

# Estimates of Ad Valorem Equivalents of Barriers Against Foreign Suppliers of Services in Eleven Services Sectors and 103 Countries

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## Abstract

A new database on the barriers faced by foreign suppliers of services has been produced by the World Bank. Data for 103 countries are available on 11 of the most important services sectors in international trade. Based on these data and building on the methodology and publications supported by the Australian Productivity Commission, this paper produces estimates of the ad valorem equivalents of the

barriers for all these sectors and countries. Compared with estimates available in the literature that are based on assessments of country- and sector-specific barriers to services providers, the estimates expand the set of sectors and more than triple the set of countries for which estimates of the ad valorem equivalents of the services barriers are available.

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# **Estimates of Ad Valorem Equivalents of Barriers Against Foreign Suppliers of Services in Eleven Services Sectors and 103 Countries**

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**Keywords:** services barriers; ad valorem equivalents; tariff equivalents; World Bank services database; Services Trade Restrictiveness Index; Australian Productivity Commission.

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# Estimates of Ad Valorem Equivalents of Barriers Against Foreign Suppliers of Services in Eleven Services Sectors and 103 Countries

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## 1. Introduction

Interest in estimates of the impact of services barriers has significantly increased since the early 1980s. In part this is due to the recognition of the growing importance of services as a share of national value added and as a share of global trade. By 2007, services as a share of national value-added ranged from 74 percent in high income OECD countries to 48 percent in low income countries.<sup>1</sup> Escaith (2008) estimated that cross-border trade in services accounted for almost 50 percent of total goods and services trade when trade is measured on a value-added basis; and when we include the value of sales by foreign affiliates, the share of services trade in total trade rises further. In addition, with the inclusion of the General Agreement on Trade in Services (GATS) as a major pillar of the WTO agenda and the inclusion of services in regional trade agreements, services commitments have become an important aspect of international trade negotiations. Estimates of what is at stake in these services trade negotiations depend in the first instance on estimates of the ad valorem equivalents (AVEs) of the barriers faced by foreign suppliers of services.

In this paper, we present our estimates of the ad valorem equivalents of the discriminatory barriers against foreign suppliers of services in 11 services sectors in 103 countries. The estimates are based on a recently available data set on the discriminatory regulatory barriers against foreign suppliers of services in these sectors and countries that was produced by the World Bank. The database contains significantly greater coverage of the regulatory regimes in services in developing countries than what has been available heretofore.<sup>2</sup> The database provides data on the

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<sup>1</sup> From the World Development Indicators database. See Francois and Hoekman (2010, table 1).

<sup>2</sup> The OECD provides a database of regulatory barriers in services and services trade restrictiveness indices for 40 countries focusing on the OECD and BRICS countries. The data are available at <http://www.oecd.org/tad/services-trade/services-trade-restrictiveness-index.htm>. See also Golub (2009) for a measures over time of restrictions on FDI in services in 50 developing and 23 developed countries.

following services sectors: (1) accounting; (2) legal; (3) air transport; (4) rail transport; (5) road transport; (6) maritime transport; (7) insurance; (8) banking; (9) fixed line telecommunications; (10) mobile telecommunications; and (11) retail distribution. These sectors are well-chosen among the many services sectors since they are among the most important in international trade. Further, these sectors are important inputs into manufacturing production, and evidence has shown that greater access to business services that are inputs into manufacturing has significant productivity impacts on the manufacturing sector.<sup>3</sup> Although Borchert, Gootiiz and Mattoo (2012) have produced services trade restrictiveness indices from this database, this paper is the first to produce ad valorem equivalents based on this database. As a result, we are able to provide much wider coverage of ad valorem equivalents of the barriers than previous efforts that were based on assessments of the regulatory regimes in the services sectors.

Following the initial work of Hoekman (1995), estimates of the ad valorem equivalents of barriers against foreign service suppliers can be grouped into two methodological categories: (i) gravity model estimates; and (ii) estimates that rely on the collection of information on the regulatory barriers against foreign suppliers of services, typically convert that information into indices of restrictiveness and then use the restrictiveness index in econometric regressions to get AVEs.<sup>4</sup> The gravity approach has been employed by Francois (1999), Walsh (2006), Francois et al., (2007) and Kimura and Lee (2004). These authors regress the total bilateral cross-border trade in services on the national incomes of the two countries, distance between them, and dummy variables to reflect common border, common language or other variables. For example, Francois (1999) assumes that the difference between the actual and predicted trade flows reflects trade barriers. Assuming a demand elasticity allows a conversion of the quantity differences into a price impact or AVE of the inferred barriers to services trade. One limitation of this approach is that the estimates are based on cross-border trade in services; but in services it is often sales through foreign direct investment that are more important.<sup>5</sup> As Francois and Hoekman (2010)

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<sup>3</sup> Several studies using firm level data have established a link between increased access to services and increases in productivity. Using panel level data and controlling for FDI endogeneity, Arnold, Mattoo and Javorcik (2011) for the Czech Republic, Fernandes and Paunov (2012) for Chile, Shepotylo and Vakhitov (2012) for Ukraine and Arnold, Javorcik, Lipscomb and Mattoo (forthcoming) for India find a significant positive relationship between FDI in services following liberalization (especially allowing foreign entry) and the performance of downstream domestic firms in manufacturing. See Francois and Hoekman (2010) for a review of the evidence from other sources.

<sup>4</sup> See Deardorff and Stern (2006) and Dee (2005) for comprehensive reviews of the literature on estimates of the ad valorem equivalents of the barriers faced by foreign suppliers of services. See also Francois and Hoekman (2010). Walsh (2006) has an extensive review of the gravity approach.

<sup>5</sup> Francois, Hoekman and Woerz (2007) bring foreign direct investment data into the approach.

note, a well-known limitation of this approach is that the AVE is not related to any specific regulatory barrier. In our experience in estimating these AVEs in business services sectors in Russia, Armenia, Georgia, Kenya, Tanzania, Kazakhstan, Belarus and Malaysia,<sup>6</sup> we find that in-country officials are often deeply skeptical or unconvinced of such estimates unless the researcher can point to specific regulatory barriers that explain the ad valorem equivalent in particular sectors; but when specific barriers can be referenced, the story typically becomes convincing. Further, without tying the AVEs and the costs of the barriers to specific regulatory barriers, the analyst is not able to recommend potential policy reforms.

Consequently, we prefer the second approach and our methodology is firmly rooted in it. In addition to the single country studies of many sectors mentioned above, the second approach has been employed in single sectors for many countries by Nguyen-Hong (2000), Warren (2000), Kalirajan et al., (2000), Kang (2000) and Kalirajan (2000).<sup>7</sup> Doove et al., (2001), Dihel and Shephard (2007) and Copenhagen Economics (2005) have estimated AVEs employing this approach for many countries and in multiple sectors. This approach collects information on the regulatory regime in a particular services sector in a country and typically converts that information into an index of restrictiveness.<sup>8</sup> Then the impact of services restrictiveness on a measure of price or cost is estimated econometrically, where a vector of independent variables that impact the price or cost of the service is included in the estimation to control for their impact. This approach is necessarily done on a sector by sector basis. The Australian Productivity Commission has pioneered work along these lines, and many of the studies it supported were collected in Findlay and Warren (2000). Although data on the full vector of variables impacting price or cost may not be known for many countries, if the restrictiveness index is known, estimates of the AVE of services barriers may be obtained using this approach assuming that the estimated coefficient on the restrictiveness index applies in these countries.

Lacking information on the regulatory regimes in services for most countries, the authors above were generally able to estimate ad valorem equivalents of the services barriers in less than

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<sup>6</sup> The first five of these country studies are available at <https://drive.google.com/?pli=1#folders/0B0V-tBs4-hXYjA3MTQ5MDctNTAxYy00M2I4LWI3NDAtZGRiNDI3NmYwOGU2>

<sup>7</sup> Bottini et al., (2011) estimate the impact of barriers in banking and telecommunications on performance variables in four Middle Eastern countries.

<sup>8</sup> Deardorff and Stern (2006) discuss alternate, but less common, ways to use the information on the regulatory barriers in subsequent regressions. See Dihel and Shephard (2007) for one variation of this approach.

30 countries.<sup>9</sup> Consequently, our country coverage is considerably broader, especially for developing countries, and also widens the available sector coverage.

In the next section, we explain the methodology and data sources. We present our results in section 3.

