A3.38: Estimated aggregate tax equivalents (percent on price) and 70% confidence interval for the banking sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	6.671	0.031	13.299
Argentina	9.019	0.041	18.171
Bolivia	10.509	0.047	21.315
Brazil	13.174	0.059	27.035
Bulgaria	5.461	0.025	10.828
Chile	10.076	0.046	20.398
China	21.577	0.093	45.904
Colombia	17.686	0.077	37.010
Croatia	7.751	0.035	15.528
Ecuador	7.698	0.035	15.419
Estonia	2.230	0.010	4.357
India	27.045	0.114	58.858
Latvia	3.479	0.016	6.837
Lithuania	1.640	0.008	3.195
Macedonia	14.967	0.066	30.956
Malaysia	34.170	0.140	76.536
Moldova	7.609	0.035	15.235
Morocco	17.281	0.076	36.100
Peru	7.195	0.033	14.378
Romania	3.264	0.015	6.407
Russia	25.513	0.108	55.177
Thailand	17.917	0.078	37.532
Venezuela	16.691	0.073	34.779
Egypt	24.381	0.104	52.481
Jordan	2.764	0.013	5.413
Serbia and Montenegro	19.009	0.083	40.005
Tunisia	14.470	0.064	29.863
Zambia	11.321	0.051	23.045

Table A3.39: Estimated Mode 1 tax equivalents (percent on cost) and 70% confidence interval for the banking sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		Lower Bound	Upper Bound
Albania	1.115	0.000	9.694
Argentina	2.203	0.000	19.943
Bolivia	0.817	0.000	7.029
Brazil	0.063	0.000	0.531
Bulgaria	1.022	0.000	8.856
Chile	0.470	0.000	3.992
China	1.990	0.000	17.870
Colombia	1.022	0.000	8.856
Croatia	1.370	0.000	12.027
Ecuador	1.577	0.000	13.947
Estonia	0.267	0.000	2.247
India	1.990	0.000	17.870
Latvia	0.063	0.000	0.531
Lithuania	0.063	0.000	0.531
Macedonia	2.996	0.000	27.939
Malaysia	1.990	0.000	17.870
Moldova	1.022	0.000	8.856
Morocco	1.990	0.000	17.870
Peru	0.817	0.000	7.029
Romania	0.199	0.000	1.672
Russia	1.990	0.000	17.870
Thailand	1.990	0.000	17.870
Venezuela	1.227	0.000	10.714
Egypt	1.990	0.000	17.870
Jordan	0.470	0.000	3.992
Serbia and Montenegro	2.996	0.000	27.939
Tunisia	1.990	0.000	17.870
Zambia	1.022	0.000	8.856

Table A3.40: Estimated Mode 2 tax equivalents (percent on cost) and 70% confidence interval for the banking sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	2.357	0.000	10.012
Argentina	0.000	0.000	0.000
Bolivia	2.357	0.000	10.012
Brazil	0.000	0.000	0.000
Bulgaria	2.357	0.000	10.012
Chile	2.357	0.000	10.012
China	4.770	0.000	21.027
Colombia	4.770	0.000	21.027
Croatia	2.357	0.000	10.012
Ecuador	0.000	0.000	0.000
Estonia	0.000	0.000	0.000
India	4.770	0.000	21.027
Latvia	0.000	0.000	0.000
Lithuania	0.000	0.000	0.000
Macedonia	4.770	0.000	21.027
Malaysia	4.770	0.000	21.027
Moldova	2.357	0.000	10.012
Morocco	4.770	0.000	21.027
Peru	2.357	0.000	10.012
Romania	2.357	0.000	10.012
Russia	4.770	0.000	21.027
Thailand	4.770	0.000	21.027
Venezuela	4.770	0.000	21.027
Egypt	4.770	0.000	21.027
Jordan	0.000	0.000	0.000
Serbia and Montenegro	7.316	0.000	33.530
Tunisia	4.770	0.000	21.027
Zambia	2.357	0.000	10.012

