

Policy Barriers to International Trade in Services

Evidence from a New Database

Ingo Borchert
Batshur Gootiiz
Aaditya Mattoo

The World Bank
Development Research Group
Trade and Integration Team
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Abstract

Surprisingly little is known about policies that affect international trade in services. Previous analyses have focused on policy commitments made by countries in international agreements but these commitments do not in many cases reflect actual policy. This paper describes a new initiative to collect comparable information on services trade policies for 103 countries, across a range of service sectors and the relevant modes of service delivery. The resultant database reveals interesting patterns in policy. Across regions, some of the fastest growing countries in Asia and the oil-rich Gulf states have the most restrictive policies in services, whereas some of the poorest countries are remarkably open. Across sectors, professional and transportation services are among the most protected in both industrial and developing

countries, while retail, telecommunications and even finance tend to be more open. An illustrative set of results suggests that trade policies matter for investment flows and access to services. In particular, restrictions on foreign acquisitions, discrimination in licensing, restrictions on the repatriation of earnings and lack of legal recourse all have a significant and sizable negative effect, reducing the expected value of sectoral foreign investment by \$2.2 billion over a 7-year period, compared with “open” policy regimes. In terms of access to services, credit as a share of gross domestic product is on average 3.3 percentage points lower in countries with major restrictions on the establishment of foreign banks as compared with those that only impose operational restrictions.

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Policy Barriers to International Trade in Services: Evidence from a New Database

Ingo Borchert, Batshur Gootiiz and Aaditya Mattoo*

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*World Bank, 1818 H Street NW, Washington DC 20433. Contact information: I.Borchert@sussex.ac.uk, bgootiiz@worldbank.org, and amattoo@worldbank.org. The authors would like to thank Rudolf Adlung, Nora Dihel, Ana Fernandes, Shushanik Hakobyan, Bernard Hoekman, Aart Kraay, Hildegunn Nordas, Sebastian Saez, David Tarr and the World Bank's Council of Chief Economists, for many helpful suggestions. We are grateful to Thelma Choi, Samantha De Martino, Yinuo Geng, Anna Rakhman, Nadia Rocha and, especially, Christine Lee, who contributed significantly to the creation of the database, and to Qinghua Zhao, who designed the website. This paper is part of a World Bank research project on trade in services supported in part by the governments of Norway, Sweden, and the United Kingdom through the Multidonor Trust Fund for Trade and Development, and by the UK Department for International Development (DFID). The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent, or any of the aforementioned individuals or institutions.

1. INTRODUCTION

Compared to the vast empirical literature on policies affecting trade in goods, the empirical analysis of services trade policy is still in its infancy. A major constraint has been inadequate data on policies affecting services trade, especially in developing countries. Previous research has tended to rely on secondary sources and policy commitments under international agreements (e.g. Hoekman 1996). However, it is widely recognized that these measures bear little resemblance to policy reality today, even if they approximated policy in the past. More recent work tends to be confined to specific countries and sectors (Warren and Findlay 2000, Centre for International Economics 2010, OECD 2011, Reisman and Vu 2012) or to restrictions on FDI alone (Golub and Koyama 2006, Golub 2009, World Bank 2010).

Our limited knowledge of the pattern of services policy contrasts with our growing awareness of the importance of services in economic activity. Today, some 80 percent of GDP in the US and the EU originates in services, and the proportion is well over 50 percent in most industrial and developing countries. As countries confront the challenge of boosting productivity, services policy reform is being identified as a priority from Europe to South East Asia, but with surprisingly little empirical evidence on how such reform is best designed. The US and EU account for over 60 percent of world services exports, and the service exports of India, China and Brazil have grown by well over 15 percent every year for the last decade. As these countries seek to sustain export growth and others to replicate it, international negotiators have been struggling to negotiate away policy barriers but with only limited knowledge of what these barriers actually are.

This paper describes a new Services Trade Restrictions Database (STRD), which collects and makes publicly available information on services trade policy assembled in a comparable manner for 103 countries and five sectors – financial services (banking and insurance), telecommunications, retail distribution, transportation and professional services (accounting and legal). We also make a small methodological contribution by proposing and comparing alternative ways of measuring the restrictiveness of services trade policy. In the process, we

identify interesting patterns of policy across countries and sectors, and present some initial evidence that services trade policy matters for economic performance.

Across regions some of the fastest growing countries in Asia and the oil-rich Gulf states have the most restrictive policies in services, whereas some other developing countries, including Cambodia, Ghana, Senegal, and Mongolia, are remarkably open. While most OECD countries are generally quite open overall, they tend to exhibit greater restrictiveness in transportation services and towards the movement of natural persons as service suppliers. In fact, across sectors, professional and transportation services are among the most protected in both industrial and developing countries, while retail, telecommunications and even finance tend to be more open.

An illustrative set of results suggests that services trade policies matter for investment flows and access to services. Accounting fully for country-specific and sector-specific sources of variation, we find that restrictions on foreign acquisitions, discrimination in licensing, restrictions on the repatriation of earnings and inadequate legal recourse all have a significant negative effect on investment inflows into services sectors. We find that such restrictions can reduce the expected value of sectoral foreign investment by \$2.2 billion over a 7-year period, compared to “open” policy regimes. In addition, based on an approach of ranking policy bundles, we estimate that credit as a share of GDP is on average 3.3 percentage points lower in countries with major restrictions on the establishment of foreign banks as compared to those that merely impose operational restrictions.

Four gaps in the data limit the scope of the present analysis and should be the focus of future data collection and research. First, we do not have adequate data on the existing market structure – e.g. the number of firms, their market share and ownership – across sectors and countries, which means that our policy measures capture the restrictions on entry into markets but do not capture the prevailing extent of competition between domestic and/or foreign firms. Second, we do not have good data on outcome variables such as prices, quality or diversity of services, which makes it hard to infer the restrictiveness of policies by econometrically analyzing their impact on outcome variables of interest (though we attempt

to do this for specific, well-defined cases in Section 6 below). Third, we are able to capture only limited information on the state of prudential and pro-competitive regulation, which makes it hard to assess how far these ostensibly non-discriminatory measures offer *de facto* protection to domestic service providers. More importantly, this gap makes it hard to assess how far the gains from market opening depend on the state of complementary regulation, and we emphasize that a mechanical elimination of trade barriers without reform of complementary regulation is not necessarily desirable in all sectors. Finally, we capture only limited information on the implementation of policies. For instance, we make an effort to identify certain aspects of the processes involved in licensing service providers, such as transparency and accountability, but the process remains opaque and it is hard to determine whether the processes in themselves offer protection to domestic providers.

The difficulty of the task we have set ourselves is well known and has inhibited efforts of similar scope in the past, despite the strong demand for better information from policy-makers, negotiators, business and researchers. Our main reason for presenting a product that is inevitably imperfect is to at least begin to enhance policy transparency and to encourage further research in this important area. Even in its present form we see the Database as playing an important role: in advancing policy reform by facilitating the analysis of services policies; in informing international negotiations by providing data on actual policies; and in provoking dialogue and refinements by making information on policies publicly available. Thus, we see this database as providing not a definitive picture of services trade policy, but a first approximation which will through feedback from various interested parties evolve into a collectively created public good – along the lines of a “wiki-database.”

In the next section, we describe the scope of the data and the data collection process, as well as the relation to other databases. In Section 3, we discuss alternative ways of measuring the restrictiveness of policy. Section 4 describes global patterns of services trade policy in the aggregate as well as across sectors and regions, while Section 5 contains a more in-depth discussion of findings for each services sector. Section 6 provides evidence that services trade policies matter, and also compares alternative methods of measuring policy. Section 7 concludes and discusses implications for future work.

2. SERVICES POLICY DATA

We describe first, in Section 2.1, the scope of the database. A much more detailed account of the Database is provided in a companion paper, “Guide to the Services Trade Restrictions Database” (Borchert, Gootiiz and Mattoo, 2012, referred to hereafter as “Database Guide”) and in supplementary material available at <http://iresearch.worldbank.org/servicestrade>. Section 2.2 then briefly discusses how this database relates to other databases covering services policies and procedures.

2.1 Data description

The Services Trade Restrictions Database contains information on policies that affect international trade in services – defined, as is now customary, to include the supply of a service through cross-border delivery, by establishing a commercial presence, or by the presence of a natural person.¹ The perspective is one of a foreign supplier who wishes to provide services to consumers in a particular country, and we focus mainly on policy measures that discriminate against foreign services or service providers. Domestic regulations that affect domestic and foreign agents alike are covered only in the instances where they clearly have major impact on trade.²

The database encompasses information from a total of 103 countries, of which 79 are developing and 24 OECD countries, broadly representing all regions and income groups in the world.³ First-hand information for developing countries was collected by administering a

¹ We do not cover “consumption abroad,” a mode of delivery that is particularly important in services like tourism, education and health – sectors not covered by the database.

² The greatest challenge is posed by domestic regulations that are in principle origin-neutral but in fact impose a bigger burden on foreign service providers. We make an effort to deal with the key regulations in professional services, such as qualification and licensing requirements, but much more could be done to improve the coverage of such measures in areas like financial services.

³ The regional affiliation of countries in this paper (and the Database) follows the official World Bank country classification, which groups all non-high income countries into world regions. For ease of exposition there are two exceptions to this rule: Trinidad and Tobago is presented as part of the Latin America and Caribbean (LAC) region, and Bahrain, Kuwait, Oman, Qatar and Saudi Arabia are referred to as Gulf Cooperation Council (GCC) countries. All six are high-income countries in official World Bank terms.

questionnaire in phases over the period 2008-2010,⁴ whereas information for OECD countries was obtained from publicly available sources.⁵ To ensure data accuracy, the policy information was subjected to review by government officials, which led to confirmation and/or update of the data for most of the OECD countries and a number of developing countries. To the best of our knowledge, no other data source provides similar information on barriers to services trade in a comparable manner for a global cross-section of countries.

The entire database, including all qualitative and quantitative information, annotated descriptions of policies as well as detailed documentation, is available at this stage at <http://iresearch.worldbank.org/servicestrade> (after clearance, it will be placed on an externally accessible website). The remainder of this section outlines essential features of the database, such as coverage of sectors and measures, quantification of policy measures and relationship to other databases. The Database Guide and the website contain a host of additional information, e.g. on the data collection process, the full list of policy measures covered, a list of governments that confirmed policy information, a detailed documentation of scoring rules, and the questionnaire used in the data collection.⁶

The five major services sectors covered in the Database, namely financial services (banking and insurance), telecommunications, retail distribution, transportation⁷ and professional services, are further disaggregated into subsectors as shown in Table 1. The choice of sectors was based primarily on our assessment of their economic importance from a development perspective, on the existence of meaningful restrictions on services trade, and the feasibility of collecting relevant policy data.

⁴ The questionnaires were completed by local law firms familiar with the policy regimes in the respective countries and sectors. While most of the surveys were conducted in phases over the period 2008-2010, an effort was made to update the information for some of the countries that were surveyed at earlier stages. The information on policies received was evaluated, and its restrictiveness assessed, by a team of World Bank economists. The consistency of information was cross-checked in consultation with industry experts, private sector representatives and lawyers.

⁵ These sources include WTO Trade Policy reviews, countries' most recent offers submitted in the WTO's Doha negotiations, the AXCO insurance database, OECD reports on "Exceptions to National Treatment for Foreign-Controlled Enterprises", and the IMF's annual reports on exchange arrangements and exchange restrictions.

⁶ Any additional inquiries or feedback regarding the database can be sent to servicestrade@worldbank.org.

We have not at this stage covered two important areas of interest to developing countries. First, cross-border trade in business processing services (associated with the “outsourcing” phenomenon) is not covered because it is either largely free from explicit restrictions or the fragmentation of services—facilitated by advances in information technology—has made it possible to trade unregulated parts of services.⁸ Second, the Database does not cover policies affecting international movement of less-skilled individuals to deliver, say, construction services because (immigration) policies affecting such movement are notoriously opaque. We hope to address these gaps in future data collection exercises. We recognize that some of our conclusions, such as the overall restrictiveness of services trade policy at the country level and the relative restrictiveness of services sectors, are necessarily influenced by the choice of sectors. We also recognize that the growing scope for digital delivery, for example in certain intermediate professional services, allows service providers to circumvent traditional barriers to trade, thus trade in these areas may be *de facto* more liberal than our data suggest. Most of our descriptive and econometric findings, however, rely on cross-country patterns of trade restrictions for given sectors, and therefore are not affected.

Within each sector or subsector, the database covers the most relevant modes of supplying the respective service: establishing commercial presence or FDI (mode 3 in WTO parlance) in every subsector; cross-border supply (mode 1) of financial, transportation and some professional services; and the presence of service supplying individuals (mode 4) in professional services. Table 1 summarizes the combinations of subsectors and modes for which information is available.

⁷ Regarding policies governing cross-border (mode 1) trade in international air passenger transportation services, we draw on the WTO’s QUASAR database since it represents the most comprehensive source currently available on bilateral air services agreements, covering over 2000 agreements.

⁸ As a result, the market for “intermediate” services is increasingly contestable even though entry into the “final” stage, on which this Database mainly focuses, is still affected by regulatory requirements. For instance, in legal services, research and documentation can be outsourced whereas representation in courts must be performed by a local firm. In accounting, bookkeeping can be outsourced whereas conformity with local requirements and ultimate responsibility rests with local professionals/firms.