## 2. Methodology

### 2.1 Basic concepts

**2.1.1 The Ad Valorem Equivalent.** Consider a simple partial equilibrium model of a service sector under perfect competition. Without loss of generality for the calculation of the ad valorem equivalent (AVE), we assume that the country concerned is small so that the supply curve by foreign services providers is perfectly elastic.<sup>10</sup> The foreign supply curve could apply to either the case of cross border supply of services or to sales by foreign affiliates from foreign direct investment. We illustrate the case below where we assume that only discriminatory restrictions exist. Then the ad valorem equivalent is shown in figure 1. When services provided by foreigners and those provided by domestic suppliers are perfect substitutes, the upper diagram of figure 1 applies. When services provided by foreigners and those provided by domestic suppliers are imperfect substitutes, the lower diagram of figure 1 applies. In either case, the AVE is measured as

$$AVE(\%) = [(P_f^1 - P_f^0) / P_f^0] \cdot 100 ,$$

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<sup>9</sup> Kalirajan et al., (2000) produced estimates for 27 countries (mostly Asia-Pacific) in banking; Nguyen-Hong (2000) produces estimates for 20 economies in engineering services; Kang (2000) produces estimates for 23 countries in transportation services; Warren (2000) produces estimates for 20 countries in communications; Dihel and Shephard (2007) produce estimates for 26-28 countries in banking, insurance, telecommunications and engineering services; Copenhagen Economics (2005) estimates the barriers for 19 European Union countries. Doove et al. (2001) produce estimates for 35 economies in air transport services, 47 countries in telecommunications, and 51 economies in electricity prices.

<sup>10</sup> If the foreign supply curve is upward-sloping, the reduction in the barriers against foreign suppliers will lead to a smaller decrease in the price of foreign services than shown in figure 1. But the difference between the foreign supply prices with and without discriminatory restrictions will still be the ad valorem equivalent.

where  $P_f^1$  is the price of services provided by foreign suppliers with restrictions and  $P_f^0$  is the price of services provided by foreign suppliers without discriminatory restrictions.<sup>11</sup>

**2.1.2 Discriminatory versus Non-Discriminatory Barriers.** Many restrictions affect both foreign and domestic suppliers of services. For example, a ban on entry for all firms could be non-discriminatory. Even if these barriers have a relatively more adverse effect on the costs of foreign firms, we call these non-discriminatory restrictions. If the non-discriminatory restrictions are also removed or reduced, the foreign supply price would fall further. In this case, the AVE of all the barriers that foreign suppliers of services confront can be decomposed into two parts: AVEs of discriminatory restrictions and those of non-discriminatory restrictions. An issue in the literature has been the disentangling of the impact on price of a service of the discriminatory and non-discriminatory components of services regulations. The data set we use in this paper provides information on discriminatory barriers only. Consequently, we only provide estimates of the AVE of discriminatory barriers.<sup>12</sup>

## 2.2 Data Sources

With two exceptions mentioned below, the data for the estimates of the discriminatory barriers faced by foreign suppliers of services come from the recently released World Bank database of survey information on 11 services sectors mentioned above in 103 countries. See Borchert, Gootiiz and Mattoo (2014; 2012) for a guide to the database.

The World Bank survey employed a 169 page questionnaire of the regulatory regimes of these 11 sectors that was completed by law firms resident in each of the non-OECD 103 countries. For OECD countries, the questionnaire was completed based on a variety of available reports. The database focuses exclusively on the discriminatory barriers faced by foreign suppliers of services and, except for the European Union countries, ignores preferential

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<sup>11</sup>In some model applications, the AVE cannot be greater than one (e.g., Balistreri et al., 2009; Jensen et al., 2010), so these researchers may use the domestic price with restrictions in the denominator; then the AVE is less than or equal to one. It is straightforward to convert the ad valorem equivalent (AVE) with the domestic price with restrictions to one with an unrestricted domestic price in the denominator. In particular, if AVE is the ad valorem equivalent with restricted prices in the denominator and AVE\* is the ad valorem equivalent with unrestricted prices in the denominator, then AVE\* may be derived from AVE as  $AVE^* = AVE/[1-AVE]$ ; and  $AVE = AVE^*/[1+AVE^*]$ .

<sup>12</sup>In work in Armenia, Georgia, Russia, Kenya, Tanzania, Belarus and Malaysia, our colleagues have supplemented the data from the World Bank questionnaire with other sources which then allowed them to estimate the AVE of the non-discriminatory barriers as well. The first five of these papers are available at <https://drive.google.com/?pli=1#folders/0B0V-tBs4-hXYjA3MTQ5MDctNTAxYy00M2I4LWI3NDAtZGRiNDI3NmYwOGU2>.

commitments and focuses exclusively on MFN barriers. For European Union countries, however, they took a weighted average of MFN and intra-EU policies.<sup>13</sup> Based on these data and the methodology they developed, Borchert, Gootiiz and Mattoo produced “Services Trade Restrictiveness Indices,” for all 11 sectors in all of the 103 countries.<sup>14</sup>

Information on two questions came from additional sources. Regarding barriers to maritime transport services, information on participation in a “United Nations Liner Code,” came from the Convention on a Code of Conduct for Liner Conferences.<sup>15</sup> Information related to intellectual property rights in retail services was based on whether the country is on the priority 301 watch list of the United States Trade Representative (USTR).<sup>16</sup>

### **2.3 Calculation of Services Trade Restrictiveness Indices from the World Bank Database According to the Methodology of the Australian Productivity Commission**

Although Borchert, Gootiiz and Mattoo calculated Services Trade Restrictiveness Indices (STRIs) based on the World Bank database and a methodology they developed, to date, the World Bank database of discriminatory services barriers has not been transformed into ad valorem equivalents. We use the data of the World Bank and transform it by building on a series of studies supported by the Australian Productivity Commission. First, these authors developed a methodology for calculating STRIs in several business services sectors. This included studies by McGuire, Schuele and Smith (2000), McGuire and Schuele (2000), Kalirajan (2000) and Nguyen-Hong (2000). STRIs were calculated and, crucially, ad valorem equivalents were also estimated (usually in separate studies). Since we need to use the regressions of the Australian authors for the ad valorem equivalents estimates, we first need to score the data on discriminatory regulatory barriers of the World Bank database consistent with the STRI methodology employed by the Australian authors.<sup>17</sup> In the case of the European Union countries, transformation of the World Bank database includes weighting the intra-EU and extra-EU services regulatory regimes. We ignored preferential arrangements other than for the EU.

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<sup>13</sup> The decision to account for preferential services policies within EU countries is in contrast with the OECD Services Trade Restrictiveness Indices which ignore preferential liberalization throughout. See: <http://www.oecd.org/tad/services-trade/methodology-services-trade-restrictiveness-index.htm>

<sup>14</sup> Landlocked countries were not included in the maritime sector survey, so the database is for less than 103 countries in this sector. The underlying data and the Services Trade Restrictiveness Indices of these authors are available at <http://iresearch.worldbank.org/servicetrade/>.

<sup>15</sup> See: [http://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=XII-6&chapter=12&lang=en](http://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XII-6&chapter=12&lang=en)

<sup>16</sup> See <http://www.ustr.gov/about-us/press-office/reports-and-publications/2011/2011-special-301-report>.

<sup>17</sup> The scoring methodology of Borchert, Gootiiz and Mattoo differs in significant ways from that of the Australian authors.

For the STRIs in each of these service sectors, the authors first developed a set of regulatory categories of potential restrictions and listed possible regulatory outcomes within each category. Typically, separate categories were defined for foreign supply of services by foreign direct investment and commercial presence or by cross-border supply from abroad. They collected data and assessed the regulatory regimes of many countries. Predetermined weights were assigned to each category based on the researchers' a priori assessment of the importance of each category to performance outcomes of the sector.

These indices are subject to criticisms of various kinds as a determinant of the price impact of the restraints. It would have been better to estimate the weights assigned to different categories, rather than assign them on an a priori basis. But limitations on the size of the sample prevented this. Related to this, although cross-border supply of services generally is an inferior substitute for supply of services with a commercial presence, for some sectors, or at least services within a sector, cross-border supply might substitute well for supply with a commercial presence. For example, some insurance or re-insurance services might compete well through on-line sales or cross-border negotiations in re-insurance. Then if the market is open to cross-border supply, restrictions in the commercial presence area would have a smaller impact on the price of the service. Conversely, if firms can enter easily with a commercial presence, restrictions on cross-border supply would likely have less of a price impact. It is difficult to construct an index that could capture all these nuances, and our indices fail to capture them. Other limitations are mentioned in the caveats section.

The sum of the weights is equal to one in all cases. Regulatory outcomes within each category in each sector were developed and scored, with a score of 1 being the most restrictive and zero implying no restriction. The estimated score for each category is obtained by multiplying the selected score by the weight that is assigned to each restriction category. The STRI for the sector in a country is obtained by summing the weighted score for each category across all restriction categories. In this manner, their evaluations of each restriction category were transformed into a services trade restrictiveness index that ranged from zero to one, with one being completely blocked to foreign services suppliers and zero implying no discriminatory barriers against foreign services suppliers.