Table A3.41: Estimated Mode 3 tax equivalents (percent on price) and 70% confidence interval for the banking sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	12.505	0.000	37.142
Argentina	14.500	0.000	43.758
Bolivia	15.220	0.000	46.195
Brazil	23.639	0.000	76.617
Bulgaria	12.505	0.000	37.142
Chile	18.798	0.000	58.684
China	21.461	0.000	68.401
Colombia	19.539	0.000	61.352
Croatia	13.421	0.000	40.156
Ecuador	14.612	0.000	44.137
Estonia	13.421	0.000	40.156
India	25.398	0.000	83.432
Latvia	15.439	0.000	46.942
Lithuania	13.421	0.000	40.156
Macedonia	13.495	0.000	40.402
Malaysia	31.818	0.000	109.702
Moldova	14.420	0.000	43.488
Morocco	18.907	0.000	59.076
Peru	14.371	0.000	43.324
Romania	12.505	0.000	37.142
Russia	23.900	0.000	77.618
Thailand	19.608	0.000	61.600
Venezuela	17.637	0.000	54.562
Egypt	25.204	0.000	82.675
Jordan	13.326	0.000	39.842
Serbia and Montenegro	15.442	0.000	46.951
Tunisia	16.309	0.000	49.927
Zambia	17.341	0.000	53.520

Table A3.42: Estimated Mode 4 tax equivalents (percent on price) and 70% confidence interval for the banking sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	0.568	0.000	4.999
Argentina	0.568	0.000	4.999
Bolivia	2.423	0.000	22.894
Brazil	1.320	0.000	11.953
Bulgaria	0.992	0.000	8.869
Chile	1.165	0.000	10.488
China	0.587	0.000	5.167
Colombia	1.898	0.000	17.578
Croatia	0.605	0.000	5.331
Ecuador	2.051	0.000	19.101
Estonia	0.414	0.000	3.625
India	0.796	0.000	7.065
Latvia	0.242	0.000	2.106
Lithuania	1.357	0.000	12.307
Macedonia	0.242	0.000	2.106
Malaysia	0.951	0.000	8.488
Moldova	0.242	0.000	2.106
Morocco	0.587	0.000	5.167
Peru	1.116	0.000	10.033
Romania	0.172	0.000	1.488
Russia	2.446	0.000	23.138
Thailand	1.339	0.000	12.132
Turkey	1.316	0.000	11.915
Venezuela	2.382	0.000	22.468
Egypt	1.520	0.000	13.868
Jordan	1.717	0.000	15.785
Serbia and Montenegro	0.384	0.000	3.355
Tunisia	2.660	0.000	25.365
Zambia	0.172	0.000	1.488

Table A3.43: Estimated aggregate tax equivalents (percent on cost) and 70% confidence interval for the insurance sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		Lower Bound	Upper Bound
Albania	18.00	0.00	54.67
Argentina	26.01	0.00	83.87
Bolivia	45.93	0.00	170.67
Brazil	44.14	0.00	161.99
Bulgaria	33.30	0.00	113.24
Chile	25.51	0.00	81.94
China	68.98	0.00	298.31
Colombia	27.20	0.00	88.47
Croatia	18.17	0.00	55.23
Ecuador	54.51	0.00	214.64
Egypt	36.76	0.00	128.11
India	112.96	0.00	632.63
Jordan	47.53	0.00	178.53
Macedonia	38.81	0.00	137.26
Malaysia	94.48	0.00	476.77
Moldova	21.77	0.00	68.03
Morocco	67.42	0.00	288.71
Peru	17.74	0.00	53.77
Romania	22.73	0.00	71.51
Russia	68.29	0.00	294.01
Serbia and Montenegro	76.18	0.00	344.58
Thailand	61.53	0.00	253.67
Tunisia	54.56	0.00	214.89
Uruguay	39.69	0.00	141.24
Venezuela	40.35	0.00	144.23

Table A3.44: Estimated Mode 1 tax equivalents (percent on cost) and 70% confidence interval for the insurance sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	58.06	19.45	114.94
Argentina	93.72	29.27	202.00
Bolivia	114.46	34.47	257.98
Brazil	47.19	16.19	90.82
Bulgaria	103.83	31.84	228.80
Chile	32.96	11.69	60.98
China	130.29	38.24	303.23
Colombia	14.14	5.27	24.74
Croatia	58.06	19.45	114.94
Ecuador	144.79	41.56	346.54
Egypt	32.96	11.69	60.98
India	137.43	39.89	324.33
Jordan	89.82	28.25	191.91
Macedonia	50.22	17.11	97.42
Malaysia	137.43	39.89	324.33
Moldova	58.06	19.45	114.94
Morocco	144.79	41.56	346.54
Peru	16.49	6.10	29.05
Romania	14.14	5.27	24.74
Russia	114.46	34.47	257.98
Serbia and Montenegro	144.79	41.56	346.54
Thailand	39.89	13.92	75.27
Tunisia	144.79	41.56	346.54
Uruguay	114.46	34.47	257.98
Venezuela	28.96	10.38	52.97