Table 1: Coverage of sectors and modes of supply

Sectors/Sub-sectors	Mode 1	Mode 3	Mode 4
Banking			
Bank lending	x	x	
Deposit acceptance	x	x	
Insurance			
Automobile insurance	x	x	
Life insurance	x	x	
Reinsurance	x	x	
Telecom			
Fixed-line		x	
Mobile		x	
Retailing			
Retail distribution		x	
Transport			
Air passenger domestic		x	
Air passenger international	x	x	
Maritime shipping international	x	x	
Maritime auxiliary services		x	
Road trucking		x	
Railway freight		x	
Professional Services			
Accounting	x	x	x
Auditing	x	x	x
Legal advice foreign law	x	x	x
Legal advice dom law		x	x
Court representation		x	x

The primary focus of the questionnaire is to gather information on policies and regulations that may potentially constitute a discriminatory barrier for foreign service providers, as well as certain key aspects of the regulatory environment. With this goal in mind, we administered a core set of questions for each subsector-mode combination. Measures that pertain to Mode 3, for which information is available for every subsector, span the following broad categories:

- i. Requirements on the legal form of entry and restrictions on foreign equity;
- ii. Limits on licenses and discrimination in the allocation of licenses;
- iii. Restrictions on ongoing operations;
- iv. Relevant aspects of the regulatory environment.

This core set of measures is supplemented with sector-specific measures, e.g. rules governing interconnection in telecommunications and limits on the size of loans in retail banking. As noted above, it is hard to identify regulatory measures, such as qualification and licensing requirements, which are in principle equally applicable to domestic and foreign providers, but in effect disadvantage foreign services or service providers. We have, however, made a special effort to cover such measures in professional services where they have significant impact on trade.

Measures governing mode 1 are slightly different in that they typically stipulate conditions under which cross-border trade may take place. Mode 4 measures, covered only in professional services, focus on immigration rules and qualification requirements that strongly affect this mode.

One challenge in the data collection process is the presence of regional or other preferential arrangements that some countries are part of and have one set of policies for their preferred partners and another set for the rest of the world. For the most part, our database describes a country's Most-Favored Nation (MFN) policies, which in (paradoxical) trade parlance means its non-preferential policies. However, in the case of some countries where the preferential regime dominates trade, such as the countries of the European Union, the database does include a description of preferential policies. In general, any restrictiveness score reflects the restrictiveness of a country's MFN policies. But such an approach would not have adequately reflected the openness of EU member countries because they are distinctly more open vis-à-vis each other and trade a lot with each other. So we created an entity entitled 'EU20' with policy descriptions and scores corresponding to EU member countries' average policies towards non-EU providers, whereas individual EU countries' measure of openness reflects a trade-weighted average of intra- and extra-EU policy regimes. In future work, we hope to extend this approach also to other regional groupings.

Another challenge is ensuring that the database is up-to-date. Even though in our experience services policies are slow to change, we have recently reviewed policies in major countries

which were surveyed in the first phase in 2008 and the subsequent reforms are reflected in the database. As indicated above, we invite feedback on the accuracy of the data, and suggested changes will be incorporated in the database after verification. Ideally these updates would be systematic and would eventually lead to a panel of policy data across countries and over time which would also support more rigorous policy analysis. To this end, we propose to collaborate in future with the Trade in Services Division of the World Trade Organization (WTO) which is also launching a policy data collection initiative.

2.2 Relationship to other databases

It is useful to clarify how this database fits into the existing data landscape. While no other database collects services trade policies for a similarly wide range of countries and sectors, there exist related datasets such as the World Bank's Investing Across Borders data, the World Bank's Doing Business data, and the OECD's Product Market Regulation (PMR) database.⁹ These databases are largely complementary to our database, and together they provide an increasingly comprehensive perspective on policy regimes for trade in services.¹⁰ Two important dimensions along which existing datasets differ are: whether the focus is on foreign providers only or on all firms; and whether the focus is on policies and regulations or on administrative/implementation requirements and, in some cases, outcomes. At the risk of oversimplification, Table 2 positions the Services Trade Restrictions Database and other related data sources along those two dimensions.¹¹

⁹ There are other, sector-specific databases, such as the World Bank's FinStats, a world-wide financial database which covers 40 key financial indicators, the World Bank's Logistics Performance Index, an interactive benchmarking tool to help countries assess their performance on trade logistics, or the International Telecommunication Union's World Telecommunication/ICT Indicators Database. The primary focus of these databases is on outcomes in the respective sectors, and less so on policy affecting foreign services or service providers. These databases are invaluable for sector impact analysis of the kind that we illustrate in Section 5.

¹⁰ Francois, Pindyuk and Wörz (2009) have compiled a unified dataset of services trade flows encompassing cross-border and FDI data from various sources (Trade in Services Database – TSD version 4). Trade flow data is likewise highly complementary to trade policy information.

¹¹ Table 2 cannot do justice to the richness of information contained in each database listed but merely intends to clarify the difference in focus.

Table 2: Relationship between databases on policies and outcomes in services sectors

Subject:	Affecting foreign providers	Affecting all providers
Policy or Regulation	Services Trade Restrictions Database	OECD Product Market Regulation
Administrative or procedural requirements/outcomes	WB/IFC Investing Across Borders	WB Doing Business; OECD Product Market Regulation

Differences across these datasets in terms of goals, units of measurement and sampling period notwithstanding, we find our services trade policy information to be reasonably consistent with other databases. For instance, there is a tight negative correlation between the country-level STRI score regarding establishment of commercial presence and the Investing Across Border’s ‘Ease of Establishment’ index, suggesting that across countries a more liberal services trade policy stance is associated with a greater ease of establishment.¹² There is likewise a high positive correlation between the country-level overall STRI score and the OECD’s PMR index (both increasing in restrictiveness) (see Annex 2).

3. MEASURING SERVICES TRADE POLICY

It is notoriously difficult to measure policies affecting services trade because of their variety and complexity (see, for example, the overview by Deardorff and Stern, 2008). We consider three approaches. In Section 3.1, we describe our workhorse method, “the services trade restrictions index” or STRI, which has the weakness of being subjective but the virtue of being simple, transparent and robust. The STRI is the basis for the discussions of policy patterns in Sections 4 and 5. We then describe two relatively sophisticated methods: the ordinal ranking of policy regimes in Section 3.2; and the econometric assessment of restrictiveness of individual policies on the basis of their impact on certain outcomes of interest in Section 3.3. We return to these methods in Section 6 where we demonstrate that

¹² The STRI stands for the Services Trade Restrictions Index, which is discussed in more detail in Section 3.

services policies influence economic performance, and that the assessments of restrictiveness based on the simple STRI are quite similar to those based on more sophisticated methods.

3.1 The Services Trade Restrictions Index (STRI)

We first develop a measure of the restrictiveness of a country's policy regime based on a broad view of the policy information alone. This measure is most convenient to depict overall patterns in policy, across countries and sectors. It builds on a relatively long tradition of restrictiveness indices, ranging from simple counts of policy barriers (Hoekman, 1996) to more complex weighted averages, where weights reflect prior (usually subjective) assessments of the relative restrictiveness of specific policy barriers; work currently being undertaken at the OECD uses an elaborate version of this method (OECD, 2009a).¹³

We construct a single measure of overall openness for any subsector-mode combination, e.g. one for the cross-border supply of bank loans and another for accepting bank deposits by establishing commercial presence abroad. This measure of openness is also subjective but relatively simple and transparent. It avoids the pitfalls of the approaches that assign fixed weights to all types of restrictions (entry, operational, regulatory) and treat the restrictions as additive. For instance, if foreign suppliers are not allowed to enter in the first place, then that restriction is binding and other restrictions on operations and regulatory environment simply do not matter. Similarly, a foreign equity limit of 49 percent already precludes foreign corporate control and so adding to it a further (frequently encountered) requirement that the majority of board of directors be nationals would amount to double counting.

Essentially, we assess policy regimes in their entirety and assign them into five broad categories: completely open, i.e. no restrictions at all; completely closed, i.e. no entry allowed at all; virtually open but with minor restrictions; virtually closed but with very limited opportunities to enter and operate; and a final residual "middle" category of regimes which allows entry and operations but imposes restrictions that are neither trivial nor

stringent. Table 3 presents those five principal categories. In order to further illustrate what portfolio of policies might underpin those restrictiveness scores, we provide an example for each category taken from the ‘policy summary’ section of our database (all examples refer to one country, Brazil, only to provide a consistent illustration).

It is convenient to assign a value to each of these five categories of regimes on an openness scale from 0 to 100 with intervals of 25.¹⁴ We call the resulting score a services trade restrictions index (STRI). As the example in Table 2 shows, most policy regimes have more than one provision in place per sub-sector and mode of supply, in which case the assigned score (shown in the right-most column) reflects the overall restrictiveness of all measures evaluated simultaneously.¹⁵ Since the STRI focuses mainly on the set of measures that discriminate against foreign services and service providers, the greatest level of openness is associated with a value of zero. However, since the STRI does not adequately cover complementary areas of non-discriminatory prudential and pro-competitive regulation, and since it is likely that the results of liberalization depend on the existence of such complementary regulation, we cannot claim that a zero value of STRI is necessarily immediately desirable from a broader welfare or development perspective.

¹³ Further information about the OECD’s work in this area, which focuses on Member economies, can be found at <http://www.oecd.org/trade/str> and is described in OECD (2011). The ability of their index to capture trade costs in services is explored in OECD (2009b).

¹⁴ At this level, basic STRI scores are no more than ‘labels’ attached to the five ordered categories of restrictiveness, but as soon as these scores are further processed, either by aggregation or by use in a quantitative model, the specific values assume a cardinal meaning that implies the five categories are ‘equidistant’ in terms of restrictiveness. The alternative approach of ranking policy bundles aims to avoid exactly this assumption.

¹⁵ The Section 4 of the Database Guide (Borchert, Gootiiz and Mattoo, 2012) contains three examples—from Burundi, Thailand and India—that illustrate how a portfolio of several measures is being assigned to one of the five basic scores. In principle, policy measures can be divided into two tiers. The first tier measures include those that affect market entry decisions most significantly, such as a limit on foreign ownership and the number of licenses. The second tier measures are those that affect operations of service providers, such as restrictions on the repatriation of earnings. The second tier measures do not contribute to overall restrictiveness when first tier measures are prohibitive. In contrast, if the first tier measures are not prohibitive then second tier measures are also considered in determining the overall restrictiveness score.

Table 3: STRI – quantifying trade policy measures

Overall policy description	5-point scale	Policy example: Brazil (relevant <i>subsector-mode</i> indicated)
Open without restrictions	0	“Entry is allowed through a subsidiary and/or branches. Authorization is required.” (<i>Automobile insurance – mode 3</i>)
Virtually open	25	“Cross-border deposit taking is allowed subject to approval and registration.” (<i>Bank deposit acceptance – mode 1</i>)
Existence of major/non-trivial restrictions	50	“Residency is required. There is an education requirement; foreign degrees may be accepted. There is a quota for intra-corporate transferees and independent professionals: at least two thirds of employees of a firm must be Brazilians. The duration of stay initially allowed is 90 days to two years, depending on visa type. Extensions are possible, depending on the type of visa, but usually only once. Foreign-licensed professionals are subject to labor market test and economic needs test. There is a minimum wage/wage parity requirement.” (<i>Auditing – mode 4</i>)
Virtually closed	75	“The limit on foreign ownership is 20 percent of voting capital, and there is no limit on foreign ownership of non-voting capital. Firms with 3 or more employees are required to employ Brazilian nationals to fill at least two-thirds of their positions.” (<i>International air passenger transportation – mode 3</i>)
Completely closed	100	“Cross-border provision of services not allowed. Must be established as a local office and headquarter and must be properly registered with local professional association.” (<i>Accounting – mode 1</i>)

Notes: As is apparent from the examples shown, most subsector-mode combinations are characterized by multiple provisions, in which case the regime assignment reflects the overall restrictiveness of all applicable measures.

Once a score is attached to each regime, STRI values can be aggregated across sectors and modes of supply. Let s_{jmc} denote the basic scores on a 5-point scale per subsector and mode of supply as described in Table 2. In order to arrive at an aggregate STRI of country c , $STRI_c$, we begin by taking weighted averages across modes of supply $m \in M$, whereby the set of modal weights $w_m^{(j)}$ is specific to sector j . The sectors differ in the relative importance of alternative modes for delivering a specific service. For instance, in a ‘consumer service’ such as life insurance, a higher modal weight is attached to commercial presence than in the

reinsurance sector in which cross-border provision amongst firms is the dominant mode of supply. Formally, the sectoral scores are given by

$$STRI_{cj} = \sum_m w_m^{(j)} s_{jmc}$$

Sectoral scores are then aggregated across all sectors $j \in J$ using weights w_j that reflect the relative importance of constituent services sectors in domestic value added. Sector weights w_j are based on services sectors' standardized share in total services output for an 'average' industrialized country. Overall country-level scores are obtained as

$$STRI_c = \sum_j w_j STRI_{cj}$$

The complete weighting schemes used to aggregate modes, subsectors and sectors, respectively, can be found in Annex 1 Table A.1, including further details regarding the sectoral weights. All scores at any level of aggregation are available from the 'STRI' section of the database; in particular, the full set of baseline values s_{jmc} is accessible so that users are free to devise alternative aggregation schemes if they so wish.

We recognize the subjectivity of this approach. Yet given data constraints and the wide range of sectors covered, there is no obviously superior method of quantification. We show below in Section 6 that the STRI assessments are broadly corroborated by other methods. The subjectivity of the STRI is somewhat mitigated by the extensive consultations we have conducted with the private sector representatives and regulators in making the assignments of weights to specific categories. We also checked the robustness of the assignments by moving border-line policy regimes across categories. We believe that the adopted approach is at this stage more suitable than any fixed algorithm to turn the rich and difficult-to-quantify aspects of policy into broadly plausible if somewhat imprecise restrictiveness scores. In Paul Krugman's words, it has the virtue of being "roughly right rather than precisely wrong."