In this study, for several sectors the list of restrictions and weights in our STRIs are identical to those of the Australian authors. In particular, the restrictions and weights are the same as those of: McGuire, Schuele and Smith (2000) in maritime services; McGuire and Schuele (2000) in banking services; Kalirajan (2000) in distribution services; and Nguyen-Hong (2000) in professional services. In the absence of explicit matrices of restrictions for the other sectors, it was necessary to develop STRIs with weights and restrictions based on those of the Australian authors. In particular, in air transport, rail transport and road transport, they were developed by Kimura et al., (2004a), based on categories of restrictions on maritime services in McGuire Schuele, and Smith (2000). In insurance services, Kimura et al., (2004b) developed the restriction list and weights based on banking services in McGuire and Schuele (2000). In fixed and mobile line services, Kimura et al., (2004c) developed a list based on categories in Warren (2000a) in telecommunications supplemented by categories in financial sectors and transport sectors in McGuire and Schuele (2000) and McGuire, Schuele and Smith (2000).

Finally, but crucially, for our STRIs we define a mapping from the World Bank database to the list of restrictions (or matrices) of the Australian authors. In the case of the European Union countries, a case by case assessment was required to assess the notes on the intra-EU policies in the World Bank database. In this manner, we score the regulatory regimes of the 11 sectors in the 103 countries according to the Australian authors' criteria, i.e., we calculate services trade restrictiveness indices according to the methodology of the Australian authors.

There is considerable overlap in the categories of services restrictiveness in the World Bank database and the Australian authors scoring matrices, but the mapping is not one to one. Defining the mapping from the World Bank database to the criteria of the various Australian authors involved judgments in many cases. When there was not a clear one to one mapping, we used the closest proxy from the World Bank database. We attempted to use all the information in the World Bank database, but in a few cases, no reasonable proxy was available. In these cases, we deleted the category from the matrix of the Australian authors and rescaled the remaining categories so that the sum of the category weights equaled one. The mapping for the banking sector is included as table 1 to illustrate the procedure. The detailed mappings for all sectors are

shown in tables 1 through 11. Complete documentation of the scoring and data are provided in Excel spreadsheets online.<sup>18</sup>

Although tables 1-11 in this paper should be self-explanatory, we discuss a few examples to clarify the mapping procedure. First consider the mapping for regulation of banking services. The first category in the McGuire and Schuele matrix for banking is licensing of banks. The category has a weight in the McGuire and Schuele matrix of 0.1, and there are five possible scores for the category. If no new license is allowed, the score is 1, for a weighted score of 0.1. If licenses up to three licenses are issued through a complicated, discriminatory and costly procedure, the McGuire and Schuele score is 0.75, for a weighted score of .075. If up to six licenses are issue with an application fee and several requirements, the McGuire and Schuele score is 0.2, for a weighted score of .02. If up to ten licenses are issued with only prudential requirements and an application fee, the McGuire and Schuele score is 0.1, for a weighted score of .01. If licenses are issued with only prudential requirements and an application fee, the McGuire and Schuele score is 0, for a weighted score of 0. If the World Bank database indicates that “market entry is not allowed,” we score this category in the McGuire and Schuele matrix at 1. The World Bank database notes three possible restrictions on the issuance of licenses: (i) there is a limit on the licenses available; (ii) the license is issued at the discretion of the regulatory body; and (iii) the license may be denied despite fulfillment of all publicly available criteria. If the World Bank database indicates all three categories of restrictions apply, we score this category of the McGuire and Schuele matrix at 0.75. If two of these restrictions apply, we score this category at 0.2. If one of these restrictions apply, we score the category at 0.1. If none apply in the World Bank database, we score this McGuire and Schuele category at zero.

There is a category “equity participation permitted,” which has a weight of 0.2 in the McGuire and Schuele matrix for banking. The score in the McGuire and Schuele matrix is  $1-s$ , where  $s$  is the maximum equity share in a bank that is permitted for foreign firms. The World Bank database produces this information precisely, so the mapping from the World Bank database to McGuire and Schuele is one to one and very clear in this case.

To give examples where the mapping is more problematical, consider accounting services, where the list of regulatory categories is adapted from Nguyen-Hong. (We call this list

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<sup>18</sup> See the folders: “STRI mapping of data,” “STRI scoring 103 countries,” and “Intra-EU STRI scoring and Calculations” at the link: <https://drive.google.com/?pli=1&authuser=0#folders/0B0V-t-Bs4-hXYjA3MTQ5MDctNTAxYy00M2I4LWI3NDAtZGRiNDI3NmYwOGU2>

and similar lists by the other Australian authors on whose work we build as the “Australian categories.”) We had to take proxies in the case of the category “Activities reserved by law to the profession,” which has a weight of 0.05. This category in the Australian list is scored at one if four or more activities are reserved to the profession. If there are two categories reserved to the profession, the Australian score is 0.5; for one or zero categories reserved to the profession the score is 0.25 and zero, respectively. In this case, we took the closest relevant proxy in the World Bank database, which was: for how many of the following actions is an economic needs test required: intra-corporate transfer (ICT), Independent Professionals as Employee of a local firm (IPC), and Service-Supplying Employee (SSE) of a firm based abroad. If an economic needs test is required for three (two, one, zero), we score the Australian matrix at 1, 0.5, 0.25 and 0, respectively.

Another example of no clear mapping is the case of restrictions on advertising, marketing and solicitation in the Australian matrix for accounting. We want to use all the information available in the World Bank database, so from the World Bank database we use the information on “minimum wage is required for IPC, ICT or SSE,” as our proxy for this category in the Australian matrix.

## **2.4 Transforming Our Services Trade Restrictiveness Indices into Ad Valorem Equivalents**

We rely on the papers by Warren (2000) in telecommunications (for both fixed line and mobile), Kalirajan et al., (2000) in financial services (for both banking and insurance), Kang (2000) in transportation services (for all four transportation sectors), Nguyen-Hong (2000) in professional services (for both accounting and auditing, and legal services) and Kalirajan (2000) for retail distribution services. Except for Warren, in all studies the authors regressed a measure of the price or costs of services against their STRIs and other relevant variables in a cross-country regression at a point in time to determine the impact of the regulatory barriers on the price of services.<sup>19</sup> Through these regressions, the authors estimated the ad valorem equivalents of the regulatory barriers in the countries of their sample.

Our methodology, which is explained in detail in Jafari (2014), assumes that the average of the international regressions of the price or cost impact estimated by the Australian authors

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<sup>19</sup>Warren estimated quantity impacts and then, using elasticity estimates, was able to obtain price impacts and ad valorem equivalents.

mentioned in the previous paragraph applies to our 103 countries and 11 sectors. Based on those estimates, we calculate AVEs. Here we provide a brief overview of the estimating equations used by these authors.

**2.4.1 Banking and Insurance.** For banking services, Kalirajan et al., (2000) use the net interest margin of banks as their price performance variable. From their estimation, the ad valorem equivalent (in percentage terms) of the STRI in banking services may be calculated from the following relationship:

$$(1) \quad 100 * (NIM_i - NIM_{i_0}) / NIM_{i_0} = 100 * [(NIM_i / NIM_{i_0}) - 1] = 100 * (e^{0.73 * STRI_i} - 1),$$

where  $NIM_i$  is the net interest margin in banking in country  $i$ ,  $NIM_{i_0}$  is the net interest margin when all restrictions in banking are removed in country  $i$ , and  $STRI_i$  is the services trade restrictiveness index in banking in country  $i$ . In equation 1, the denominator is a price measure without any restrictions. This implies that the ad valorem equivalent may exceed 100 percent. We employ the same equation for insurance services.

**2.4.2 Transportation Services.** In the case of the four transportation services sectors, we used the econometric estimates of Kang (2000) for maritime services. But given the expanded set of countries in our data set, it was necessary to adapt the calculation of the ad valorem equivalents. Kang uses shipping margins as the proxy for shipping price. The shipping margins from country  $i$  (exporter) to country  $j$  (importer),  $M_{ij}$ , are defined as

$$M_{ij} = IM_{ij} / EX_{ij},$$

where  $IM_{ij}$  represents the observed CIF value reported by importing country  $j$  for all products imported from country  $i$ , and  $EX_{ij}$  represents the observed FOB value of all exports reported by the  $i$ th country as exported to the  $j$ th country. The shipping margins are estimated as functions of a set of variables, the most important of which are bilateral restrictions (our STRIs), the distance between the trading partners and the scale of bilateral trade. Given that Singapore typically ranks number one on the World Bank Doing Business measure of “Trading Across Borders,” we assume that STRIs in transportation services that are less than or equal to the value for Singapore imply an AVE equal to zero. Further, assuming that variables other than the restrictiveness index do not change, we obtain differences in the expected shipping margin of

country  $i$  and the average expected shipping margin of countries in the same development category, as a function of differences in the STRIs. Then we calculate the AVEs as:

$$(2) \text{ AVE}_i = [(E(M_i) - 1) - (E(M_{\text{Singapore}}) - 1)] / (E(M_i) - 1)$$

In the case of transportation services, unlike all other cases, we took the percentage price change as a percent of the domestic price with restrictions. Thus, in the case of our four transportation services sectors only, the maximum ad valorem equivalent is 100 percent.<sup>20</sup>