Table A3.45: Estimated Mode 2 tax equivalents (percent on cost) and 70% confidence interval for the insurance sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	0.00	0.00	0.00
Argentina	55.70	3.76	142.01
Bolivia	66.68	4.35	177.25
Brazil	29.54	2.18	67.65
Bulgaria	61.09	4.05	159.03
Chile	21.01	1.60	46.33
China	9.26	0.74	19.33
Colombia	9.26	0.74	19.33
Croatia	35.87	2.59	84.39
Ecuador	82.11	5.12	230.86
Egypt	9.26	0.74	19.33
India	78.43	4.94	217.63
Jordan	53.59	3.64	135.51
Macedonia	31.32	2.30	72.27
Malaysia	78.43	4.94	217.63
Moldova	0.00	0.00	0.00
Morocco	82.11	5.12	230.86
Peru	9.26	0.74	19.33
Romania	9.26	0.74	19.33
Russia	66.68	4.35	177.25
Serbia and Montenegro	82.11	5.12	230.86
Thailand	7.05	0.57	14.56
Tunisia	40.58	2.88	97.36
Uruguay	66.68	4.35	177.25
Venezuela	18.57	1.43	40.48

Table A3.46: Estimated Mode 3 tax equivalents (percent on price) and 70% confidence interval for the insurance sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	17.99	0.00	56.74
Argentina	8.43	0.00	24.58
Bolivia	21.84	0.00	71.00
Brazil	55.42	0.00	231.26
Bulgaria	13.14	0.00	39.83
Chile	19.55	0.00	62.41
China	88.19	0.00	456.98
Colombia	31.44	0.00	110.11
Croatia	5.58	0.00	15.89
Ecuador	39.21	0.00	145.60
Egypt	40.22	0.00	150.48
India	142.72	0.00	1011.74
Jordan	34.40	0.00	123.24
Macedonia	40.00	0.00	149.38
Malaysia	105.04	0.00	603.07
Moldova	24.78	0.00	82.44
Morocco	49.82	0.00	199.84
Peru	20.99	0.00	67.80
Romania	29.63	0.00	102.34
Russia	74.67	0.00	354.87
Serbia and Montenegro	58.40	0.00	248.78
Thailand	102.43	0.00	579.00
Tunisia	41.47	0.00	156.61
Uruguay	24.35	0.00	80.76
Venezuela	46.31	0.00	181.14

Table A3.47: Estimated Mode 4 tax equivalents (percent on cost) and 70% confidence interval for the insurance sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	29.00	5.53	58.53
Argentina	28.26	5.40	56.89
Bolivia	131.35	19.40	356.18
Brazil	60.36	10.50	135.03
Bulgaria	38.52	7.13	80.33
Chile	58.66	10.25	130.54
China	77.94	12.96	183.70
Colombia	113.02	17.34	292.89
Croatia	26.84	5.15	53.75
Ecuador	112.34	17.26	290.62
Egypt	92.94	14.90	228.44
India	37.88	7.03	78.84
Jordan	121.76	18.34	322.54
Macedonia	12.33	2.49	23.43
Malaysia	71.25	12.04	164.70
Moldova	12.33	2.49	23.43
Morocco	50.80	9.07	110.29
Peru	98.17	15.56	244.75
Romania	11.52	2.33	21.81
Russia	124.56	18.65	332.25
Serbia and Montenegro	20.74	4.06	40.64
Thailand	85.95	14.01	207.25
Tunisia	199.40	26.09	627.40
Uruguay	24.74	4.78	49.19
Venezuela	174.59	23.81	522.03

Table A3.48: Estimated aggregate tax equivalents (percent on cost) and 70% confidence interval for the fixed-line telecommunications sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	3.78	0.00	53.41
Argentina	1.11	0.00	13.64
Bolivia	5.48	0.00	85.18
Brazil	1.58	0.00	19.84
Bulgaria	1.56	0.00	19.55
Chile	1.48	0.00	18.42
China	6.70	0.00	111.34
Colombia	4.76	0.00	71.02
Ecuador	5.56	0.00	86.85
Egypt	9.36	0.00	180.85
India	5.68	0.00	89.16
Jordan	6.80	0.00	113.69
Macedonia	6.02	0.00	96.37
Malaysia	4.90	0.00	73.80
Moldova	3.35	0.00	46.21
Morocco	10.19	0.00	206.65
Peru	1.35	0.00	16.73
Romania	0.58	0.00	6.86
Russia	5.59	0.00	87.43
Serbia & Montenegro	7.47	0.00	129.80
Spain	1.82	0.00	23.15
Thailand	6.60	0.00	109.12
Tunisia	10.54	0.00	217.97
Uruguay	5.22	0.00	79.92
Venezuela	1.59	0.00	20.01