3.2 Ordinal ranking of policy combinations

While the STRI scores are convenient for aggregation and graphic depiction, they introduce artificial precision and the underlying classification of regimes into five categories is not based on the precise combination of policies. When it comes to policies affecting services trade, we can in many cases see that one combination of policies is more restrictive than another but we are generally not in a position to measure precisely how much more restrictive. For example, there is at this stage little basis to say exactly how much more restrictive a country that imposes a 49 percent limit on foreign ownership is compared to the one that imposes a 51 percent limit, or a country that does not allow branch banking compared to the one that does. But we can say with confidence that in each case, *ceteris paribus*, the former is more restrictive than the latter.

So our second approach is to assign countries to “policy regime bins,” each of which represents a particular combination of policies. Of course, the STRI is also based on an underlying ordinal ranking of policy regimes, on which we impose cardinal scores. But while the STRI method assesses the overall restrictiveness of policy regimes, the key innovation in this ordinal ranking method is to create hierarchies of policies and policy bundles. One basic assumption is that market access restrictions (on entry) take precedence over operational measures in determining the degree of openness. The precise assumptions that deliver ordered ‘policy regime bins’ are necessarily sector-specific and have to be tailored to the types of measures typically encountered as well as to their relative significance in that sector. In financial services, for example, combinations of measures range from “allows cross-border delivery or entry as a branch and imposes no significant restrictions on foreign subsidiaries” to “does not allow cross-border delivery or entry as a branch, and imposes significant restrictions on foreign subsidiaries.” We cannot, of course, always unambiguously rank different combinations of policies in terms of openness but this approach helps to depict policy regimes more transparently across countries in each sector.

Table 4: Ordinal measures of policy restrictiveness in bank lending, commercial presence (mode 3): an illustration

Bin	Example (total/bin)	Sector open to foreign entry	Entry through establishment	Operations	Entry as a branch
1	Argentina (38)	yes	No restriction	No restriction	No restriction
2	Namibia (4)	yes	No restriction	No restriction	Not allowed
3	Ghana (26)	yes	No restriction	Nationality req	Not allowed
4	India (24)	yes	Nat treatment violation	Nationality req; repatriation restr	license limit branches
5	Iran (1)	Entry not allowed	n/a	n/a	n/a

Note: Examples of restrictions on entry through establishment include denial of majority ownership, a quantitative limit on the number of licenses issued, or discrimination in entry conditions against foreigners. Examples of restrictions on operations include nationality requirements for employees and a restriction on repatriation of earnings. Restrictions on entry as a branch include requirements to incorporate locally or a limit on licenses. The numbers in brackets indicate the number of countries in the relevant bin.

Table 4 presents an example of mode 3 policies in the bank lending subsector, ranging from open countries in the first row to the most restrictive bin in the last row.¹⁶ In this approach the relative restrictiveness of countries *within* any given bin remains undetermined but we could assert with some confidence that any of the 26 economies in bin 3 (e.g. Ghana) overall applies a less restrictive set of policies towards foreign investment than any country in bin 4 (e.g. India). The table’s triangular structure reflects the fact that market access restrictions, especially restrictions on entry and establishment, take precedence over operational measures in determining the degree of openness; the assumed hierarchy of bundles—reflected in the order of the columns—is driving results under this approach. Annex 3 shows that country classifications under this method are broadly consistent with the STRI scores.

3.3 Measuring restrictiveness by impact using econometric approaches

More sophisticated methods estimate the restrictiveness of policies econometrically, based on their impact on some outcome variable of interest, controlling for other determinants. The

¹⁶ The definition of ‘policy bins’ corresponds to the empirical investigation of the banking sector in Section 5, where the bins are represented by a set of dummy variables, see Tables 5 and 6 below.

relative restrictiveness of individual measures can be inferred from the estimated coefficients of the policy variables, and the overall restrictiveness in the sector-mode can be calculated as a weighted average of these variables using these coefficients as weights. In this method, however, the estimated restrictiveness is conditional on the sample used and framed in terms of the chosen dependent variables.

Using the same subscripts as in section 3.1, let $\hat{\beta}_{jk}$ denote the estimated coefficient on policy variable k in sector j , and let x_{cjk} denote the corresponding policy variable (typically a dummy variable taking the value of one if country c applies a policy measure k in sector j). At the sectoral level, the index is then computed as

$$\hat{S}_{cj} = \left(\sum_k \hat{\beta}_{jk} x_{cjk} \right) \frac{100}{\hat{S}_{cj}^{\max}}$$

where the last term merely serves to normalize the index on the range from 0 to 100, making it comparable to the STRI of section 3.1.¹⁷ Sectoral scores are aggregated across all sectors $j \in J$ using the same weights w_j as before (see Annex 1, Table A.1):

$$\hat{S}_c = \sum_j w_j \hat{S}_{cj}$$

We illustrate this methodology in Section 6, using the results from a regression of global foreign direct investment flows across ten services sectors on policy barriers (and other controls). One difficulty is the paucity of internationally comparable data on outcomes, especially for natural candidates such as the price of the service (ideally controlling for quality differences). Even when we do have data on certain outcomes, such as the level of access to the service, the fact that our policy data is available only for a single point of time obliges us to conduct cross-country analysis and limits our ability to control for non-policy related differences across countries; see e.g. Borchert et al. (2012) who quantify econometrically the effect on market structure and access to services of policy measures in

¹⁷ Lubotsky and Wittenberg (2006) consider the case in which k alternative proxy variables are available to measure the true effect of one latent, unobserved factor (e.g. policy restrictiveness), and devise a strategy for combining those proxies optimally so as to minimize attenuation bias. This is different from a situation in which policy measures may be *additive* in terms of restrictiveness, thus their framework does not directly apply to our context.

telecommunications and air transportation services using the present data. Finally, broader economy-wide measures of outcomes – such as growth or productivity – seem too remote to be credibly linked to service sector policy through cross-country analysis. The econometric approach is therefore best suited for sector-specific analysis – of which we provide some examples later in this paper – rather than studies involving several sectors with no obvious common metric.¹⁸ The value of this approach is that it allows us to examine whether policy matters for outcomes that we care about, and which elements of policy matter most.

4. PATTERNS OF SERVICES TRADE POLICY

The pattern of services trade policies may be examined from different perspectives and at different levels of aggregation. Which are the countries that are open to foreign provision and which restrict services supply by foreign providers? In which sectors are there more stringent limits on foreign participation? What types of instruments are used to limit the entry and operations of foreign suppliers? What does the pattern of openness look like across different modes of supply, i.e. for foreign investors, natural persons, and cross-border services delivery? This section addresses the first three questions by organizing the policy information across various dimensions of interest. The database contains much more detailed information than is presented here on all four questions.

4.1 Country-level indicators of services openness

Across the entire sample of 103 countries, most exhibit a fairly open profile of services trade policies, resulting in a distribution of country-level indices that is skewed towards lower values of STRIs (which can in principle range from 0 to 100). Figure 1 plots the cumulative distribution of STRI values; as can be seen, the median STRI value is about 24, i.e. more than half of all countries would on average be classified as ‘virtually open’. Furthermore, the

¹⁸ See Dihel and Shepherd (2007) for an example of an estimation-based cross-sectoral study of restrictiveness using an explicit index measure of policy barriers. Novy and Chen (2011) discuss techniques that do not rely on any explicit construction of indices summarizing policy barriers but instead infer unobserved trade barriers from the difference between actual and predicted ‘normal’ trade flows.

STRI score of 90 percent of all countries lies strictly below 50 – i.e. on average below the score signifying the presence of ‘major restrictions.’

Figure 1: Frequency distribution of the country-level services trade restrictiveness index (STRI)

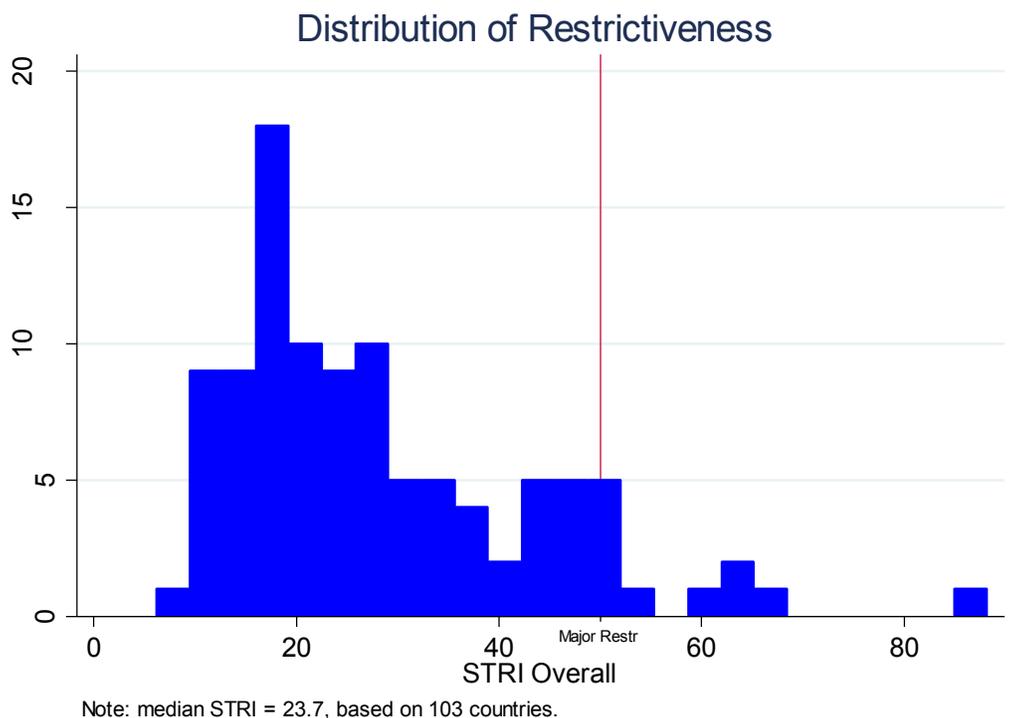
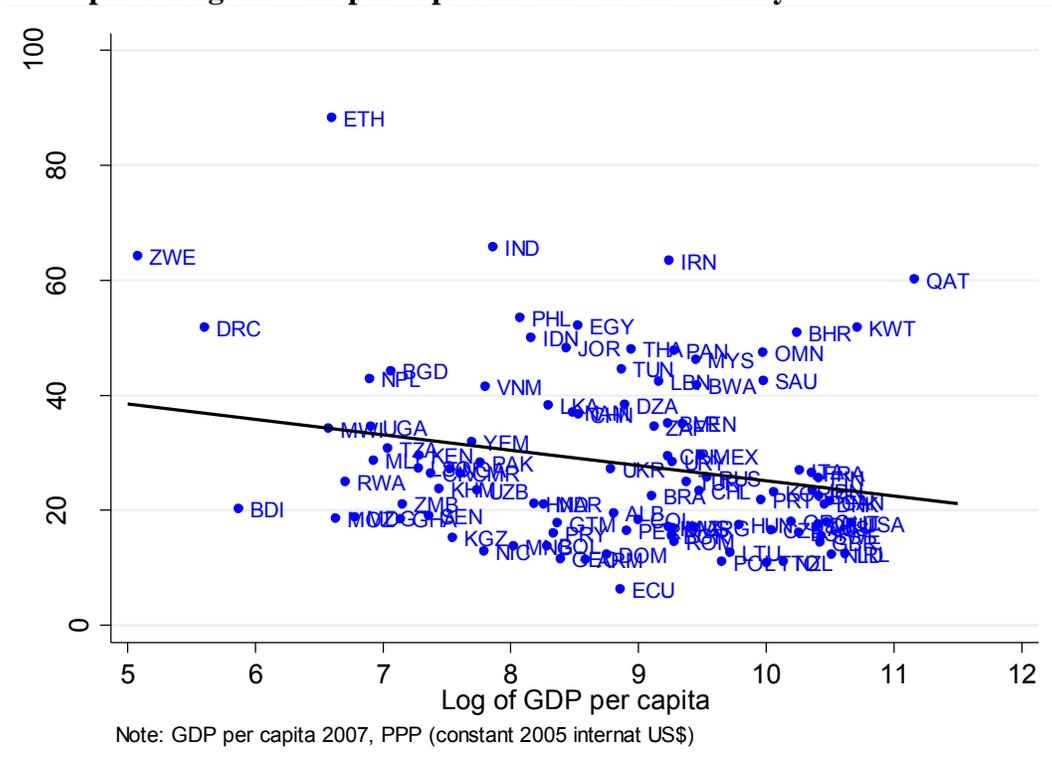


Figure 2 presents each country’s overall index of services trade restrictions, aggregated over all sectors and modes, plotted against its per capita income. It also includes a linear fit of the relationship between the country STRI and per capita income. This figure confirms the earlier picture that most countries are fairly open and that only a few countries have adopted an across-the-board restrictive stance on services, either by closing many sectors altogether or by imposing other stringent measures on foreign entry.

But Figure 2 reveals a great deal of variation across world regions in the overall restrictiveness of services trade policies. On the one hand, most OECD countries are clustered together at the bottom-right corner, testimony to their general overall openness (notwithstanding some rather restricted subsectors). On the other hand, the Gulf Cooperation

Council (GCC) countries, while equally rich, exhibit some of the most restrictive policies observed in the sample, thus placing Qatar, Kuwait, Bahrain, Oman and Saudi Arabia in the top-right corner of Figure 2.

Figure 2: Country-level services trade restrictions index (STRI) plotted against the per capita income of the country



Note: Banking (2 subsectors; mode 1 and 3), insurance (3 subsectors; mode 1 and 3), telecommunications (2 subsectors; mode 3), retailing (mode 3), transportation (maritime and air: mode 1 and 3; maritime auxiliary services, rail and road: mode 3), and professional services (4 subsectors; mode 1, 3 and 4).