**2.4.3 Fixed Line and Mobile Telephone Services.** In the case of telecommunications, Warren estimated the quantity impacts of policy restrictions and other variables including per capita income and population density, and then used an estimate of the price elasticity of demand to get the price impact of policy restrictions. Define  $b^f$  and  $b^m$  as the estimated coefficients of the STRIs on the change in quantities in fixed line and mobile, respectively, and  $e_i$  as the elasticity of demand. Warren defines

$$(Q_i^{m*} - Q_i^m) / Q_i^m = QI_i^m \quad \text{and} \quad (P_i^{m*} - P_i^m) / P_i^m = PI_i^m \quad \text{and}$$

$$(Q_i^{f*} - Q_i^f) / Q_i^f = QI_i^f \quad \text{and} \quad (P_i^{f*} - P_i^f) / P_i^f = PI_i^f ,$$

where  $Q_i^f$  and  $Q_i^m$  are the quantity of fixed lines and mobile phone subscribers per 100 inhabitants, respectively; the same variable with an asterisk is the estimated quantity assuming no policy restrictions. P is a price variable defined analogously to the quantity variable. Warren estimates that

$$(3a) (Q_i^{f*} - Q_i^f) / Q_i^f = QI_i^f = b^f * STRI_i^f / Q_i^f = e_i PI_i^f$$

$$(3b) (Q_i^{m*} - Q_i^m) / Q_i^m = QI_i^m = b^m * STRI_i^m / Q_i^m = e_i PI_i^m$$

The ad valorem equivalents in fixed line and mobile are then:

$$(4a) \left[ \frac{1}{(PI_i^f + 1)} - 1 \right] \cdot 100 = \left[ \frac{(P_i^f - P_i^{f*})}{P_i^{f*}} \right] \cdot 100 = \text{AVE}_i^f (\%) \quad \text{if } PI_i^f > -1$$

$$(4b) \left[ \frac{1}{(PI_i^m + 1)} - 1 \right] \cdot 100 = \left[ \frac{(P_i^m - P_i^{m*})}{P_i^{m*}} \right] \cdot 100 = \text{AVE}_i^m (\%) \quad \text{if } PI_i^m > -1$$

<sup>20</sup> As explained above, it is straightforward to calculate the AVE with the unrestricted price in the denominator from the data provided on the AVE with the restricted price in the denominator.

Since the price without restrictions must be non-negative, we impose the following constraint:

$$PI_i^f > -1, \text{ and } PI_i^m > -1.$$

**2.4.4 Professional Services.** In professional services, as the only available study on professional services, we use the study by Nguyen-Hong (2000) on engineering firms as our proxy for legal and accounting services. Nguyen-Hong used a cross-sectional data set of 84 engineering firms in 20 countries. He used price- cost margins as his dependent variable, which he regressed against the firm's market share, cost of capital, sales growth, diversification index, three types of Trade Restrictiveness indices and some other variables. Based on his methodology, the price raising or rent creating impact of the foreign discriminatory restrictions in country i can be estimated from the following equation<sup>21</sup>:

$$(5) \text{ Price Impact}(i) = \left[ \frac{p-p_0}{p_0} \right](i) = \left( \frac{p}{c} \right) (\beta_e + \beta_o) (1-m) \text{ STRI}(i) = 1.33 * (0.37+0.26) * 0.94 * \text{ STRI}(i)$$

where  $p$  and  $p_0$  refer to prices with and without restrictions, respectively,  $c$  is variable costs (assumed constant),  $\beta_e$  and  $\beta_o$  are the estimated coefficients of the impact of the indices of market access and operations barriers on foreign firms, respectively, and  $m$  is the sample mean of firms' market shares. We have only one STRI that combines both types of barriers of Nguyen-Hong, so we use our STRI for both coefficients, and we use sample means of Nguyen-Hong for  $m$  and  $\frac{p}{c}$ . Since equation 5 ignores the cost-raising impact of policy restrictions, in principle, it is a biased down measure of the AVEs of the impacts. Nonetheless, table 15 shows that the AVEs in professional services are among the highest of all the sectors.

**2.4.5 Distribution Services.** Kalirajan (2000) employed a methodology very similar to Nguyen-Hong, starting with his estimation of price-cost margins based on many variables. The principle methodological differences were that Kalirajan estimated the cost raising impacts of the barriers and developed a single STRI. Based on his estimating equation, we may calculate the AVE of the discriminatory restrictions from the the cost raising impact, that is, as:

$$(6) \text{ Cost Impact } (i) = \left[ \frac{c-c_0}{c_0} \right](i) = PQ * \beta \text{ STRI}(i) / [cQ - PQ \beta \text{ STRI}(i)] = \beta \text{ STRI}(i) / [(c/P) - \beta \text{ STRI}(i)]$$

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<sup>21</sup> This methodology underestimates the costs of the barriers since it ignores the impact of the barriers on costs of the service.

where  $c$  and  $c_0$  are variable costs with and without restrictions, respectively,  $P$  and  $Q$  are price and quantity with restrictions,  $\beta$  is the estimated coefficient for the impact of a change in the STRI.

### 3. Results and Caveats

#### 3.1 Results

The results for the 103 countries and 11 sectors of the Services Trade Restrictiveness Indices that we have calculated based on the World Bank database and the Australian methodology are presented in table 12. Our AVEs are presented in table 13. To assist with interpretation, in table 14, we present the STRIs and AVEs by sector, but aggregated to three levels of development. In table 15, we show our STRIs and AVEs by sector, aggregated by geographic region. Full details of the calculations are available online.<sup>22</sup>

Focusing on high income countries, table 14 shows that professional services are among the sectors with the highest AVEs in high income countries. But high income countries have uniformly lower estimated AVEs than transition countries, developing countries or least developing countries.

From table 15, we see that fixed line telephone services in South Asia and especially in Sub-Saharan Africa stand out as the sector and regions with the highest AVEs. There are 13 countries with AVEs of 915 percent, with 12 of them in Sub-Saharan Africa. Given that our calculated STRIs in fixed line do not appear dramatically higher than in mobile telephone services, the very high AVEs in fixed line may appear puzzling. The explanation is that the AVE is calculated based on an estimate of the quantity impacts of the barriers. In particular, it depends on the number of subscribers per 100 inhabitants (see equations 3 and 4). Given much higher penetration of mobile telephone subscribers than fixed line in many developing countries, especially in many Sub-Saharan countries, we will often get much higher AVEs in fixed line for comparable STRIs in fixed line and mobile telephone services. State owned telecom monopolies traditionally have typically done an extremely poor job of providing telephone service in Sub-Saharan Africa. For example, in Kenya and Tanzania, which are two of the countries with an estimated 915 percent AVE in fixed line, there is less than one fixed line subscriber per 200

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<sup>22</sup> Links for the STRI calculations are provided above. For the ad valorem equivalent calculations, see the folder “Ad Valorem Equivalents Calculations” at <https://drive.google.com/?pli=1#folders/0B0V-t-Bs4-hXYjA3MTQ5MDctNTAxYy00M2I4LWI3NDAtZGRiNDI3NmYwOGU2>

inhabitants.<sup>23</sup> But mobile telephone services have been a game changer in Sub-Saharan Africa in terms of widening access to telephone service. In 2014, in Kenya, there were 70 mobile telephone subscribers per 100 inhabitants, while in Tanzania there were 57 per 100 inhabitants.

Table 14 shows that mobile telephone and retail distribution services have the lowest AVEs, in part explained by the penetration rates of mobile telephones. We generally see high estimates of AVEs in developing and least developed countries in transport services, especially rail transportation services. All the transportation AVEs are highly volatile if the price without restrictions is in denominator. We present the transport AVEs, unlike the others, as a percent of the price of service with restrictions, but they are easily converted to AVEs as a percent of the price of services without restrictions.<sup>24</sup>

Finally, an issue in the literature is whether the barriers to foreign providers of services raise costs or create rents. In the event of the latter, for the welfare analysis of liberalization, it would also be important to know if the rents are captured by domestic agents or foreign agents. In order to decompose the AVEs into cost increasing or rent creating shares, it would be necessary to have better information on the regulatory regimes. Our estimates do not provide information on this issue.

### 3.2 Caveats

Some of the more important caveats are the following.

- (i) The weights for the categories of limitations are assumed based on the judgment of the researchers as to their importance. With a larger sample, it would be possible to estimate the impact of separate categories of restrictions on the performance variable rather than make an a priori judgment.
- (ii) The additive nature of our STRIs fails to fully take into account nuances of the substitution possibilities between cross-border supply and supply by commercial presence regarding their impacts on the price of the service.

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<sup>23</sup> If the initial fixed line penetration rate is extremely low and there is a high STRI equation 3a yields a value of that is less than negative one. Since this implies a negative price of telecom services without restrictions, we cannot use equation 3a in these cases. Since it occurs only in cases of very high effective barriers, we assign an AVE in these cases equal to the highest AVE for countries in our sample for which we can calculate an AVE. That value is: 915%, based on the estimate for Cambodia.