Table A3.49: Estimated Mode 1 tax equivalents (percent on price) and 70% confidence interval for the fixed-line telecommunications sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	12.36	0.00	48.03
Argentina	0.00	0.00	0.00
Bolivia	15.41	0.00	61.98
Brazil	0.00	0.00	0.00
Bulgaria	7.43	0.00	27.29
Chile	0.00	0.00	0.00
China	18.03	0.00	74.70
Colombia	25.11	0.00	112.52
Ecuador	6.00	0.00	21.67
Egypt	7.43	0.00	27.29
India	7.43	0.00	27.29
Jordan	13.88	0.00	54.87
Macedonia	11.34	0.00	43.57
Malaysia	0.00	0.00	0.00
Moldova	0.00	0.00	0.00
Morocco	20.71	0.00	88.42
Peru	7.42	0.00	27.25
Romania	0.00	0.00	0.00
Russia	7.43	0.00	27.29
Serbia and Montenegro	7.43	0.00	27.29
Thailand	20.70	0.00	88.36
Tunisia	20.71	0.00	88.42
Uruguay	0.00	0.00	0.00
Venezuela	7.42	0.00	27.25

Table A3.50: Estimated Mode 2 tax equivalents (percent on price) and 70% confidence interval for the fixed-line telecommunications sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	36.11	7.77	71.69
Argentina	0.00	0.00	0.00
Bolivia	0.00	0.00	0.00
Brazil	36.11	7.77	71.69
Bulgaria	0.00	0.00	0.00
Chile	0.00	0.00	0.00
China	36.11	7.77	71.69
Colombia	36.11	7.77	71.69
Ecuador	36.11	7.77	71.69
Egypt	36.11	7.77	71.69
India	36.11	7.77	71.69
Jordan	0.00	0.00	0.00
Macedonia	36.11	7.77	71.69
Malaysia	36.11	7.77	71.69
Moldova	36.11	7.77	71.69
Morocco	36.11	7.77	71.69
Peru	36.11	7.77	71.69
Romania	0.00	0.00	0.00
Russia	16.67	3.81	31.03
Serbia and Montenegro	36.11	7.77	71.69
Thailand	36.11	7.77	71.69
Tunisia	36.11	7.77	71.69
Uruguay	0.00	0.00	0.00
Venezuela	36.11	7.77	71.69

Table A3.51: Estimated Mode 3 tax equivalents (percent on price) and 70% confidence interval for the fixed-line telecommunications sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		Lower Bound	Upper Bound
Albania	25.36	8.47	46.16
Argentina	11.83	4.11	20.66
Bolivia	45.87	14.55	88.48
Brazil	7.26	2.55	12.49
Bulgaria	3.00	1.07	5.09
Chile	15.38	5.28	27.15
China	64.45	19.60	130.51
Colombia	26.78	8.91	48.94
Ecuador	55.95	17.34	110.87
Egypt	132.24	35.42	311.53
India	55.89	17.32	110.73
Jordan	78.32	23.14	164.10
Macedonia	61.87	18.92	124.49
Malaysia	60.96	18.68	122.36
Moldova	31.05	10.22	57.46
Morocco	132.24	35.42	311.53
Peru	3.00	1.07	5.09
Romania	6.91	2.43	11.88
Russia	58.12	17.92	115.82
Serbia and Montenegro	83.15	24.32	176.20
Thailand	72.72	21.73	150.32
Tunisia	132.24	35.42	311.53
Uruguay	77.18	22.85	161.27
Venezuela	5.71	2.02	9.76

Table A3.52: Estimated Mode 4 tax equivalents (percent on price) and 70% confidence interval for the fixed-line telecommunications sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	5.73	1.40	10.40
Argentina	14.22	3.37	26.62
Bolivia	79.70	15.72	183.10
Brazil	39.25	8.60	80.02
Bulgaria	29.66	6.68	58.60
Chile	36.35	8.03	73.41
China	33.11	7.38	66.17
Colombia	59.12	12.26	128.11
Ecuador	66.23	13.49	146.51
Egypt	33.40	7.44	66.80
India	22.87	5.26	44.14
Jordan	58.32	12.12	126.08
Macedonia	6.35	1.55	11.55
Malaysia	27.04	6.14	52.96
Moldova	6.35	1.55	11.55
Morocco	17.60	4.12	33.36
Peru	43.27	9.37	89.33
Romania	5.16	1.26	9.34
Russia	57.16	11.92	123.15
Serbia and Montenegro	8.77	2.12	16.11
Thailand	43.38	9.39	89.61
Tunisia	110.07	20.30	273.53
Uruguay	17.43	4.08	33.01
Venezuela	82.69	16.19	191.51