Among developing countries the restrictiveness of applied policies varies widely. Interestingly, some of the most restrictive policies today are visible in the fast-growing economies of Asia, including China, India, Indonesia, Malaysia, Philippines and Thailand, as well as in the Middle East, including Egypt, Iran, Saudi Arabia and Tunisia. Some of Africa’s poorest nations also have rather restrictive services policies. In particular, Ethiopia, Zimbabwe and DR Congo turn out to be amongst the most restrictive countries in the sample (top-left corner). At the same time, another group of developing countries like Rwanda, Madagascar, Senegal and Mongolia are remarkably open (bottom-left corner). It is also true,

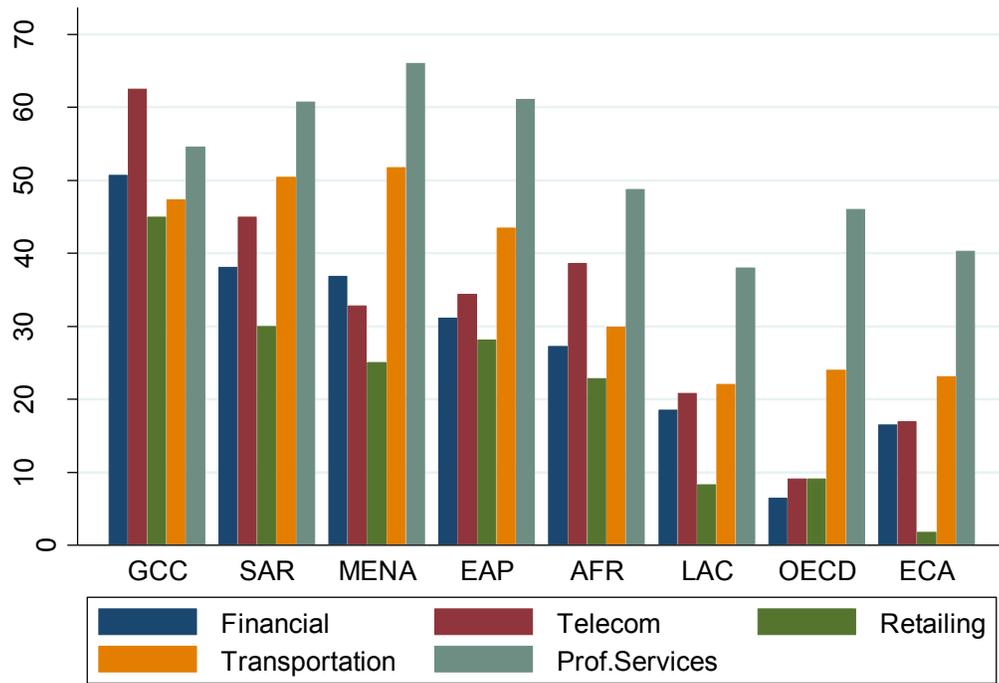
though, that for some of these developing countries the sheer absence of any sectoral regulation leads to a low STRI score, in which case the resulting openness is qualitatively different from the predictable market access in countries that formally institute open policies.

4.2 Sectoral policy patterns at the regional level

Figure 3 shows average levels of restrictiveness broken down by major service sector and region of the world. On average, the most restrictive policies are observed in the high-income GCC countries with a regional average STRI score of 50, followed by South and East Asia, respectively, as well as the Middle East and North Africa. In contrast, policies are relatively liberal in Latin America, Eastern Europe and OECD countries, with Sub-Saharan Africa somewhere between the restrictive and the more liberal regions.

The pattern of relative restrictiveness across sectors is surprisingly similar in developing and industrial countries. The highest barriers to trade in both developing and industrial countries are typically observed in professional services. One reason is that for these services, the international movement of professionals (mode 4) is critical. And such movement faces two daunting barriers: immigration-related restrictions, which make even entry difficult for foreigners intending to sell services, and licensing and qualification-related restrictions, which make it difficult for foreign trained professionals to practice their professions. But the problem is not mode 4 alone. Both cross-border delivery and commercial presence in legal and accounting services also tend to be restricted. Figure 3 shows that even those OECD and ECA countries that are widely known for their open policies regarding the establishment of commercial presence still maintain substantial barriers in a range of professional services subsectors.

Figure 3: Services Trade Restrictions Index (STRI) by sector and region



Note: 103 countries included.

Note: The services trade restrictions index (STRI) at the regional level is calculated as a simple average of individual country's STRIs. The STRI in the cross-border air passenger transportation subsector comes from the QUASAR database of WTO (2007). Regional abbreviations: HNO – High income non-OECD, SAR – South Asia, EAP – East Asia and Pacific, MENA – Middle East and North Africa, AFR – Sub-Saharan Africa, LAC – Latin America and Caribbean, ECA – Europe and Central Asia, OECD – High income OECD.

Apart from professional services, transportation services remain one of the few bastions of protectionism in high-income countries and are also subject to relatively high barriers in developing countries. In maritime transportation, even though international shipping is today quite open, entry into cabotage and auxiliary services such as cargo handling is restricted in many countries. In air transportation, most countries across all income groups require international services to be provided within the highly confining framework of bilateral air services agreements and also restrict investment in the supply of international and domestic air passenger services.

We can infer from the current state of policies that developing countries have liberalized a range of services sectors over the last couple of decades. However, even though markets for most services are now competitive and allow foreign participation, they remain in most countries some distance from being completely open. In telecommunications, public

monopolies are in most countries a relic of history and some measure of competition has been introduced in both mobile and fixed line services. At the same time, though, new entry by foreign providers is not permitted in a number of countries, and even where it is, governments continue to limit the number of providers or, particularly in Asia, the extent of foreign ownership (see Figure 6 below). In banking and insurance too, domination by state-owned entities has given way to increased openness to the presence of foreign and private financial institutions. Yet in both banking and insurance, the allocation of new licenses often remains opaque and highly discretionary. Retail distribution ranks consistently amongst the most open services sectors in any region, but even in this case a range of domestic regulations, such as zoning laws, occasionally impede entry in both developing and industrial countries.

5. A CLOSER LOOK AT SERVICES POLICY IN SPECIFIC SECTORS

In this section, we describe briefly the patterns of policy observed in financial, telecommunications, retail, transportation and professional services.

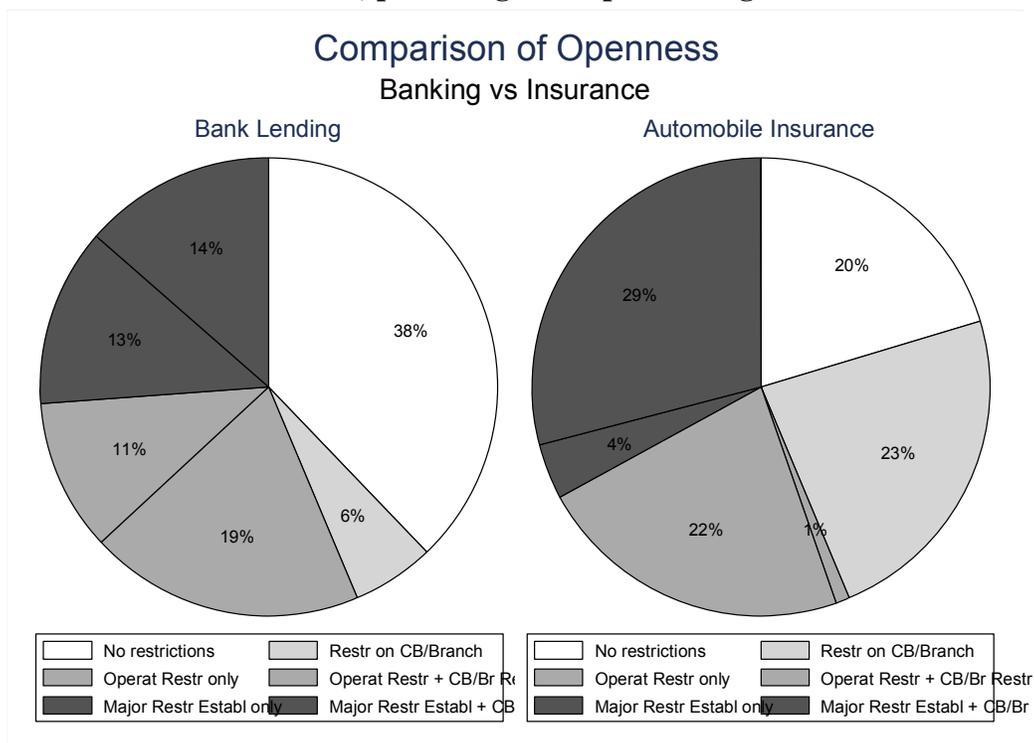
5.1. Financial services: Banking and insurance

Contrary to the general perception that governments maintain a range of precautionary restrictions in financial services, especially in developing countries, both banking and insurance turn out to be relatively free of explicit restrictions. More than half of the countries in our sample have no significant restrictions on either cross border delivery or commercial presence. Only a few countries remain significantly restrictive, namely Ethiopia, Iran, Zimbabwe, and Qatar.

Sifting between the precautionary and protectionist restrictions can be hard in financial services because countries may hesitate to open certain modes of supply where the incremental benefits in efficiency seem to them smaller than the danger of increased volatility. For example, openness to cross-border trade in banking services implies allowing capital mobility, and openness to branch banking implies accepting home country regulation

of, say, capital adequacy requirements on overall international operations rather than separately on operations in the host country. The survey does reveal that on average countries do restrict cross-border trade in financial services more stringently than FDI. Looking specifically across financial subsectors, cross-border trade in reinsurance and banking services is much more open than cross-border trade in life and automobile insurance services. Within the banking sector, offering deposit-taking services across borders is in general more restricted than borrowing from abroad. This pattern is fairly uniform across all world regions.

Figure 4: A comparison of the pattern of restrictions in bank lending and automobile insurance, percentage of implementing countries

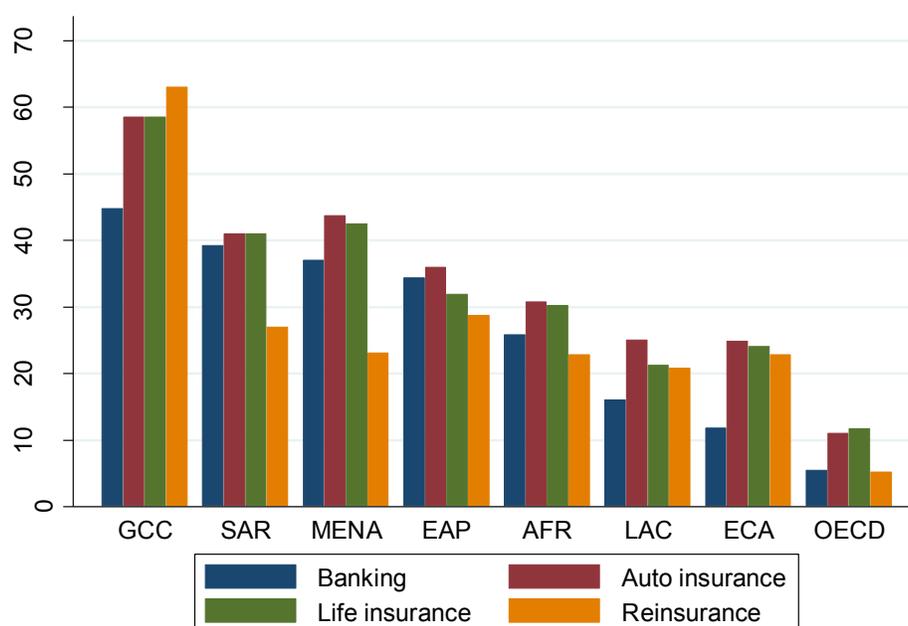


Note: ‘Restr on CB/Branch’ denotes the application of either a restriction on cross-border banking or branch entry or both; ‘Operat Restr only’ denotes the application of only a restriction on the operations of foreign banks; ‘Operat Restr + CB/Br Restr’ denotes the application of restrictions on both cross-border banking or branch entry as well as one or more operational restriction(s); ‘Major Restr Establ only’ denotes the application of a major restriction on the establishment of commercial presence; and ‘Major Restr Establ + CB/Br Restr’ denotes the application of both a major restriction on the establishment of commercial presence as well as a restriction on both cross-border banking or branch entry. The six categories are defined to be mutually exclusive so that any country is characterized by one and only one description.

It is relatively straightforward to identify policy barriers to the establishment and operation of subsidiaries as restrictions on services trade. Such barriers can include limits on foreign

ownership of subsidiaries or on the expansion of the local branch network. Figure 4 (LHS graph) shows that in the banking sector while a little more than one-third of countries maintain an open regime in both cross-border trade and FDI, only about one-quarter of countries impose major restrictions on commercial establishment. In the insurance sector (RHS graph), only about one-fifth of the countries have an open regime in both cross-border trade and FDI, and about one-third of the countries maintain significant restrictions on commercial establishment. How far these alternative combinations of policy matter for policy is an issue to which we return in the penultimate section.

Figure 5: STRI in financial services by region and sub-sector (Mode 1 and Mode 3)



Note: 103 countries included.