<sup>24</sup> If AVE is the ad valorem equivalent with restricted prices in the denominator and AVE\* is the ad valorem equivalent with unrestricted prices in the denominator, then AVE\* may be derived from AVE as  $AVE^* = AVE/[1 - AVE]$

- (iii) We had to map the data in the World Bank database to the Australian based list of restrictions. In many cases this is not a one to one mapping and we have had to take the closest proxies available or modify the subcategories of the Australian list of restrictions.
- (iv) The impacts could change over time, but we are relying on cross-country econometric estimates of the impact of a change in our STRIs on the price or cost of the service that were done about 14 years ago.
- (v) Differences from the average that are not explained by the econometric model are ignored.
- (vi) For some sectors, such as road transportation and communications, no list of restrictions or estimated AVEs was developed by the Australian authors. In these cases, we developed lists of restrictions based on the closest categories from comparable sectors of the Australian authors. These estimates in these sectors are subject to an additional level of skepticism, since we must make a further assumption that the regression results apply for comparable sectors, e.g., the results for banking apply to insurance.

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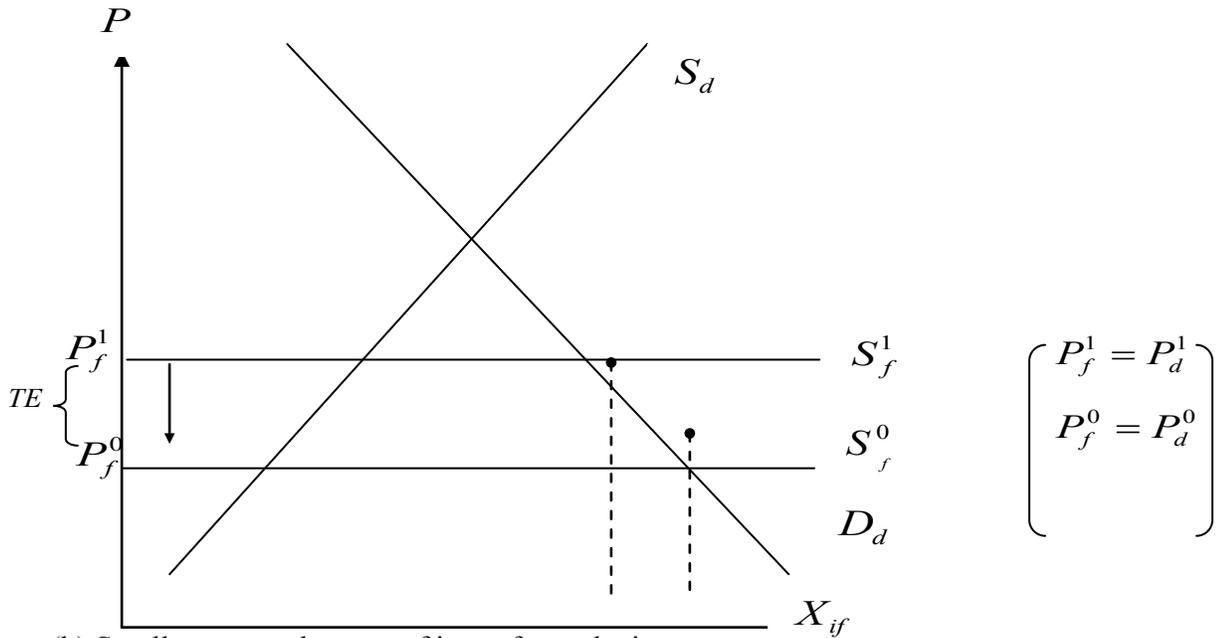
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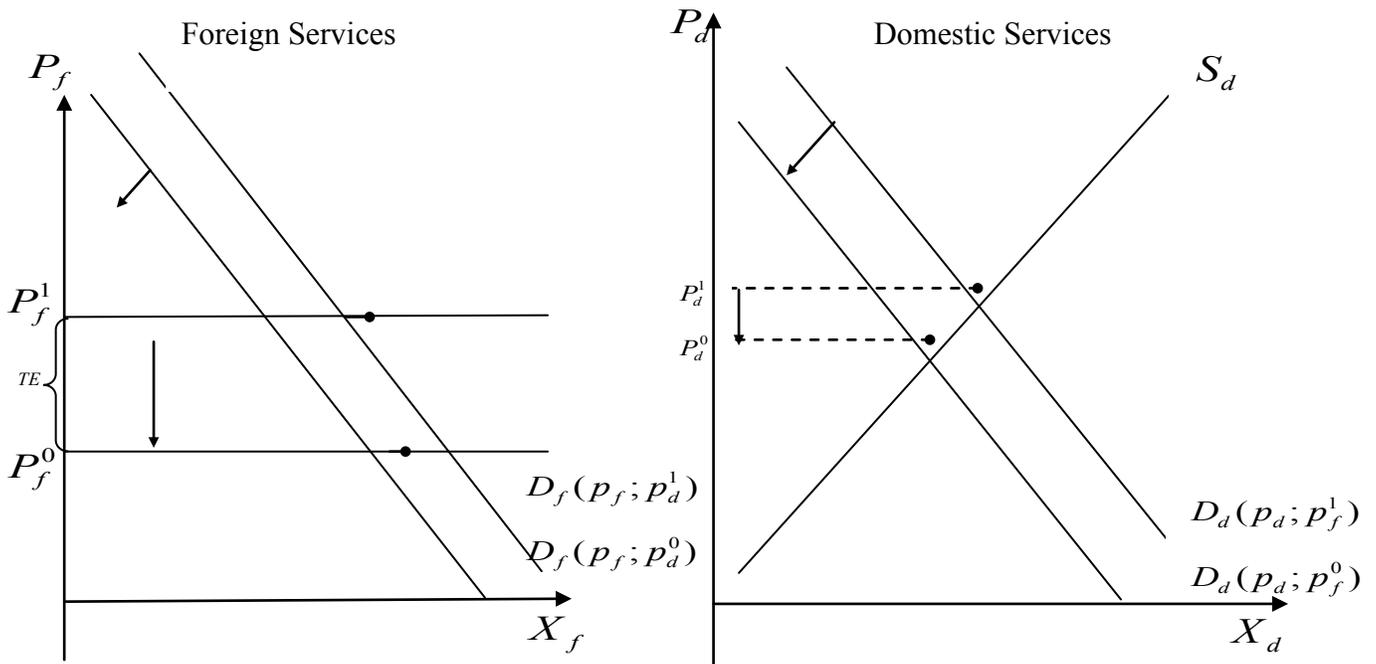
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Figure 1: Ad Valorem Equivalent (TE) of Barriers (Discriminatory Restrictions)

(a) Small country: the case of perfect substitutes



(b) Small country: the case of imperfect substitutes



## Tables

**Table 1. Mapping: Banking Sector**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Restrictions on Commercial Presence</b>				<b>Restrictions on Commercial Presence</b>			
<b>Licensing of banks</b>				<b>Licensing of banks</b>			
Issues no new license / No new license is allowed	0.1	1		Market entry is not allowed (mode 3)	0.1	1	
Issues up to 3 new licenses with only prudential requirements / Licenses are issued through complicated (discriminately) and costly procedure.	0.1	0.75		Market entry is allowed but three of the following restrictions apply: (a) There is a limit on the number of licenses available, (b) License is allocated at the discretion of regulatory body (c) license is not granted if publicly available criteria fulfilled.	0.1	0.75	
Issues up to 6 new licenses with only prudential requirements. / Licenses are generally issued with application fee and several requirements.	0.1	0.2		Market entry is allowed but two of the following restriction apply: (a) There is a limit on the number of licenses available, (b) License is allocated at the discretion of regulatory body, (c) license is not granted if publicly available criteria fulfilled.	0.1	0.2	
Issues up to 10 new licenses with only prudential requirements. / Licenses are generally issued with application fee.	0.1	0.1		Market entry is allowed but one of the following restriction apply : (a) There is a limit on the number of licenses available, (b) License is allocated at the discretion of regulatory body, (c) license is not granted if publicly available criteria fulfilled.	0.1	0.1	
Issues new licenses with only prudential requirements. / Licenses are generally issued with application fee.	0.1	0		Market entry is allowed but none of the following restriction apply: (a) There is a limit on the number of licenses available, (b) License is allocated at the discretion of regulatory body, (c) license is not granted if publicly available criteria fulfilled.	0.1	0	
<b>Form of commercial presence</b>				<b>Form of commercial presence</b>			
Measures which restrict or require a specific type of establishments	0.1	1		One of the following form of establishment is restricted : (a) Green field branch , (b) Joint venture ,( c) Greenfield Subsidiary, (d) Acquisition	0.1	1	
No restriction on establishment	0.1	0		None of the following form of establishment is restricted : (a) Green field branch , (b) Joint venture ,( c) Greenfield Subsidiary, (d) Acquisition	0.1	0	
<b>Direct investment: equity participation permitted</b>				<b>Direct investment: equity participation permitted</b>			
The score is inversely proportional to the maximum equity participation permitted in an existing domestic bank.	0.2	1-s		The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm. If s = maximum foreign equity participation permitted in a professional firm	0.2	1-s	
<b>Joint-venture arrangements</b>				<b>Joint-venture arrangements</b>			
Issues no new banking licenses and no entry is allowed through a joint venture with a domestic bank	0.1	1		No entry is allowed through a joint venture with a domestic bank	0.1	1	
Bank entry is only through a joint venture with a domestic bank.	0.1	0.5		There are specific requirements for foreign firms to enter the local market through a joint venture ( none of the following forms of establishment is allowed: (a) Green field branch, (b) Greenfield Subsidiary, (c) Acquisition (d) there is a maximum foreign equity permitted which imposes a de facto joint venture requirement).	0.1	0.5	
No requirement for a bank to enter through a joint venture with a domestic bank.	0.1	0		No restriction	0.1	0	
<b>Permanent movement of people</b>				<b>Permanent movement of people</b>			
No entry of executives, senior management and/or specialists	0.02	1		Percentage of domestic residents/citizens on the board of directors required is 100%	0.02	1	
Executives, specialists and/or senior management can stay up to 1 year.	0.02	0.8		Percentage of domestic residents/citizens on the board of directors required is above 75% and below 100%	0.02	0.8	
Executives, specialists and/or senior management can stay up to 2 years.	0.02	0.6		Percentage of domestic residents/citizens on the board of directors required is above 50% and below 75%	0.02	0.6	
Executives, specialists and/or senior management can stay up to 3 years.	0.02	0.4		Percentage of domestic residents/citizens on the board of directors required is above 25% and below 50%	0.02	0.4	
Executives, specialists and/or senior management can stay up to 4 years.	0.02	0.2		Percentage of domestic residents/citizens on the board of directors required is above 0% and below 25%	0.02	0.2	
Executives, specialists and/or senior management can stay a period of 5 years or more.	0.02	0		Percentage of domestic residents/citizens on the board of directors required is 0%	0.02	0	