Table A3.53: Estimated aggregate tax equivalents (percent on cost) and 70% confidence interval for the mobile telecommunications sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	5.49	0.00	30.66
Argentina	3.03	0.00	16.13
Bolivia	7.77	0.00	45.45
Brazil	8.30	0.00	49.03
Bulgaria	5.65	0.00	31.68
Chile	3.11	0.00	16.58
China	18.56	0.00	134.48
Colombia	4.32	0.00	23.59
Ecuador	5.52	0.00	30.88
Egypt	5.73	0.00	32.16
India	18.44	0.00	133.31
Jordan	3.88	0.00	20.99
Macedonia	5.12	0.00	28.39
Malaysia	16.98	0.00	119.31
Moldova	4.52	0.00	24.79
Morocco	7.61	0.00	44.37
Peru	1.42	0.00	7.31
Romania	2.90	0.00	15.40
Russia	14.13	0.00	93.78
Serbia and Montenegro	13.60	0.00	89.31
Thailand	23.50	0.00	187.70
Tunisia	5.57	0.00	31.20
Uruguay	1.32	0.00	6.76
Venezuela	7.07	0.00	40.80

Table A3.54: Estimated Mode 1 tax equivalents (percent on price) and 70% confidence interval for the mobile telecommunications sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	0.00	0.00	0.00
Argentina	0.00	0.00	0.00
Bolivia	28.66	0.00	93.61
Brazil	13.43	0.00	39.14
Bulgaria	13.43	0.00	39.14
Chile	0.00	0.00	0.00
China	13.43	0.00	39.14
Colombia	0.00	0.00	0.00
Ecuador	13.43	0.00	39.14
Egypt	13.43	0.00	39.14
India	13.43	0.00	39.14
Jordan	0.00	0.00	0.00
Macedonia	0.00	0.00	0.00
Malaysia	0.00	0.00	0.00
Moldova	0.00	0.00	0.00
Morocco	28.66	0.00	93.61
Peru	0.00	0.00	0.00
Romania	0.00	0.00	0.00
Russia	13.43	0.00	39.14
Serbia and Montenegro	28.66	0.00	93.61
Thailand	13.43	0.00	39.14
Tunisia	13.43	0.00	39.14
Uruguay	0.00	0.00	0.00
Venezuela	28.66	0.00	93.61

Table A3.55: Estimated Mode 2 tax equivalents (percent on price) and 70% confidence interval for the mobile telecommunications sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Albania	0.00	0.00	0.00
Argentina	0.00	0.00	0.00
Bolivia	0.00	0.00	0.00
Brazil	0.00	0.00	0.00
Bulgaria	42.41	0.00	118.49
Chile	0.00	0.00	0.00
China	0.00	0.00	0.00
Colombia	0.00	0.00	0.00
Ecuador	0.00	0.00	0.00
Egypt	0.00	0.00	0.00
India	42.41	0.00	118.49
Jordan	0.00	0.00	0.00
Macedonia	0.00	0.00	0.00
Malaysia	0.00	0.00	0.00
Moldova	0.00	0.00	0.00
Morocco	0.00	0.00	0.00
Peru	0.00	0.00	0.00
Romania	42.41	0.00	118.49
Russia	42.41	0.00	118.49
Serbia and Montenegro	102.80	0.00	377.37
Thailand	42.41	0.00	118.49
Tunisia	0.00	0.00	0.00
Uruguay	0.00	0.00	0.00
Venezuela	42.41	0.00	118.49

Table A3.56: Estimated Mode 3 tax equivalents (percent on price) and 70% confidence interval for the mobile telecommunications sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		Lower Bound	Upper Bound
Albania	4.38	0.00	15.26
Argentina	1.46	0.00	4.93
Bolivia	0.56	0.00	1.87
Brazil	4.03	0.00	13.98
Bulgaria	0.42	0.00	1.39
Chile	1.18	0.00	3.96
China	12.12	0.00	46.08
Colombia	2.63	0.00	8.98
Ecuador	1.87	0.00	6.35
Egypt	2.34	0.00	7.97
India	10.45	0.00	39.00
Jordan	2.34	0.00	7.97
Macedonia	4.07	0.00	14.14
Malaysia	11.58	0.00	43.78
Moldova	2.92	0.00	9.99
Morocco	1.46	0.00	4.93
Peru	0.76	0.00	2.55
Romania	0.59	0.00	1.96
Russia	6.59	0.00	23.56
Serbia and Montenegro	1.75	0.00	5.90
Thailand	13.75	0.00	53.24
Tunisia	1.18	0.00	3.96
Uruguay	0.28	0.00	0.93
Venezuela	0.31	0.00	1.02