Certain regional patterns emerge in terms of the policy restrictions on entry, ownership, and operation (Figure 5). GCC members and other MENA countries have among the most restrictive policies and generally do not allow majority ownership and control in a foreign invested financial institution.¹⁹ Also, most of Asia’s emerging and large economies restrict

¹⁹ Iran does not allow FDI in banking and insurance; and Qatar does not allow FDI anywhere outside Qatar’s Financial Center. In Bahrain, the foreign ownership limit is 49%, for Kuwait 40%, and Saudi Arabia 40%. In addition, the licensing requirements are not predefined, which increases the discretion of the regulators significantly. In Yemen and Morocco, if foreign ownership is greater than 10% of the equity, approval of the Governor of the Central Bank is required. In Egypt, entry through subsidiary is not allowed, and for expansion of existing banks, the (not-predefined) requirements specified by the Central Bank should be fulfilled.

commercial presence of foreign financial institutions in a variety of ways, including explicit restrictions on ownership, control and legal form, discretionary licensing, and limits on operational freedom.²⁰ In Africa, Ethiopia and Zimbabwe place severe limits on foreign presence, but other countries impose explicit restrictions on ownership, control, and operations of foreign owned financial institutions. In Latin America, Brazil requires a presidential decree for establishing a bank, while Uruguay explicitly limits the number of licenses in banking, but other countries are open to FDI and tend to restrict only entry through a branch and impose a nationality requirement on employees. In ECA and the OECD, there are no significant restrictions on FDI in banking and insurance services.

5.2. Telecommunications

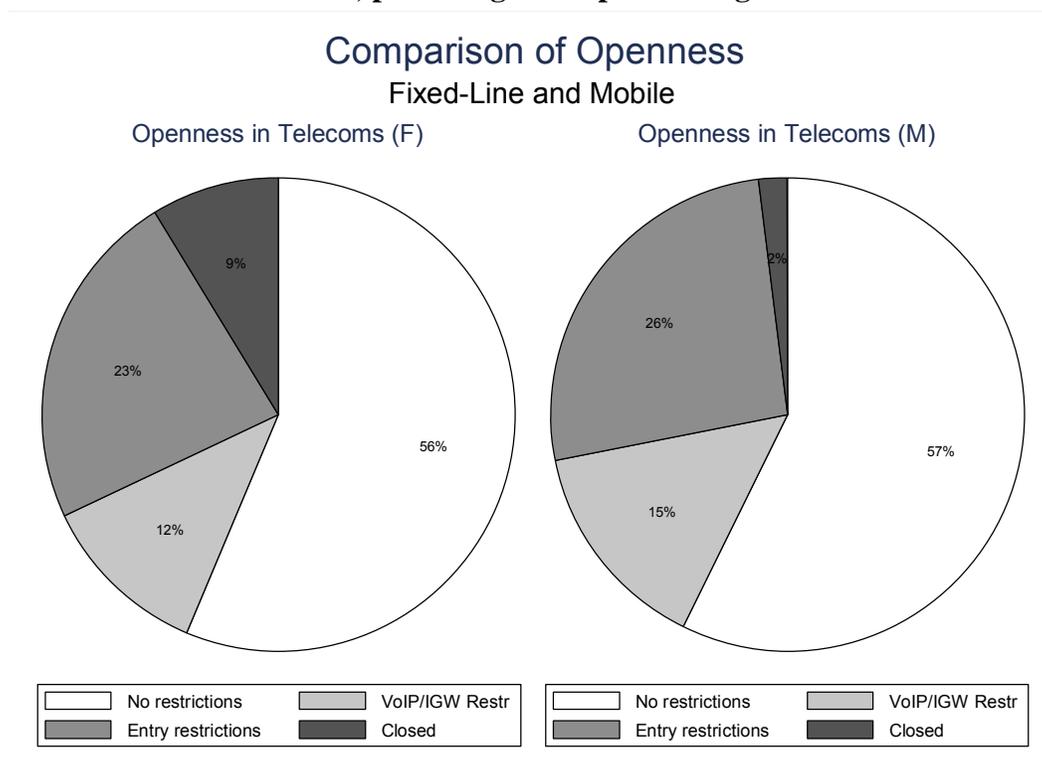
The telecommunications sector has seen remarkable liberalization of FDI, and public monopolies have all but disappeared. Only about 10 of the sample of 103 countries are either closed or virtually closed to foreign presence. But at the same time only about 40 countries are fully open to the establishment of commercial presence by foreign providers. Thus, a surprisingly large number of countries still maintain restrictions. The dynamism of this sector has obscured the persistence of barriers and concentrated market structures.

Due to the importance of network externalities in the telecommunications sector and the likely presence of a large incumbent firm to whose infrastructure competitors need access (interconnection), the list of policy measures affecting foreign investment has been augmented with additional sector-specific information concerning the existence of an

²⁰ In Malaysia, the foreign ownership limit in non-Islamic banking and insurance is 49 percent; in the Philippines 70 percent of banking assets must be held by banks which are majority owned by Filipinos; in China, foreign ownership is not allowed in mandatory automobile insurance and allowed only up to 50 percent in life insurance in a joint venture; in Thailand, the foreign equity limit is 25 percent of the paid-up registered capital in banking and 49 percent in insurance; in Vietnam, foreign equity participation is limited to 30 percent in banking; and India allows only 26 percent of foreign ownership in a life or automobile insurer. Across most Asian countries, the second significant policy issue is restrictive and discretionary licensing. In Thailand's insurance sector, licenses are granted by the Ministry of Finance, but the approval of the Cabinet is also required. In Philippines, there is an overall limit on foreign investment in the banking sector in addition to firm level foreign ownership limit. In India, there is a limit of 20 licenses for foreign bank branches per year. Upon establishment, countries tend to limit the freedom of expansion through branches. Malaysia allows expansion through a branch or setting up of ATMs on a case by case basis; in the Philippines, six branches are permitted per bank, and in Thailand, branching is not allowed in banking. In India, foreign banks are required to submit a branch expansion plan annually.

independent regulatory authority, the permissibility of voice-over-internet protocol (VoIP) operations, and control over the international gateway. Figure 6 summarizes the incidence of policy measures in increasing order of restrictiveness. Despite the celebrated ‘mobile telecommunications revolution’, for the world as a whole there are only minor differences in the openness of the fixed-line and the mobile telephony sectors, except for a small number of countries that allow foreign providers in the mobile sector but currently do not permit entry in fixed line services, e.g. Mozambique, Zambia, Belarus, Kuwait, Oman, Iran and Bangladesh.²¹

Figure 6: A comparison of the pattern of restrictions in fixed-line and mobile telecommunications, percentage of implementing countries



Note: VoIP refers to “voice over internet protocol” and IGW refers to “International Telecommunications Gateway.”

²¹ In the mobile telephony sector, a limit on the number of licenses often is a consequence of radio spectrum management, which we consider as a technical constraint and therefore do not count as a market entry barrier.

GCC economies remain the most restrictive to foreign investment, with Saudi Arabia being the group's most open member, which may reflect the country's recent accession process to the WTO. In South Asia, the types of restrictions applied are rather idiosyncratic – for instance, India maintains a staggered regime of equity restrictions, Sri Lanka subjects entry to a discretionary political decision, while Bangladesh is quite liberal in its mobile sector but has effectively closed entry to the fixed line segment. Some East Asian countries, such as Laos and Malaysia, tend to limit foreign ownership, often combined with a requirement to enter as joint venture. Africa is characterized by a few very restrictive outliers (e.g. Ethiopia or Botswana) while the remaining countries are fairly open, even though there is significant government discretion over policy measures.²² Most countries in the ECA region are essentially open to foreign telecommunications investment with hardly any major restrictions, with the exception of Belarus and Uzbekistan. In Latin America, equity restrictions are virtually absent, and only Mexico and Uruguay impose some entry restrictions. There are hardly any FDI restrictions in OECD countries, with only Canada and Korea still imposing equity limitations on foreign investors and some grandfathered restrictions on investment in incumbents in Australia, Japan and New Zealand.

Even when the way is clear for foreign service providers to establish a commercial presence, their operations may be affected by three significant measures affecting their ability to route their traffic via VoIP, to operate an international gateway of their own, and to be able to freely repatriate profits from their overseas investment. Overall, about two-thirds of all countries permit both VoIP and gateways and do not have a restriction on repatriation of earnings in place, thus further testifying to the telecommunications sector's relative openness.²³ Due to the need to regulate the network externalities, and to arbitrate between

²² For instance, authorities reserve a say in deciding whether to grant new licenses (e.g. in DRC the President's authorization is required for obtaining a license, or in Mozambique the foreign ownership limit depends on the Finance Ministry's authorization). Alternatively, fees for licenses or gateways may not be set based on rules but rather on a case-by-case basis (e.g. in Madagascar the fee for international gateway operations is determined by the Ministry of Telecommunications, and in Cote d'Ivoire the license fee depends of the scale, nature and duration of operations). Policies in some Southern African countries, e.g. Malawi, South Africa and Zimbabwe, aimed at increasing the ownership stake of indigenous groups or historically disadvantages minorities influence the equity structure of foreign investments.

²³ Requirements to duly register investment projects with the relevant local authority before remitting profits, prudential foreign exchange controls, or tax requirements that do not appear to be discriminatory are not taken to constitute a barrier in this sense.

the potentially opposing interests of incumbent and entrant firms, the existence of an independent regulatory authority is usually considered important in the telecommunications sector. About two-thirds of the 103 countries covered have set up an agency that is independent from the sector ministry.²⁴

5.3. Retailing

The database covers commercial presence or mode 3 in retailing since international trade through cross-border retailing is still limited. With regard to commercial presence in retail distribution, the questionnaire covers restrictions on form of entry, ownership, regulatory and sector specific operational limits such as limitations on multi-brand stores, the number of outlets, locations of the store, and the type of products sold.²⁵

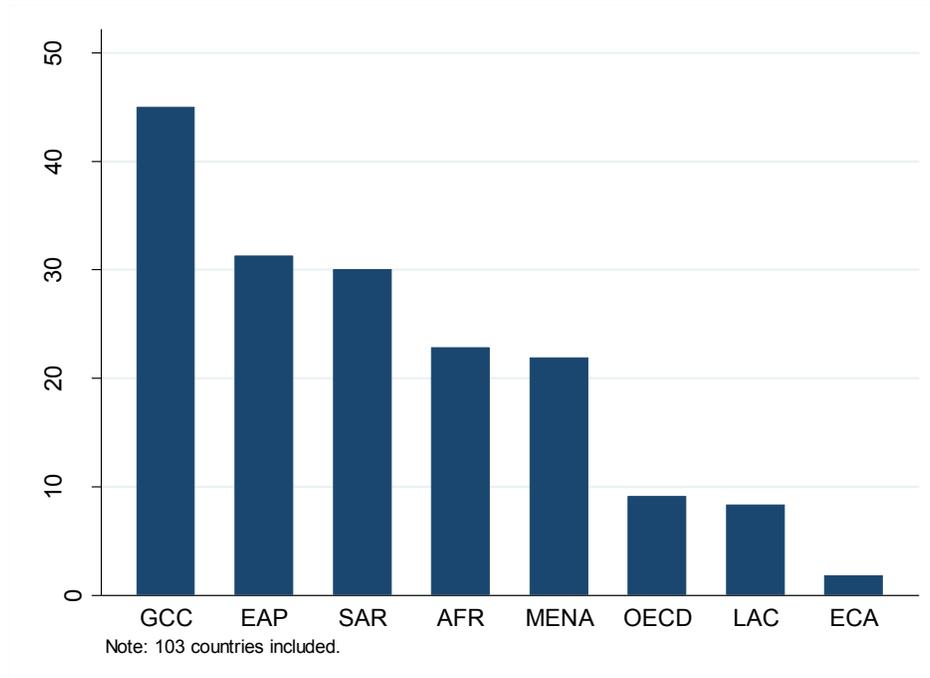
We find that nearly 60 out of the 103 countries covered are open to FDI in retail (see Figure 7 below); in fact, retailing is more open than other sectors covered. Most countries allow close to 100 percent foreign ownership for Greenfield investments as well as acquisitions, except for some GCC countries (Qatar, Bahrain, Oman, Kuwait, and Saudi Arabia). The sector is officially closed in Ethiopia and Panama as only domestic investment is permitted, although there appears to be scope for foreign providers to tap the Panamanian market to some extent.²⁶

²⁴ Another important dimension of the regulatory environment concerns the legal rights afforded to foreign companies in the host country. The database contains information on certain aspects of the policy regime that enables us to distinguish between three broad stages of investor “comfort”. In the lowest one, foreign telecom enterprises have at least the right to appeal decisions or orders issued by the regulating authority, even when (or especially if) the latter is not an independent entity. Additionally, the regulator may be obliged to provide reasons for a decision, in particular the rejection of a license request. Finally, we could have both the first two requirements, plus the regulating authority enjoying independence from the competent sector ministry.

²⁵ To ensure comparability across sectors and because of resource constraint, the survey focuses on a standard class of measures across different sectors. For example, we did not cover measures relating to land ownership, property ownership, store hours, and labor regulations that might be more relevant to retailing than to other sectors.

²⁶ In Panama the restriction is not applicable to firms which had obtained their licenses before 1972.

Figure 7: STRI in Retailing (commercial presence; mode 3)



However, the apparent openness in retailing should be viewed with caution. First, we find many of the developing countries do not have formal regulations for retail activities. In fact, the STRI database shows that in 23 percent of the countries a license is not required, and 30 percent of countries indicate there is no regulatory authority in retailing. It is not clear how far this lack of formal regulation translates into openness.

Furthermore, openness in retailing can be deceptive because, apart from explicit restrictions, there is evidence to suggest that a complicated multi-layered licensing process and idiosyncratic and behind-the-border restrictions hinder market entry. These measures are often buried in the procedures of obtaining licenses and in various requirements of administrative bureaucracy, all of which are hard to capture. For example, in the absence of a sector regulator, some countries require firms to obtain a license from a body whose board of directors consists of local trading enterprises and/or private sector representatives.

While there are few explicit barriers on ownership and licensing and few explicit quantitative limits on licenses, a number of countries impose economic needs tests (ENTs). These

countries, which include OECD countries, require an ENT for selling particular products or locating in certain parts of the country. South Korea, for instance, requires an ENT for selling used cars only, while Vietnam stipulates that the establishment of any additional outlets, other than the first one, is subject to an ENT. China limits foreign ownership to 49 percent if the retailer has set up 30 or more stores that sell multiple types and brands of goods. India still restricts foreign ownership in multi-brand retail stores, which effectively prevents the direct entry of most international retailers into the market. Recent attempts towards relaxing these restrictions have not been successful so far.