**Table 1 Continued. Mapping: Banking Sector**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Cross border trade</b>				<b>Cross border trade</b>			
<b>Raising funds by foreign banks</b>	<b>0.1</b>			<b>Raising funds by foreign banks</b>	<b>0.1</b>		
Banks are not permitted to raise funds in the domestic market. / Foreign banks are not permitted to have cross-border deposits of the host country banks, corporations, and households.	0.1	1		restrictions on raising capital domestically	0.2	1	
Banks are restricted from raising funds from domestic capital market. / Foreign banks are permitted to have cross-border deposits of only some types of the host country residents or any type of the host country residents with specific ceiling amount.	0.1	NA					
Banks are restricted in accepting deposits from the public. / Foreign banks are permitted to have cross-border deposits of the host country banks, corporations, and households with licenses.	0.1	NA					
Banks can raise funds from any source with only prudential requirements. / Foreign banks are permitted to have cross-border deposits of any type of residents without restrictions.	0.1	0		no restrictions on raising capital domestically	0.2	0	
<b>Lending funds by foreign banks.</b>	<b>0.1</b>			<b>Proxy for Lending funds by foreign banks.</b>	<b>0.1</b>		
Banks are not permitted to lend to domestic clients. / Foreign banks are not permitted to have cross-border lending to the host country banks, corporations and households.	0.1	1		Restrictions on all 4 categories: repatriation of earnings, transactions in local currencies, licensing discrimination and "other" discrimination	0.1	1	
Banks restricted to a specified lending size or lending to government projects. Foreign banks are permitted to have cross-border lending to only some types of the host country residents or any type of the host country residents with specific ceiling amount.	0.1	0.75		Restrictions on 3 of the 4 categories	0.1	0.75	
Banks are restricted in providing certain services such as credit cards, leasing and consumer finance. / Foreign banks are permitted to have cross-border lending to the host country banks, corporations, and households with licenses.	0.1	0.5		Restrictions on 2 of the 4 categories	0.1	0.5	
Banks are directed to lend to housing and small business.	0.1	0.25		Restriction on 1 of the 4 categories	0.1	0.25	
Banks can lend to any source with only prudential restrictions. / Foreign banks are permitted to have cross-border lending to any type fo the host country residents without restrictions.	0.1	0		No restrictions	0.1	0	
<b>Other Restrictions</b>				<b>Other Restrictions</b>			
<b>Other business of banks - insurance and securities -</b>	<b>0.1</b>			<b>Restriction on banking services</b>	<b>0.1</b>		
Banks can only provide banking services.	0.1	1		Access denied to both deposit insurance and the central bank discount window	0.1	1	
Banks can provide banking services plus one other line of business - insurance or security services.	0.1	0.5		Access denied to either deposit insurance or the central bank discount window	0.1	0.5	
Banks have no restriction on conducting other lines of business.	0.1	0		Access provided to both deposit insurance and the central bank discount window	0.1	0	
<b>Direct investment: restrictions on certain types of services.</b>	<b>0.1</b>			<b>Direct investment: restrictions on certain types of services.</b>	<b>0.1</b>		
Restrictions on providing some types of banking services.	0.1	1		Access denied to the main payment system	0.1	1	
No restriction on providing any type of banking services.	0.1	0		Access provided to the main payment system	0.1	0	

**Table 1 Continued. Mapping: *Banking Sector***

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Expanding the number of banking outlets</b>	<b>0.05</b>			<b>Expanding the number of banking outlets</b>	<b>0.05</b>		
One banking outlet with no new banking outlet permitted.	0.05	1		Both branches (outlets) and ATMs are restricted	0.05	1	
Number of banking outlets is limited in number and location.	0.05	0.75		Restriction on either branches (outlets) or ATMs	0.05	0.75	
Expansion of banking outlets is subject to non-prudential regulatory approval.	0.05	0.25	NA				
No restrictions on banks expanding operations.	0.05	0		No restriction on number of outlets or number of ATMs	0.05	0	
<b>Composition of the board of directors</b>	<b>0.02</b>			<b>Composition of the board of directors</b>	<b>0.02</b>		
The score is inversely proportional to the percentage of the board that can comprise foreigners.	0.02	1-b		The score is inversely proportionately to the percentage of the board that can comprise foreigners. If b = maximum percentage of the board that can comprise foreigners.	0.02	1-b	
<b>Temporary movement of people</b>	<b>0.01</b>			<b>Temporary movement of people ( we used information on temporary movement of people for accounting services)</b>	<b>0.01</b>		
No temporary entry of executives, senior managers and/or specialists.	0.01	1		No limitation on the duration of stay initially allowed for IPC	0.01	1	
Temporary entry of executives, senior managers and/or specialists up to 30 days.	0.01	0.75		Duration of stay initially allowed for IPC is up to 1 month	0.01	0.75	
Temporary entry of executives, senior managers and/or specialists up to 60 days.	0.01	0.5		Duration of stay initially allowed for IPC is up to 2 month	0.01	0.5	
Temporary entry of executives, senior managers and/or specialists up to 90 days.	0.01	0.25		Duration of stay initially allowed for IPC is up to 3 month	0.01	0.25	
Temporary entry of executives, senior managers and/or specialists over 90 days.	0.01	0		Duration of stay initially allowed for IPC is over 3 month	0.01	0	
<b>Total</b>	<b>1</b>				<b>1</b>		

**Table 2. Mapping: Accounting Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>BARRIERS TO ESTABLISHMENT</b>							
<b>Form of establishment</b>	<b>0.08</b>			<b>Form of establishment</b>	<b>0.08</b>		
Prohibition on incorporation	0.08	1		Prohibition of separate legal entity	0.08	1	
Some form of incorporation permitted	0.08	0.5	NA				
No restrictions	0.08	0		Separate legal entity allowed	0.08	0	
<b>Foreign partnership or joint venture</b>	<b>0.08</b>						
Prohibition on partnership with foreign professionals	0.08	1		Limit on ownership or control by foreign national is not allowed	0.08	1	
Partnership or joint venture with local professionals required	0.08	0.5	NA				
No restrictions	0.08	0		ownership or control by foreign national is allowed	0.08	0	
<b>Investment and ownership by foreign professionals</b>	<b>0.05</b>			<b>Investment and ownership by foreign professionals</b>	<b>0.05</b>		
Firms must be owned or controlled by local professionals. The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm	0.05			The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm. If s = maximum foreign equity participation permitted in a professional firm	0.05	1-s	
<b>Investment and ownership by non-professional investors</b>	<b>0.05</b>			<b>Investment and ownership by non-professional investors</b>	<b>0.05</b>		
Firms must be owned or controlled by professionals. The score is proportional to the non- professional equity permitted in a professional firm. For example , equity participation to maximum of 75 percent in existing firm receives a score of 0.25	0.05			The score is inversely proportional to the maximum equity participation permitted for non- locally licensed professionals in a professional firm. Let p = the maximum equity participation permitted for non- locally licensed professionals in a professional firm	0.05	1-p	
<b>Nationality or citizenship requirements</b>	<b>0.135</b>			<b>Nationality or citizenship requirements</b>	<b>0.135</b>		
Nationality required to qualify or to practice	0.135	1		Market closed nationality of host country is required	0.135	1	
Nationality required for use of professional title, but practice is relatively free	0.135	0.25	NA				
No restrictions	0.135	0		No restriction	0.135	0	
<b>Residency and local presence</b>	<b>0.135</b>			<b>Residency and local presence</b>	<b>0.135</b>		
Permanent or prior residency (more than 12 months)	0.135	1		Residency in host country is required	0.135	1	
Less than 12 months prior residency	0.135	0.75	NA				
Prior residency required for local training	0.135	0.5	NA				
Domicile or representative office only	0.135	0.25	NA				
No restrictions	0.135	0		No restriction	0.135	0	