Table A3.57: Estimated Mode 4 tax equivalents (percent on price) and 70% confidence interval for the mobile telecommunications sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		Lower Bound	Upper Bound
Albania	5.59	1.74	9.33
Argentina	13.85	4.20	23.71
Bolivia	77.16	19.91	155.58
Brazil	38.14	10.80	69.91
Bulgaria	28.85	8.38	51.57
Chile	35.33	10.08	64.28
China	32.19	9.27	58.08
Colombia	57.33	15.48	110.36
Ecuador	64.19	17.05	125.60
Egypt	32.47	9.34	58.62
India	22.25	6.59	39.06
Jordan	56.56	15.30	108.67
Macedonia	6.19	1.93	10.36
Malaysia	26.31	7.70	46.70
Moldova	6.19	1.93	10.36
Morocco	17.14	5.15	29.64
Peru	42.02	11.78	77.82
Romania	5.03	1.57	8.38
Russia	55.44	15.03	106.23
Serbia and Montenegro	8.55	2.64	14.41
Thailand	42.13	11.81	78.05
Tunisia	106.31	25.85	228.16
Uruguay	16.97	5.10	29.33
Venezuela	80.03	20.52	162.42

Table A3.58: Estimated aggregate tax equivalents (percent on cost) and 70% confidence interval for the engineering sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		Lower Bound	Upper Bound
Argentina	0.94	0.00	16.64
Brazil	2.61	0.00	52.95
Chile	1.91	0.00	36.74
China	3.14	0.00	66.74
Indonesia	2.88	0.00	59.97
Malaysia	3.72	0.00	82.79
Philippines	1.34	0.00	24.51
Portugal	0.90	0.00	15.89
Russia	0.84	0.00	14.76
Singapore	1.02	0.00	18.26
Thailand	2.55	0.00	51.57

Table A3.59: Estimated Mode 1 tax equivalents (percent on cost) and 70% confidence interval for the engineering sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Argentina	0.00	0.00	0.00
Brazil	91.88	11.67	231.21
Chile	91.88	11.67	231.21
China	91.88	11.67	231.21
Indonesia	91.88	11.67	231.21
Malaysia	38.52	5.68	81.99
Philippines	91.88	11.67	231.21
Russia	38.52	5.68	81.99
Singapore	91.88	11.67	231.21
Thailand	91.88	11.67	231.21

Table A3.60: Estimated Mode 2 tax equivalents (percent on cost) and 70% confidence interval for the engineering sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Argentina	0.00	0.00	0.00
Brazil	16.78	0.00	190.65
Chile	16.78	0.00	190.65
China	0.00	0.00	0.00
Indonesia	16.78	0.00	190.65
Malaysia	8.07	0.00	70.49
Philippines	16.78	0.00	190.65
Russia	0.00	0.00	0.00
Singapore	0.00	0.00	0.00
Thailand	0.00	0.00	0.00

Table A3.61: Estimated Mode 3 tax equivalents (percent on cost) and 70% confidence interval for the engineering sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Argentina	0.31	0.00	3.25
Brazil	3.05	0.00	36.39
Chile	0.47	0.00	4.97
China	4.99	0.00	65.45
Indonesia	2.89	0.00	34.16
Malaysia	8.41	0.00	130.39
Mexico	2.00	0.00	22.74
Philippines	0.31	0.00	3.25
Portugal	1.18	0.00	12.92
Russia	0.31	0.00	3.25
Singapore	0.31	0.00	3.25
Thailand	5.28	0.00	70.14

Table A3.62: Estimated Mode 4 tax equivalents (percent on cost) and 70% confidence interval for the engineering sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Argentina	2.49	0.00	25.61
Brazil	4.69	0.00	53.09
Chile	6.07	0.00	72.87
China	5.96	0.00	71.21
Indonesia	6.24	0.00	75.42
Malaysia	2.04	0.00	20.62
Philippines	6.19	0.00	74.74
Russia	3.14	0.00	33.31
Singapore	3.37	0.00	36.08
Thailand	2.78	0.00	28.95