We also capture discretion in the licensing decision by examining whether the licensing decision is provided within a specified timeframe and whether a reason is given for denying a license. In about 13 percent of the countries, such as Algeria, Iran, Uganda, and Zambia, regulators are not required to make a licensing decision within a timeframe. About 18 percent of retail regulators are not obliged to give reasons for denying a license, most of whom are located in Africa and the Middle East.

While some countries are deceptively open, others may be deceptively closed. For example, countries that in principle do not permit foreign presence, such as India and Panama, nonetheless have in practice allowed more and more activities to be provided by foreign suppliers, possibly under the guise of wholesale services. Thus, foreign retailers are *de facto* able to penetrate a market to an extent that stands in contrast to a country's seemingly restrictive *de jure* policies.

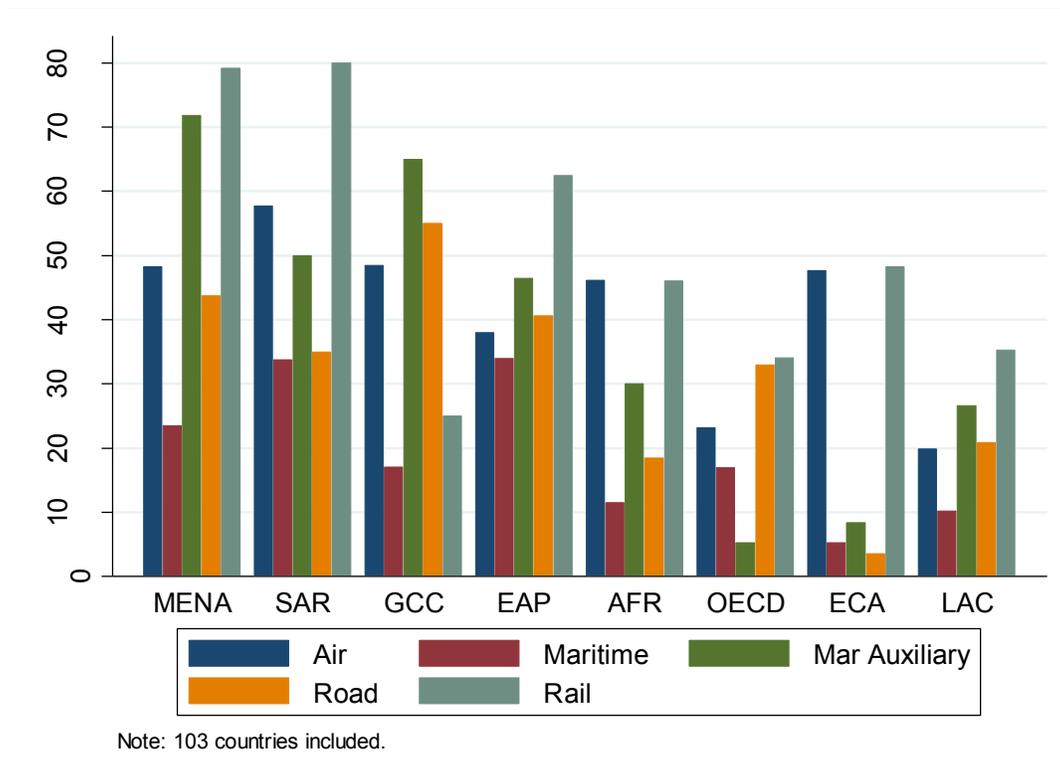
5.4. Transportation

Across all transportation subsectors, there are still measures to protect flag carriers and domestic incumbents from foreign competition.²⁷ This feature is most pronounced in air passenger transportation, where the dominant incumbent is often majority state-owned. While the pattern of the Asia and the Middle East being the more restrictive regions holds also in transportation, high-income OECD countries are more restrictive in transportation

²⁷ Transport and professional services are two sectors where the brief descriptions of the patterns of policy do not do justice to the richness of policy detail to be found in the database.

than in most other sectors, in particular with respect to ownership limitations (Figure 8). At the same time, there is also a great deal of heterogeneity across world regions, with a tendency of poorer countries to restrict cross-border trade, whereas higher income countries are relatively more restrictive regarding entry via commercial presence.²⁸

Figure 8: STRI in transportation by region and sub-sector (Mode 1 and Mode 3)



Note: STRI of Air and Maritime transportation combines mode 1 and mode 3, with weights of 70 and 30 respectively for the two modes. STRI of maritime auxiliary, road freight, and rail freight transportation services covers only mode 3 or commercial presence. The underlying data for mode 1 air transportation come from the WTO' Quasar Database.

A few countries have chosen to close one or more transportation subsectors altogether to foreign presence, among them Ethiopia, India, Jordan or Algeria. In the road trucking sector, most EU member countries have instituted a two-tiered regime such that entry is allowed for firms domiciled within the EU but is closed to entry from outside. Almost one-third of all

²⁸ For air passenger transportation, we rely on the WTO's Air Liberalization Index (ALI) that quantifies the

countries that have a rail track network (28 out of 93) have closed their railway freight sector to foreign entry. Air transportation is most restricted in Sub-Saharan Africa, whereas maritime auxiliary services are by far most restricted in Gulf countries. In the maritime shipping sector, only a few countries in Africa and South Asia still have some cargo preferences or quotas in place, underscoring the general openness of trade in cross-border shipping services. Of the 81 coastal countries, about one-quarter restrict access for foreign investors to auxiliary port services (such as cargo handling, storage, maritime agency services and freight forwarding). As in maritime shipping, these countries are located mostly in the GCC and MENA region. Lastly, while quotas on liner or bulk cargo are not widespread any longer as a means of regulating cross-border maritime shipping services, there are nevertheless a number of countries in which liner conferences are exempt from competition law. A notably high share of countries not subjecting such arrangements to competition law is found in the OECD (one in four).

5.5. Professional services

Since the movement of individuals is critical to trade in professional services, it is not surprising that most parts of the world have restrictive policies for these services. Interestingly, countries in Latin America, Eastern Europe, and Central Asia have slightly more liberal policies in professional services than OECD countries.²⁹

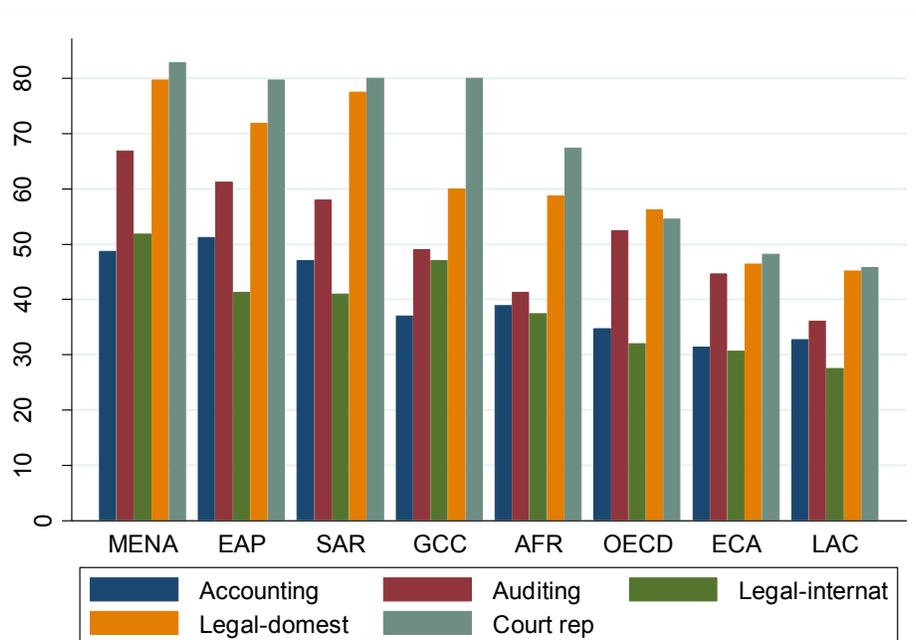
Across all regions, accounting and the practice of foreign law tend to be more open than auditing and the practice of domestic law and court appearances (Figure 9). Entry as a branch is more commonly allowed in accounting than auditing, and ownership or control by non-locally licensed professionals is more frequently allowed in accounting than in auditing.

We find that professional services firms organize themselves differently from foreign investors in other sectors, especially where commercial presence (mode 3) is concerned. Partnerships and membership of an international network of professional services firms are more common and so restrictions on entry as a branch do not have as severe an impact as in

restrictiveness of a country's BASA portfolio.

financial services. Policy restrictions too are unusual and different from those affecting other sectors. In many cases, non-locally licensed professionals cannot own or establish an office by themselves; they are required to partner with locally licensed professionals, such as lawyers. In some countries, foreign firms cannot hire locally licensed employees, which prevent the firms from practicing, for example, domestic law. The licensing and qualification requirements for individual professionals thus also affect entry through commercial presence. Restrictions are imposed by several countries on the use of a brand name and on the ability to associate with locally licensed professionals.

Figure 9: STRI in professional services by region and sub-sector (Modes 1, 3 and 4)



Note: 103 countries included.

Note: ‘Legal-internat’ denotes the sector providing legal advice on international law; ‘Legal-domest’ denotes the sector providing legal advice on domestic law; ‘Court rep’ denotes the sector providing legal representation before a domestic court. STRI of accounting, auditing, legal advisory services for international and domestic law covers modes 1, 3, and 4. The STRI of court representation covers modes 3 and 4.

Across all regions, the movement of individuals (mode 4) is the most heavily regulated, including by immigration and qualification requirements. The immigration requirements

²⁹ See also Kox and Nordås (2010).

such as limits on duration of stay, duration of employment, and the area in which foreign professionals can practice severely limit the ability of foreign professionals to enter through mode 4. The qualification requirements are equally burdensome. Many OECD and developing countries require local licensing, including local professional certificate, local work experience, local language proficiency and a degree from a local university, as a precondition to practice. In some cases, such as to practice international law, degrees from foreign universities and work experience abroad are accepted. A common feature in the data is that regional bloc countries such as EU, SADC or GCC countries recognize only professional licensing from other countries within the bloc. Also in these regional blocs, nationality is required in order to be licensed to practice and even to be admitted to the accountancy or legal professional associations.

Cross border supply (mode 1) policies in professional services are not always clearly defined. In particular, many developing countries indicate there is no legal and policy framework to define, restrict, or allow professional services provided on a cross-border basis. The reason for not having defined mode 1 policy may be that the regulations have not caught up with the rapid development of online and electronic forms of communications. Yet even in countries where such policies are more clearly defined, it is common to find requirements such as local licensing, residency (or a requirement to have a local branch office), or a need to demonstrate local unavailability of services and partnership with local firms in order to provide professional services cross-border.

6. EVALUATING POLICY IMPACT AND COMPARING ALTERNATIVE METHODS OF MEASURING RESTRICTIVENESS

This section has three related objectives: to illustrate that services policy matters for outcomes that we care about; to show how restrictiveness of policy may be inferred econometrically, as discussed in Section 3.3; and to demonstrate that our simple STRI produces as economically sensible results as more complex methods of measuring policy restrictiveness.

While collecting and publishing information on regulatory measures affecting trade in services is the primary purpose of this database, we are ultimately interested in evaluating the economic impact of such policies. Due to the idiosyncratic nature of individual services sectors, a full-fledged analysis is clearly beyond the scope of one paper, and for the purposes of this section we assume policy restrictiveness to be exogenous data.³⁰ We will, however, present two examples of the impact of services trade policies: on mode 3 flows, i.e. inward foreign investment, and on access to services. The value of foreign investment is a uniform metric across heterogeneous sectors and thus is a natural dependent variable for a broad cross-sectoral investigation in Section 6.1. In contrast, ‘performance’ assumes a different meaning in each sector. In Section 6.2, we use the example of bank lending to illustrate how services trade policies affect access to financial services as measured by domestic credit extended to the private sector.

6.1. Cross-sectoral analysis based on FDI flows

We assess the impact of policy barriers on FDI using a comprehensive dataset on global mergers and acquisitions (M&A) spanning the period 2003-2009.³¹ The dataset consists of

³⁰ In their study of telecommunications and transport sector policies, Borchert et al. (2012) go further and account for the endogeneity of policy choices.

³¹ It would be of interest eventually to take into account the impact on greenfield investment as well but data concerns prevent us from incorporating greenfield flows into the present analysis. First, the best greenfield data with global coverage that is currently available relies heavily on *estimated* rather than actual FDI flows, thus greenfield data is not of a quality comparable to the M&A data we use here. Second, the sectoral breakdown is

individual equity deals between country pairs and sectors as tracked by ThomsonReuters' Platinum database. We pool equity flows for every host country across all possible origins and recent years to obtain information on the total value of M&A inflows per country and sector. We are able to match data on FDI flows with information on services policy restrictiveness for 93 destination countries and 8 services sectors.³²

Table 5 presents evidence on the effect of policy restrictiveness on the global pattern of M&A activity. In columns 1-3 restrictiveness is measured by the STRI score, whereas in columns 4-6 a set of key individual policy measures are included directly.³³ In each case we report results for a specification with sector fixed effects (columns 1 and 4), with country fixed effects (columns 2 and 5), and both sets of fixed effects (columns 3 and 6), though fixed effects are not reported to conserve space.³⁴ Whether we control directly for major determinants of FDI inflows such as country size, population density and per capita income or whether we account for unobserved country and sector heterogeneity with fixed effects, we find that restrictive policies are associated with a significantly lower value of M&A inflows.