**Table 2 Continued. Mapping: Accounting Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Quotas or economic needs tests on the number of foreign professionals and firms</b>	<b>0.1</b>			<b>Quotas or economic needs tests on the number of foreign professionals and firms</b>	<b>0.1</b>		
Quotas or economic needs tests	0.1	1		Quotas or economic needs tests	0.1	1	
Some restrictions apply	0.1	0.5		Labor market test required	0.1	0.5	
No restrictions	0.1	0		Neither quota or economic needs tests, nor labor market test required	0.1	0	
<b>Licensing and accreditation of foreign professionals</b>	<b>0.1</b>			<b>Licensing and accreditation of foreign professionals</b>	<b>0.1</b>		
Local retraining required for a full license	0.1	1		Foreign training or experience is not recognized	0.1	1	
Local examination required in all cases	0.1	0.75		Passing a professional exam in the host country is required	0.1	0.75	
Case-by-case assessment of foreign license and qualifications	0.1	0.5		Automatic recognition of foreign licensee is not granted	0.1	0.5	
Aptitude tests	0.1	0.25		Foreign licensee professionals are eligible to practice subject to conditions	0.1	0.25	
Foreign license and qualifications sufficient to practice	0.1	0		No restrictions	0.1	0	
<b>Licensing and accreditation of local professionals</b>	<b>0.05</b>			<b>Licensing and accreditation of local professionals</b>	<b>0.05</b>		
Compulsory membership of professional association	0.05	0.33		Passing the exam is required	0.05	0.33	
Professional examination	0.05	NA	NA	Training or work experience is required	0.05	0.33	
Practical experience	0.05	0.33		Higher education is required	0.05	0.33	
Higher education	0.05	0.33					
<b>Permanent movement of people</b>	<b>0.02</b>			<b>Permanent movement of people</b>	<b>0.02</b>		
No entry of executives, senior managers or specialists	0.02	1		Intra Cooperate transfer (ICT) is not allowed	0.02	1	
Entry of up to 1 year	0.02	0.8		Intra Cooperate transfer (ICT) is allowed up to 1 year	0.02	0.8	
Entry of up to 2 years	0.02	0.6		Intra Cooperate transfer (ICT) is allowed up to 2 years	0.02	0.6	
Entry of up to 3 years	0.02	0.4		Intra Cooperate transfer (ICT) is allowed up to 3 years	0.02	0.4	
Entry of up to 4 years	0.02	0.2		Intra Cooperate transfer (ICT) is allowed up to 4 years	0.02	0.2	
Entry of up to 5 years or more	0.02	0		Intra Cooperate transfer (ICT) is allowed over 4 years	0.02	0	
<b>BARRIERS TO ONGOING OPERATIONS</b>							
<b>Activities reserved by law to the profession</b>	<b>0.05</b>			<b>Activities reserved by law to the profession</b>	<b>0.05</b>		
4 core activities and over	0.05	1		Economic needs test is required for each of ICT, Independent Professionals as Employee of a local firm (IPC), and Service-Supplying Employee (SSE) of a firm based abroad.	0.05	1	
2 core activities	0.05	0.5		Economic needs test is required for two of ICT,IPC and SSE	0.05	0.67	
1 core activity	0.05	0.25		Economic needs test is required for one of ICT,IPC and SSE	0.05	0.33	
None	0.05	0		Economic needs test is required for none of ICT,IPC and SSE	0.05	0	

**Table 2 Continued. Mapping: Accounting Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Multi-disciplinary practices</b> <b>0.05</b> <b>This category has been removed so that the weights sum to one</b>							
Prohibition on partnership or association with other professions	0.05	1					
Majority partnership required	0.05	0.5					
No restrictions	0.05	0					
<b>Advertising, marketing and solicitation</b> <b>0.05</b> <b>Proxy: Minimum wage/salary restriction</b> <b>0.1</b>							
Prohibition of advertising, marketing and solicitation	0.05	1		Minimum wage/salary is required for ICT, IPE, and SSE	0.1	1	
Restrictions apply to some groups or activities	0.05	0.5		Minimum wage/salary is required for at least one of ICT, IPE, and SSE	0.1	0.5	
General legal requirements	0.05	0		Minimum wage/salary is not required for ICT, IPE, and SSE	0.1	0	
<b>Fee setting</b> <b>0.05</b> <b>Proxy: Minimum wage/salary restriction</b>							
Minimum and maximum fees for all groups in the profession	0.05	1		Minimum wage/salary is required for ICT, IPE, and SSE	0.1	1	
Restrictions apply to some groups or activities	0.05	0.5		Minimum wage/salary is required for at least one of ICT, IPE, and SSE	0.1	0.5	
Setting fee freely	0.05	0		Minimum wage/salary is not required for ICT, IPE, and SSE	0.1	0	
<b>Licensing requirements on management</b> <b>0.02</b> <b>Proxy: Restrictions on Greenfield branches"</b> <b>0.04</b>							
At least a majority of managers must be nationals or residents	0.02	1		Greenfield branch is not allowed	0.02	1	
Directors and managers must be locally licensed	0.02	0.5	NA				
Directors and managers must be domiciled	0.02	0.25	NA				
No restrictions	0.02	0		Greenfield branch is allowed	0		
<b>Other restrictions</b> <b>0.02</b> <b>Proxy: Restrictions on Greenfield branches"</b>							
Restrictions on hiring local professionals	0.02	0.33		Greenfield branch is not allowed	1		
Restrictions on the use of firm's international names	0.02	0.33		Greenfield branch is not allowed	1		
Government procurement — restrictions towards foreign suppliers	0.02	0.33		Greenfield branch is not allowed	1		
No restrictions	0.02	0		Greenfield branch is allowed	0		
<b>Temporary movement of people</b> <b>0.01</b> <b>Temporary movement of people</b> <b>0.01</b>							
No temporary entry	0.01	1		No limitation on the duration of stay initially allowed for IPC	0.01	1	
Temporary entry of up to 30 days	0.01	0.75		Duration of stay initially allowed for IPC is up to 1 month	0.01	0.75	
Temporary entry of up to 60 days	0.01	0.5		Duration of stay initially allowed for IPC is up to 2 month	0.01	0.5	
Temporary entry of up to 90 days	0.01	0.25		Duration of stay initially allowed for IPC is up to 3 month	0.01	0.25	
Temporary entry over 90 days	0.01	0		Duration of stay initially allowed for IPC is over 3 month	0.01	0	
<b>Total</b>	<b>1.05</b>				<b>1</b>		