Table A3.63: Estimated aggregate tax equivalents (percent on cost) and 70% confidence interval for the distribution sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Argentina	6.10	1.44	10.06
Brazil	31.92	6.93	56.61
Chile	41.94	8.84	76.31
China	38.43	8.18	69.31
Colombia	52.12	10.68	97.25
Hong Kong	13.37	3.08	22.53
India	77.44	14.87	153.08
Indonesia	67.70	13.32	130.97
Malaysia	71.23	13.89	138.90
Morocco	38.60	8.21	69.64
Philippines	69.05	13.54	134.01
Russia	48.05	9.95	88.78
Singapore	36.04	7.73	64.60
South Africa	4.26	1.01	6.99
Thailand	32.83	7.11	58.36
Uruguay	32.96	7.13	58.62
Venezuela	63.74	12.66	122.21
Vietnam	82.75	15.70	165.47
Zambia	42.69	8.98	77.83

Table A3.64: Estimated Mode 1 tax equivalents (percent on cost) and 70% confidence interval for the distribution sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		Lower Bound	Upper Bound
Argentina	0.00	0.00	0.00
Brazil	13.68	5.61	22.81
Chile	29.23	11.53	50.82
China	13.68	5.61	22.81
Colombia	29.23	11.53	50.82
Hong Kong	13.68	5.61	22.81
India	29.23	11.53	50.82
Indonesia	29.23	11.53	50.82
Malaysia	29.23	11.53	50.82
Morocco	29.23	11.53	50.82
Philippines	29.23	11.53	50.82
Russia	29.23	11.53	50.82
Singapore	29.23	11.53	50.82
South Africa	0.00	0.00	0.00
Thailand	13.68	5.61	22.81
Uruguay	21.21	8.53	36.09
Venezuela	0.00	0.00	0.00
Vietnam	0.00	0.00	0.00
Zambia	0.00	0.00	0.00

Table A3.65: Estimated Mode 2 tax equivalents (percent on cost) and 70% confidence interval for the distribution sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		Lower Bound	Upper Bound
Argentina	0.00	0.00	0.00
Brazil	8.08	0.00	17.02
Chile	16.82	0.00	36.94
China	0.00	0.00	0.00
Colombia	16.82	0.00	36.94
Hong Kong	3.96	0.00	8.18
India	16.82	0.00	36.94
Indonesia	16.82	0.00	36.94
Malaysia	16.82	0.00	36.94
Morocco	16.82	0.00	36.94
Philippines	16.82	0.00	36.94
Russia	16.82	0.00	36.94
Singapore	16.82	0.00	36.94
South Africa	0.00	0.00	0.00
Spain	0.00	0.00	0.00
Thailand	0.00	0.00	0.00
Uruguay	12.37	0.00	26.59
Venezuela	0.00	0.00	0.00
Vietnam	0.00	0.00	0.00
Zambia	0.00	0.00	0.00

Table A3.66: Estimated Mode 3 tax equivalents (% on cost) and 70% confidence interval for the distribution sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Argentina	0.05	0.00	0.17
Brazil	4.19	0.00	14.26
Chile	2.18	0.00	7.25
China	7.24	0.00	25.47
Colombia	4.47	0.00	15.26
Hong Kong	0.03	0.00	0.08
India	4.74	0.00	16.22
Indonesia	5.83	0.00	20.19
Malaysia	7.31	0.00	25.75
Morocco	1.61	0.00	5.31
Philippines	6.56	0.00	22.92
Russia	3.55	0.00	11.97
Singapore	0.03	0.00	0.08
South Africa	0.03	0.00	0.08
Thailand	5.47	0.00	18.88
Uruguay	1.22	0.00	4.03
Venezuela	4.30	0.00	14.66
Vietnam	9.66	0.00	34.90
Zambia	3.69	0.00	12.48

Table A3.67: Estimated Mode 4 tax equivalents (percent on price) and 70% confidence interval for the distribution sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Argentina	23.78	6.54	42.38
Brazil	58.90	14.75	115.34
Chile	36.99	9.80	68.43
China	12.14	3.46	20.90
Colombia	30.40	8.20	55.21
Hong Kong	12.14	3.46	20.90
India	21.26	5.89	37.61
Indonesia	42.47	11.09	79.73
Malaysia	21.26	5.89	37.61
Morocco	9.26	2.67	15.80
Philippines	33.84	9.04	62.05
Russia	33.11	8.87	60.59
Singapore	18.14	5.08	31.80
South Africa	23.78	6.54	42.38
Thailand	33.84	9.04	62.05
Uruguay	23.78	6.54	42.38
Venezuela	33.84	9.04	62.05
Vietnam	30.40	8.20	55.21