With respect to the STRI, we do not constrain the discrete index to have a linear effect on FDI inflows but rather include indicator variables for three different levels of restrictiveness, relative to the reference group of 'open' economies.³⁵ Indeed, the results in columns 1 and 2 show that higher levels of restrictiveness deter investment in a significant and monotonically increasing manner, and the effect is not necessarily linear. In column 3, in which we control fully for country-specific and sector-specific sources of variation, the estimates suggest that over a 7-year period, the expected value of M&A inflow is on average about \$2.2bn lower in

less detailed than in the M&A data and often defined differently, so that including greenfield flows into the dataset would substantially limit our ability to exploit the cross-sectoral variation in restrictiveness.

³² Air transportation and maritime shipping are excluded because both services are traded primarily cross-border rather than by establishing commercial presence; in addition, in both sectors, alliances and networks dwarf mergers or acquisitions as a means of reaching foreign markets.

³³ We also experimented with other sets of variables, but there seemed to be the strongest a priori justification for including the set shown in Table 5.

³⁴ In keeping with recent advances in estimating (trade) flow variables, results in Table 5 are obtained using Poisson estimation, which addresses concerns about heterogeneity arising from log-linearizing the model and, in addition, allows us to retain zero investment flow observations.

a country and sector characterized by a high STRI score (75-100) as compared to an ‘open’ policy regime.³⁶ These adverse effects are sizable relative to average inbound M&A flows.

Table 5: Global M&A activity in services and policy restrictiveness

	(1)	(2)	(3)	(4)	(5)	(6)
Log(GDP) 2007	0.6271***			0.6466***		
Log(GDP per capita) 2007	0.5958***			0.4448***		
Population Density (people/sqkm)	0.0007			0.0009*		
Dummy STRI (25-50]	-0.3347*	-1.2122***	0.0266			
Dummy STRI (50-75]	-1.0844*	-2.0094**	0.1350			
Dummy STRI (75-100]	-2.5569***	-5.1664***	-1.6993**			
No Investment (0%)				-1.2156***	-3.0110***	0.1062
Minority Ownership				-1.2573***	-1.1678**	-1.0676**
Limit number of licenses				0.2131	0.4931	0.5100**
Discrim licensing criteria				-0.6286***	-0.8852***	-0.5587**
Restriction repatr earnings				-0.6951**	0.4245	-0.7666*
No recourse/appeal				-0.6813**	-1.5015***	-1.0085**
Observations	744.0000	744.0000	744.0000	478.0000	478.0000	478.0000
Pseudo R ²	0.7901	0.6434	0.8792	0.7795	0.7215	0.8818
Log L	-4.280e+05	-7.272e+05	-2.462e+05	-3.613e+05	-4.563e+05	-1.936e+05
Sector fixed effects	yes	no	yes	yes	no	yes
Country fixed effects	no	yes	yes	no	yes	yes

Dependent variable is total value of sectoral M&A inflow in million USD;
Poisson estimation with robust standard errors based on 8 services sectors.

Columns 4-6 demonstrate that individual policies, too, have a highly significant effect across all specifications. The prominent role of equity restrictions is not surprising given that the value of acquisitions is the dependent variable. Restricting ownership to a minority stake, or not permitting foreign ownership at all, strongly deters mergers and acquisitions. Other significant variables turn out to be discriminatory licensing criteria, restrictions on the repatriation of earnings and whether investors can appeal licensing decisions. The coefficient sign pertaining to limits on the number of licenses is unexpected, though.³⁷

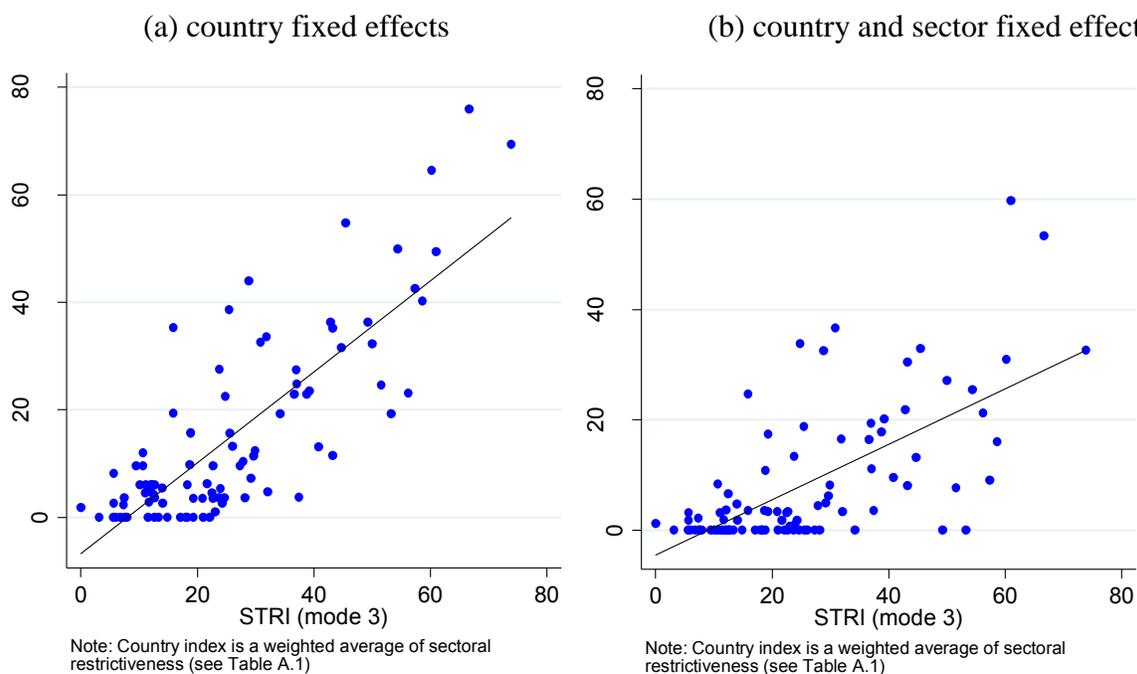
³⁵ As indicated in Table 5, levels of restrictiveness in this and all subsequent analyses are defined over the following intervals: open = [0, 25], first level = (25, 50], second level = (50, 75], third level = (75, 100].

³⁶ The coefficients in column 2, which controls for any unobserved country characteristics, correspond to marginal effects on the expected value of investment of \$1.6bn, \$2.6bn and \$6.8bn, respectively; this is roughly equivalent to an annual reduction of expected investment between \$230-\$980m.

³⁷ This may be due to the cross-sectoral nature of the exercise. In a sector-specific study, Borchert et al. (2012) show that license limits exert a significant negative effect in fixed-line telecommunications, a sector in which licenses are known to be a key policy instrument.

As discussed in Section 3.3, an econometric measure of the overall restrictiveness in a sector-mode can be calculated as a weighted average of these variables using their coefficients as weights. We calculate the econometric estimates of restrictiveness implied by columns 5 and 6 in Table 5, using negative and significant coefficients, and plot the result on the vertical axes of Figure 10 against the STRI.

Figure 10: A Comparison of the STRI with an Econometric Estimate of Restrictiveness



Reassuringly, such measures turn out to be highly correlated with the STRI. In the sample of 93 countries, Spearman's rank correlation coefficient between the econometric estimate and the conventional STRI equals 0.73 (panel 10a) and 0.61 (panel 10b), respectively, with both statistics being highly significant.

6.2. An example of sectoral analysis: Bank lending

Moving from the cross-sectoral analysis to the sector-specific analysis of bank lending has two advantages. First, it allows us to focus also on the relative impact of alternative combinations of sector-specific policies, as discussed in Section 3.2 on the ordinal ranking of policy combinations. Second, we are able to assess the impact of sectoral policies on an

outcome we care about from a developmental perspective—availability of credit to the private sector.

Table 6 presents the synopsis of results of including policy variables in three alternative ways: the STRI approach (discussed in Section 3.1), indicator variables to represent different *policy combinations* (discussed in Section 3.2), and key separate policy measures. In column 1, the monotonic and non-linear effect of increasing restrictive STRI scores is clearly apparent.³⁸ Column 2 reveals that limits on the operations of foreign providers, e.g. nationality requirements for employees or restrictions on repatriation of earnings, deter capital inflows at least as much as direct limits on foreign investment, e.g. via equity limitations. The positive—though insignificant—coefficient for countries that do not allow entry through branch banking (but are open otherwise) may reflect the substitution effect away from greenfield investment, including branches, towards M&A.

³⁸ To ensure comparability of results throughout this section, the same STRI brackets as in Table 5 are applied in Tables 6 and 7.

Table 6: Global M&A activity in banking and policy restrictiveness

	(1)	(2)	(3)
Log(GDP) 2007	0.6611***	0.6786***	0.6544***
Log(GDP per capita) 2007	0.6133***	0.3982***	0.5967***
Population Density (people/sqkm)	0.0007	0.0005	0.0008
STRI (25, 50]	-0.4418*		
STRI (50, 75]	-2.5633***		
STRI (75, 100]	-20.9608***		
Restr on Branches only		0.5189	
Operational Restr		-0.8227***	
Major Restr Establishment		-0.8571***	
No acquisitions (0%)			-3.5001***
Minority ownership			-0.7339
Limit number of licenses			-0.1728
Restriction repatriation earnings			-1.0985**
No recourse/appeal			-0.0068
No branch entry			0.0595
Restr on cross-border trade			-0.1471
Constant	-1.5984	0.5918	-1.3882
Observations	93	93	93
Pseudo R-sq	0.7950	0.8071	0.8016
Log L	-1.158e+05	-1.090e+05	-1.121e+05

Dependent variable is total value of M&A inflow to the Banking sector in million USD.
Poisson estimation with robust standard errors.

In column 3, we include policy variables separately. The list differs slightly from that in Table 5 because of the addition of variables that are specific to the banking sector (restrictions on cross-border trade and branch banking), and because of the exclusion of one variable ‘discriminatory licensing criteria’ for want of sufficient variation within this single sector. The results in column 3 are consistent with those shown in columns 4-6 of Table 5, except that not all variables which are significant across all sectors in Table 5 also exert a significant effect within the banking sector.³⁹

³⁹ In addition, to the extent that observable variables are *alternative* proxies for measuring overall restrictiveness, their *joint* significance is the relevant criterion (Lubotsky and Wittenberg, 2006).

Overall, Tables 5 and 6 suggest that the presence of services trade policies that discriminate against foreign suppliers is associated with a lower level of investment inflows. Yet foreign investment is rarely a goal in itself, and one may conceive of many performance variables that would be more closely associated with the notion of welfare gains from open trade policies. As one example, here we focus on the amount of domestic credit extended to the private sector (as a percentage of GDP) since it appears plausible to expect that a more open sector with a greater presence of foreign banks would, all else equal, be more likely to result in better access to finance (see e.g. Beck et al., 2008).⁴⁰

Table 7 is structured in the same way as the previous table in its use of three alternative ways to infer the effect of policy measures on financial access. Conditional on size, income and population density, we find a robust and significant effect of banking sector policies on the extent of credit available to the private sector. In particular, the approach of ordinal ranking combinations of policies in column 2 aligns reasonably well with expectations as the estimated coefficients on combinations of policy measures are monotonically increasing in (negative) magnitude. The difference between the two highly significant coefficients indicates that credit as a share of GDP is on average 3.3 percentage points lower in countries with major restrictions on establishment of foreign banks as compared to those that merely impose operational restrictions.⁴¹

With regard to the role of individual policy measures, the significant detrimental effect of license limits, or similar measures akin to a market access quota, is noteworthy. Across all specifications, the evidence suggests that closing the banking sector to foreign providers or otherwise limiting competition through the license process appears to be linked to less access to credit by domestic entities.

⁴⁰ Domestic credit as a share of GDP is only one of possibly many ways to capture the performance of the banking system. However, most other indicators are severely afflicted by missing values.

⁴¹ As before, we highlight the marginal effect in order to convey an idea about the approximate size of the effect associated with more restrictive policies, without claiming this to be a causal effect.

Table 7: Availability of credit to the private sector and policy restrictiveness

	(1)	(2)	(3)
Log(GDP) 2007	28.7852***	23.1826***	28.9766***
Log(Population)	-21.8667***	-16.3525***	-20.9216***
Population Density (people/sqkm)	0.0296*	0.0242*	0.0232
STR1 (25, 50]	-14.7005		
STR1 (50, 75]	-68.1747***		
STR1 (75, 100]	-51.2875***		
Restr on Branches only		-16.8306	
Operational Restr		-29.6466***	
Major Restr Establishment		-32.8754***	
No acquisitions (0%)			-58.1234***
Minority ownership			0.5520
Limit number of licenses			-24.8711**
Restriction repatriation earnings			2.2888
No recourse/appeal			2.9468
No branch entry			-6.0036
Restr on cross-border trade			9.5379
Constant	-12.8094	13.4692	-15.7323
Observations	91	91	91
R-squared	0.4629	0.4925	0.4756

Dependent variable is domestic credit to the private sector (% GDP). Linear regression with robust standard errors. Domestic credit as a percentage of GDP is taken from the World Development Indicators for the year 2008. For Kyrgyztan the corresponding 2007 figure and for Zimbabwe the 2006 figure is used for want of missing 2008 values in both countries.

7. CONCLUSION

Our primary contribution is collecting and making available information on a key dimension of policy in an unprecedented range of countries, sectors, and modes. We then take some first steps towards measuring policy and its impact. First, we construct a services trade restrictions index (STR1) which simply and transparently captures the restrictive effect of the entire set of policies applied by a country in a given service sector and mode of supply. This measure helps us depict the broad pattern of policy across countries and sectors. Second, we

propose a method that aims to derive a consistent ordinal ranking of countries in terms of their restrictiveness. This approach treats combinations of policy measures as the ‘units of observation’ which are to be ranked using plausible assumptions on the relative importance and relationship between measures. Finally, we turn to econometrically inferring the restrictiveness of individual policies by estimating their impact on two outcomes that we may care about – FDI and access to services.

What have we learned? Across regions, some of the fastest growing countries in Asia and the oil-rich Gulf states have among the most restrictive policies in services, whereas some of the poorest countries, like Cambodia, Ghana, Senegal, and Mongolia, are remarkably open. While most OECD countries are generally quite open overall, they tend to exhibit greater restrictiveness in transportation services and towards the movement of natural persons as services suppliers. In fact, across sectors, professional and transportation services are among the most protected in both industrial and developing countries, while retail, telecommunications and even finance tend to be more open. These conclusions are, of course, based on the specific sectors that are included in our study.

An illustrative set of results suggests that trade policies matter for investment flows and access to services. Based on a comprehensive sample covering multiple services sectors and 93 countries, and fully accounting for any country-specific and sector-specific sources of variation, we find that restrictions on foreign acquisitions, discrimination in licensing, restrictions on the repatriation of earnings and inadequate legal recourse all have a significant negative effect on investment inflows into services sectors. We find that such restrictions can reduce the expected value of sectoral foreign investment by \$2.2 billion over a 7-year period, compared to ‘open’ policy regimes. Looking at access to financial services, the approach of ordinally ranking policy bundles indicates that credit as a share of GDP is on average 3.3 percentage points lower in countries with major restrictions on establishment of foreign banks as compared to those that merely impose operational restrictions.

In future work, we plan to deploy the measures of restrictiveness to a richer set of performance variables in order to infer more detailed information about the costs of

restrictions on services trade. It is worth keeping in mind, though, that reaping efficiency gains from openness is certainly not the only objective pursued by policy makers. They may also care about access to services, poverty reduction, or other goals. Each of these concerns or objectives could be a basis for evaluating policy. It should be of interest to explore how the quantification methods developed in this paper can be used to analyze the impact of regulatory measures on policy objectives other than market access. We also believe that the observed state of service sector openness reflects policy choices made (or consciously not made); hence, future work could harness the data for exploring the determinants of services trade policy.

As noted in the introduction, the services trade restrictions database is a first step. We hope that researchers, policy-makers and even the private sector will use it, find it of some use and provide critical feedback. Only by establishing such a dialectical relationship with users can the database evolve into an increasingly reliable and up-to-date source of information.

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ANNEX 1: Weighting Schemes for STRI Index

Table A.1 below documents the sets of weights used to derive aggregate, country-level STRI scores, $STRI_c$, from basic scores per sub-sector and mode, s_{jmc} . Modal weights sum up to unity within any given subsector, e.g. ‘accounting’ (all subsectors are listed in Table 1). Subsectors are aggregated to the sectoral level, e.g. ‘telecommunications,’ using simple averages. Sector scores are aggregated to the country level using standardized weights based on the constituent services sectors’ share in total services output for an ‘average’ industrialized country. The service sector output shares are taken from Hoekman (1995, p.37/Appendix 1) and scaled so as to make the weights of all sectors covered in the Services Trade Restrictions Database add up to unity. We recognize that services sectors command a different share in total services output in developing and developed countries, respectively, and are at least in part influenced by policy restrictions. However, comparability requires the use of one uniform set of weights for all countries and so shares for an ‘average’ industrialized country were used because industrial countries tend to be more open and so shares are less likely to be distorted by restrictions.

Table A.1: STRI construction: sector and modal weighting schemes

Aggregate sectors	Subsectors, by mode of supply	Modal weights $w_m^{(j)}$	Sector weights w_j
Banking	Mode 1:		0.149
	(1) Deposit acceptance	0.15	
	(2) Bank lending	0.15	
	Mode 3:		
	(3) Deposit acceptance	0.85	
	(4) Bank lending	0.85	
Insurance	Mode 1:		0.095
	(5) Life	0.10	
	(6) Automobile	0.10	
	(7) Reinsurance	0.80	
	Mode 3:		
	(8) Life	0.90	
(9) Automobile	0.90		
(10) Reinsurance	0.20		

Telecommunications	Mode 3:		0.095
	(11) Fixed-line	1.00	
	(12) Mobile	1.00	
Retailing	Mode 3:		0.239
	(13) Retail distribution	1.00	
Transportation	Mode 1:		0.223
	(14) Air passenger international	0.70	(0.037)
	(15) International shipping	0.70	(0.037)
	Mode 3:		
	(16) Air passenger international	0.30	
	(17) Air passenger domestic	0.30	
	(18) International shipping	0.30	
	(19) Maritime auxiliary	1.00	(0.050)
	(20) Road freight	1.00	(0.062)
	(21) Rail freight	1.00	(0.037)
	Professional Services	Mode 1:	
(22) Accounting		0.20	
(23) Auditing		0.20	
(24) International law		0.20	
Mode 3:			
(25) Accounting		0.40	
(26) Auditing		0.40	
(27) Domestic law		0.50	
(28) International law		0.40	
(29) Court representation		0.50	
Mode 4:			
(30) Accounting		0.40	
(31) Auditing		0.40	
(32) Domestic law		0.50	
(33) International law	0.40		
(34) Court representation	0.50		

Notes: As an exception to the modal aggregation rule outlined above, air passenger transportation subsectors are first aggregated within mode 3, i.e. air passenger domestic and air passenger international, then the resulting modal score is aggregated with mode 1 using the modal weights as shown.

ANNEX 2: Comparison of STRI information with other databases

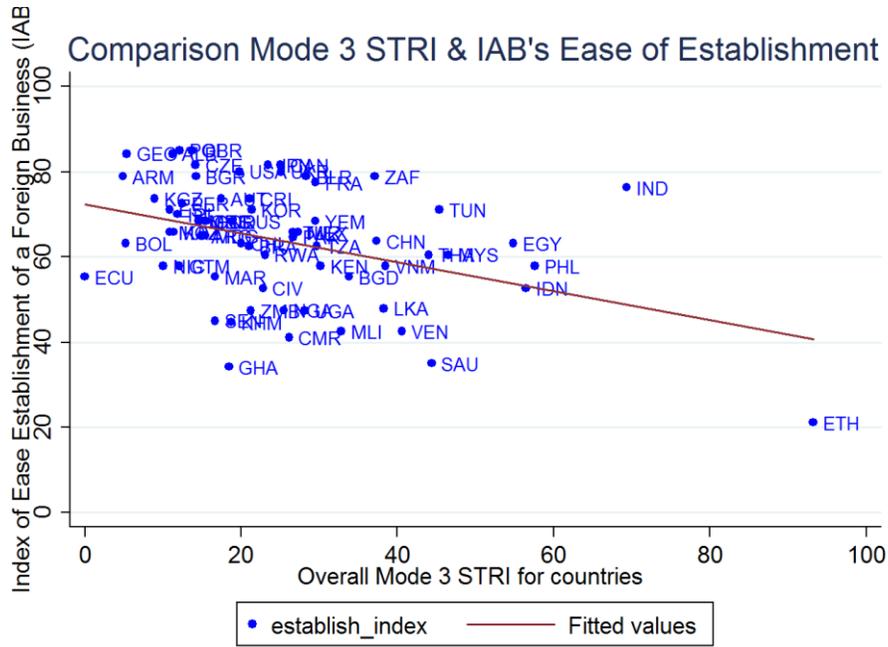
As noted in Section 2.2, the Services Trade Restrictions Database can be used in conjunction with other existing databases to provide an increasingly comprehensive perspective on global trade in services. Such databases include the World Bank's Investing Across Borders data, the World Bank's Doing Business data, and the OECD's Product Market Regulation data. We present a comparison of the STRI database with the 'Investing Across Borders' dataset and the OECD's PMR database, respectively, as these two multi-sector datasets are closely related to our policy database (cf. Table 4).

A.2.1 Investing Across Borders

The World Bank's Investing Across Borders (IAB) database seeks to compare the regulation of foreign direct investment for 87 economies. It accesses the laws, regulations, and practices affecting the flow of FDI. The dataset includes four categories, with the first two being most directly related with the STRI data: Investing Across Sectors indicators, Starting a Foreign Business indicators, Accessing Industrial Land indicators, and Arbitrating Commercial Disputes indicators. The Investing Across Sectors indicators measure the restrictions on foreign equity ownership in Greenfield and M&A projects for various sectors. Several of the sector – retail banking, insurance, telecommunications, railway freight, domestic air transportation, and international air transportation – are also measured by our database; for these variables, we have compared the two datasets for discrepancies in foreign equity restrictions.

The IAB's Starting a Foreign Business indicators measures the procedural requirements faced by foreign companies seeking to establish a local subsidiary. It collects information regarding the number of procedures and the time for each procedure, as well as formulating an index to measure the ease of establishment. This ease of establishment index (on a scale of 0 to 100, with the higher the number meaning the easier it is to start a subsidiary) can be graphed against Mode 3 STRI scores for all overlapping countries. The following graph

indicates a correlation between high STRI scores and low ease of establishment, which is as expected.

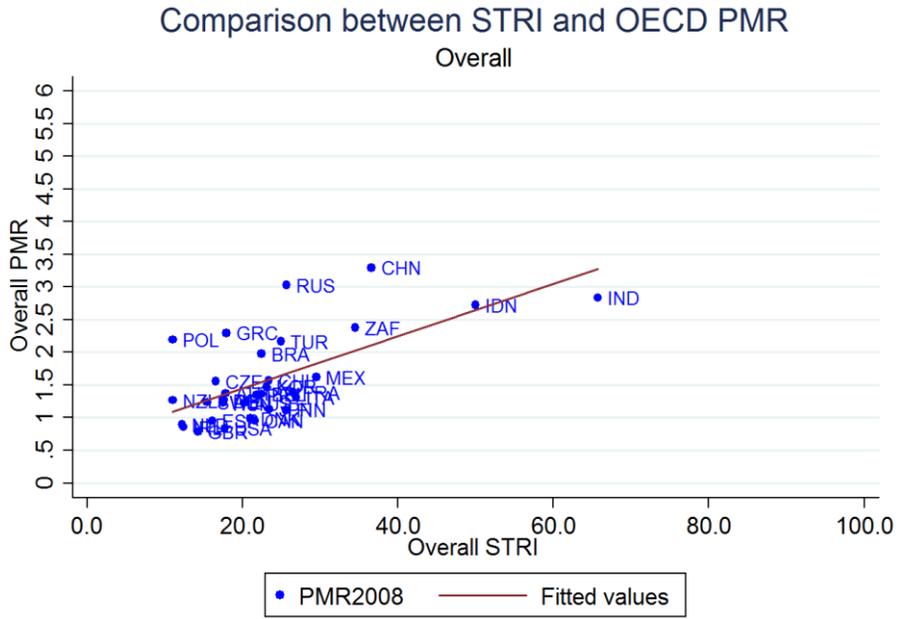


Spearman's Rank Correlation Coefficient = -0.3637

A.2.2 OECD's Product Market Regulation (PMR) database

The OECD's Product Market Regulation (PMR) indicators examine the extent to which policy measures promote or hinder competition. Countries covered include 34 OECD countries plus Brazil, China, India, Indonesia, Russia, and South Africa. By incorporating the OECD's other datasets on non-manufacturing (services) sectors and on FDI restrictions, the PMR indicators are "economy-wide" assessments on a scale of zero to six, with six indicating the most restrictive economies.

By measuring the overall competitiveness environment of these countries, it would be expected that a restrictive PMR value would correspond to a restrictive overall environment for services trade as well. Consequently, when graphing PMR values against STRI values, the following graph does reveal a rather high degree of positive correlation.



Spearman's Rank Correlation Coefficient = 0.5963

ANNEX 3: A Comparison of the STRI and Ordinal Policy Rankings

Table A3.1 below compares the results obtained with the STRI method discussed in Section 3.1 with the ordinal policy rankings discussed in Section 3.2. The fact that most of the countries in the Table lie along the diagonal indicates that both methods yield qualitatively the same result in terms of restrictiveness.

Table A3.1: Distribution of countries by STRI scores and ordinal policy categories: an illustration for the bank lending sector (mode 3)

STRI Scores → Ordinal rankings ↓	STRI = 0	STRI = 25	STRI = 50	STRI >= 75
Open	ARG, ARM, AUT, BEL, BGR, CZE, DEU, DNK, ESP, FRA, GBR, GEO, GRC, HUN, IRL, ITA, JPN, KOR, LTU, MAR, MUS, NLD, NZL, POL, PRT, ROM, SWE, TTO, TUR, ZMB	AUS, FIN, MLI, NGA, UGA, USA, UZB, ZAF		
Branch restriction only	n/a	CRI, NAM, RWA, UKR		
Minor or operational restrictions only	ALB, DOM, ECU, GTM, HND, KGZ, KHM, MEX, MNG, NIC, PAN	CAN, CHL, CHN, CIV, COL, DRC, GHA, IDN, KAZ, KEN, LBN, LKA, MWI, OMN, PER, PRY, TUN, TZA, VEN, YEM	BHR	
Major establishment restriction			BGD, BLR, BRA, BWA, EGY, IND, JOR, KWT, MYS, PAK, PHL, RUS, SAU, THA, URY, VNM, ZWE	QAT, IRN

Notes: The policy bins are defined as follows: (i) 'Open': No branch restriction AND no establishment restriction AND no operational restriction; (ii) 'Branch restriction only': Existence of a branching restriction; (iii) 'Major establishment restriction': Either a majority ownership for acquisitions is not allowed (<=50%) OR there is a license limit OR a combination thereof; (iv) 'Minor or operational restrictions only': Any policy combination not falling into any of the aforementioned bins but subject to the following: majority ownership for acquisitions must be allowed (>50%) AND there must not be a license limit AND there is an operational restriction (such as a nationality requirement for employees, a restriction on repatriation of earnings, a lack of the right to appeal decisions, and a difference in criteria for licenses).