Table A3.68: Estimated aggregate tax equivalents (percent on cost) and 70% confidence interval for the distribution sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		Lower Bound	Upper Bound
Argentina	6.10	1.44	10.06
Brazil	31.92	6.93	56.61
Chile	41.94	8.84	76.31
China	38.43	8.18	69.31
Colombia	52.12	10.68	97.25
Hong Kong	13.37	3.08	22.53
India	77.44	14.87	153.08
Indonesia	67.70	13.32	130.97
Malaysia	71.23	13.89	138.90
Morocco	38.60	8.21	69.64
Philippines	69.05	13.54	134.01
Russia	48.05	9.95	88.78
Singapore	36.04	7.73	64.60
South Africa	4.26	1.01	6.99
Thailand	32.83	7.11	58.36
Uruguay	32.96	7.13	58.62
Venezuela	63.74	12.66	122.21
Vietnam	82.75	15.70	165.47
Zambia	42.69	8.98	77.83

Table A3.69: Estimated Mode 1 tax equivalents (percent on cost) and 70% confidence interval for the distribution sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		Lower Bound	Upper Bound
Argentina	0.00	0.00	0.00
Brazil	13.68	5.61	22.81
Chile	29.23	11.53	50.82
China	13.68	5.61	22.81
Colombia	29.23	11.53	50.82
Hong Kong	13.68	5.61	22.81
India	29.23	11.53	50.82
Indonesia	29.23	11.53	50.82
Malaysia	29.23	11.53	50.82
Morocco	29.23	11.53	50.82
Philippines	29.23	11.53	50.82
Russia	29.23	11.53	50.82
Singapore	29.23	11.53	50.82
South Africa	0.00	0.00	0.00
Thailand	13.68	5.61	22.81
Uruguay	21.21	8.53	36.09
Venezuela	0.00	0.00	0.00
Vietnam	0.00	0.00	0.00
Zambia	0.00	0.00	0.00

Table A3.70: Estimated Mode 2 tax equivalents (percent on cost) and 70% confidence interval for the distribution sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Argentina	0.00	0.00	0.00
Brazil	8.08	0.00	17.02
Chile	16.82	0.00	36.94
China	0.00	0.00	0.00
Colombia	16.82	0.00	36.94
Hong Kong	3.96	0.00	8.18
India	16.82	0.00	36.94
Indonesia	16.82	0.00	36.94
Luxembourg	0.00	0.00	0.00
Malaysia	16.82	0.00	36.94
Morocco	16.82	0.00	36.94
Philippines	16.82	0.00	36.94
Russia	16.82	0.00	36.94
Singapore	16.82	0.00	36.94
South Africa	0.00	0.00	0.00
Thailand	0.00	0.00	0.00
Uruguay	12.37	0.00	26.59
Venezuela	0.00	0.00	0.00
Vietnam	0.00	0.00	0.00
Zambia	0.00	0.00	0.00

Table A3.71: Estimated Mode 3 tax equivalents (percent on cost) and 70% confidence interval for the distribution sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Argentina	0.05	0.00	0.17
Brazil	4.19	0.00	14.26
Chile	2.18	0.00	7.25
China	7.24	0.00	25.47
Colombia	4.47	0.00	15.26
Hong Kong	0.03	0.00	0.08
India	4.74	0.00	16.22
Indonesia	5.83	0.00	20.19
Malaysia	7.31	0.00	25.75
Morocco	1.61	0.00	5.31
Philippines	6.56	0.00	22.92
Russia	3.55	0.00	11.97
Singapore	0.03	0.00	0.08
South Africa	0.03	0.00	0.08
Thailand	5.47	0.00	18.88
Uruguay	1.22	0.00	4.03
Venezuela	4.30	0.00	14.66

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Vietnam	9.66	0.00	34.90
Zambia	3.69	0.00	12.48

Table A3.72: Estimated Mode 4 tax equivalents (percent on price) and 70% confidence interval for the distribution sector

Country	Estd. Tax Equivalent	Bootstrap 70% Confidence Interval	
		<i>Lower Bound</i>	<i>Upper Bound</i>
Argentina	23.78	6.54	42.38
Brazil	58.90	14.75	115.34
Chile	36.99	9.80	68.43
China	12.14	3.46	20.90
Colombia	30.40	8.20	55.21
Hong Kong	12.14	3.46	20.90
India	21.26	5.89	37.61
Indonesia	42.47	11.09	79.73
Malaysia	21.26	5.89	37.61
Morocco	9.26	2.67	15.80
Philippines	33.84	9.04	62.05
Russia	33.11	8.87	60.59
Singapore	18.14	5.08	31.80
South Africa	23.78	6.54	42.38
Thailand	33.84	9.04	62.05
Uruguay	23.78	6.54	42.38
Venezuela	33.84	9.04	62.05
Vietnam	30.40	8.20	55.21
Zambia	10.98	3.14	18.84

Source: For all tables in Annex 3, own calculations.