**Table 3. Mapping: Legal Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>BARRIERS TO ESTABLISHMENT</b>				<b>BARRIERS TO ESTABLISHMENT</b>			
<b>Form of establishment</b>	<b>0.08</b>			<b>Form of establishment</b>	<b>0.08</b>		
Prohibition on incorporation	0.08	1		Prohibition of separate legal entity	0.08	1	
Some form of incorporation permitted	0.08	0.5	NA				
No restrictions	0.08	0		Separate legal entity allowed	0.08	0	
<b>Foreign partnership or joint venture</b>	<b>0.08</b>			<b>Foreign partnership or joint venture</b>	<b>0.08</b>		
Prohibition on partnership with foreign professionals	0.08	1		Limit on ownership or control by foreign national is not allowed	0.08	1	
Partnership or joint venture with local professionals required	0.08	0.5	NA				
No restrictions	0.08	0		ownership or control by foreign national is allowed	0.08	0	
<b>Investment and ownership by foreign professionals</b>	<b>0.05</b>			<b>Investment and ownership by foreign professionals</b>	<b>0.05</b>		
Firms must be owned or controlled by local professionals. The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm	0.05			The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm. If s = maximum foreign equity participation permitted in a professional firm	0.05	1-s	
<b>Investment and ownership by non-professional investors</b>	<b>0.05</b>			<b>Investment and ownership by non-professional investors</b>	<b>0.05</b>		
Firms must be owned or controlled by professionals. The score is proportional to the non- professional equity permitted in a professional firm. For example , equity participation to maximum of 75 percent in existing firm receives a score of 0.25	0.05		1	The score is inversely proportional to the maximum equity participation permitted for non- locally licensed professionals in a professional firm. Let p = the maximum equity participation permitted for non- locally licensed professionals in a professional firm	0.05	1-p	
<b>Nationality or citizenship requirements</b>	<b>0.135</b>			<b>Nationality or citizenship requirements</b>	<b>0.135</b>		
Nationality required to qualify or to practice	0.135	1		Market closed nationality of host country is required	0.135	1	
Nationality required for use of professional title, but practice is relatively free	0.135	0.25	NA				
No restrictions	0.135	0		No restriction	0.135	0	
<b>Residency and local presence</b>	<b>0.135</b>			<b>Residency and local presence</b>	<b>0.135</b>		
Permanent or prior residency (more than 12 months)	0.135	1		Residency in host country is required	0.135	1	
Less than 12 months prior residency	0.135	0.75	NA				
Prior residency required for local training	0.135	0.5	NA				
Domicile or representative office only	0.135	0.25	NA				
No restrictions	0.135	0		No restriction	0.135	0	
<b>Quotas or economic needs tests on the number of foreign professionals and firms</b>	<b>0.1</b>			<b>Quotas or economic needs tests on the number of foreign professionals and firms</b>	<b>0.1</b>		
Quotas or economic needs tests	0.1	1		Quotas or economic needs tests	0.1	1	
Some restrictions apply	0.1	0.5		Labor market test required	0.1	0.5	
No restrictions	0.1	0		Neither quota or economic needs tests, nor labor market test required	0.1	0	
<b>Licensing and accreditation of foreign professionals</b>	<b>0.1</b>			<b>Licensing and accreditation of foreign professionals</b>	<b>0.1</b>		
Local retraining required for a full license	0.1	1		Foreign training or experience is not recognized	0.1	1	
Local examination required in all cases	0.1	0.75		Passing a professional exam in the host country is required	0.1	0.75	
Case-by-case assessment of foreign license and qualifications	0.1	0.5		Automatic recognition of foreign licensee is not granted	0.1	0.5	
Aptitude tests	0.1	0.25		Foreign licensee professionals are eligible to practice subject to conditions	0.1	0.25	
Foreign license and qualifications sufficient to practice	0.1	0		No restrictions	0.1	0	

**Table 3 Continued. Mapping: Legal Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Licensing and accreditation of local professionals</b>				<b>Licensing and accreditation of local professionals</b>			
Compulsory membership of professional association	0.05	0.33		Passing the exam is required	0.05	0.33	
Professional examination	0.05	NA	NA				
Practical experience	0.05	0.33		Training or work experience is required	0.05	0.33	
Higher education	0.05	0.33		Higher education is required	0.05	0.33	
<b>Permanent movement of people</b>				<b>Permanent movement of people</b>			
No entry of executives, senior managers or specialists	0.02	1		Intra Cooperate transfer (ICT) is not allowed	0.02	1	
Entry of up to 1 year	0.02	0.8		Intra Cooperate transfer (ICT) is allowed up to 1 year	0.02	0.8	
Entry of up to 2 years	0.02	0.6		Intra Cooperate transfer (ICT) is allowed up to 2 years	0.02	0.6	
Entry of up to 3 years	0.02	0.4		Intra Cooperate transfer (ICT) is allowed up to 3 years	0.02	0.4	
Entry of up to 4 years	0.02	0.2		Intra Cooperate transfer (ICT) is allowed up to 4 years	0.02	0.2	
Entry of up to 5 years or more	0.02	0		Intra Cooperate transfer (ICT) is allowed over 4 years	0.02	0	
<b>BARRIERS TO ONGOING OPERATIONS</b>				<b>BARRIERS TO ONGOING OPERATIONS</b>			
<b>Activities reserved by law to the profession</b>				<b>Activities reserved by law to the profession</b>			
	0.05			Economic needs test is required for each of ICT, Independent Professionals as Employee of a local firm (IPC), and Service-Supplying Employee (SSE) of a firm based abroad.	0.05	1	
4 core activities and over	0.05	1					
2 core activities	0.05	0.5		Economic needs test is required for two of ICT,IPC and SSE	0.05	0.67	
1 core activity	0.05	0.25		Economic needs test is required for one of ICT,IPC and SSE	0.05	0.33	
None	0.05	0		Economic needs test is required for none of ICT,IPC and SSE			
<b>Multi-disciplinary practices</b>				<b>This category has been removed</b>			
Prohibition on partnership or association with other professions	0.05	1					
Majority partnership required	0.05	0.5					
No restrictions	0.05	0					
<b>Advertising, marketing and solicitation</b>				<b>Proxy: Minimum wage/salary restriction</b>			
Prohibition of advertising, marketing and solicitation	0.05	1		Minimum wage/salary is required for ICT, IPE, and SSE	0.05	1	
Restrictions apply to some groups or activities	0.05	0.5		Minimum wage/salary is required for at least one of ICT,I PE, and SSE	0.05	0.5	
General legal requirements	0.05	0		Minimum wage/salary is not required for ICT, IPE, and SSE	0.05	0	
<b>Fee setting</b>							
Minimum and maximum fees for all groups in the profession	0.05	1					
Restrictions apply to some groups or activities	0.05	0.5					
Setting fee freely	0.05	0					
<b>Licensing requirements on management</b>				<b>Proxy: Restrictions on Greenfield branches"</b>			
At least a majority of managers must be nationals or residents	0.02	1		Greenfield branch is not allowed	0.02	1	
Directors and managers must be locally licensed	0.02	0.5	NA				
Directors and managers must be domiciled	0.02	0.25	NA				
No restrictions	0.02	0		Greenfield branch is allowed	0.02	0	
<b>Other restrictions</b>							
Restrictions on hiring local professionals	0.02	0.33					
Restrictions on the use of firm's international names	0.02	0.33					
Government procurement — restrictions towards foreign suppliers	0.02	0.33					
No restrictions	0.02	0					

**Table 3 Continued. Mapping: *Legal Services***

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Temporary movement of people</b>	<b>0.01</b>			<b>Temporary movement of people</b>	<b>0.01</b>		
No temporary entry	0.01	1		No limitation on the duration of stay initially allowed for IPC	0.01	1	
Temporary entry of up to 30 days	0.01	0.75		Duration of stay initially allowed for IPC is up to 1 month	0.01	0.75	
Temporary entry of up to 60 days	0.01	0.5		Duration of stay initially allowed for IPC is up to 2 month	0.01	0.5	
Temporary entry of up to 90 days	0.01	0.25		Duration of stay initially allowed for IPC is up to 3 month	0.01	0.25	
Temporary entry over 90 days	0.01	0		Duration of stay initially allowed for IPC is over 3 month	0.01	0	
<b>Total</b>	<b>1.05</b>				<b>1</b>		

**Table 4. Mapping: Insurance Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Restrictions on Commercial Presence</b>				<b>Restrictions on Commercial Presence</b>			
<b>Licensing of insurance services</b>	<b>0.1</b>			<b>Licensing of insurance services</b>	<b>0.1</b>		
No new license is allowed	0.1	1		Market entry is not allowed (mode 3)	0.1	1	
Licenses are issued through complicated (discriminately) and costly procedure.	0.1	0.75		Market entry is allowed but three of the following restriction apply : (a) There is a limit on the number of licenses available, (b) license is allocated at the discretion of regulatory body, (c) license is not granted if publicly available criteria fulfilled.	0.1	0.75	
Licenses are generally issued with application fee and several requirements.	0.1	0.5		Market entry is allowed but two of the following restriction apply : (a) There is a limit on the number of licenses available, (b) license is allocated at the discretion of regulatory body, (c) license is not granted if publicly available criteria fulfilled.	0.1	0.2	
Licenses are generally issued with application fee.	0.1	0.25		Market entry is allowed but one of the following restriction apply : (a) There is a limit on the number of licenses available, (b) license is allocated at the discretion of regulatory body, (c) license is not granted if publicly available criteria fulfilled.	0.1	0.1	
Licenses are automatically issued upon application without any cost.	0.1	0		Market entry is allowed but none of the following restriction apply : (a) There is a limit on the number of licenses available, (b) license is allocated at the discretion of regulatory body, (c) license is not granted if publicly available criteria fulfilled.	0.1	0	
<b>Form of commercial presence</b>	<b>0.1</b>			<b>Form of commercial presence</b>	<b>0.1</b>		
Measures which restrict or require a specific type of establishments.	0.1	1		One of the following form of establishment is restricted : (a) Green field branch , (b) Joint venture ,( c) Greenfield Subsidiary, (d) Acquisition	0.1	1	
No restriction on establishment.	0.1	0		Non of the following form of establishment is restricted : (a) Green field branch , (b) Joint venture ,( c) Greenfield Subsidiary, (d) Acquisition	0.1	0	
<b>Direct investment: equity participation permitted</b>	<b>0.2</b>			<b>Direct investment: equity participation permitted</b>	<b>0.2</b>		
The score is inversely proportional to the maximum equity participation permitted in an existing domestic insurance company.	0.2	1-s		The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm. If s = maximum foreign equity participation permitted in a professional firm.	0.2	1-s	
<b>Direct investment: restrictions on certain types of services</b>	<b>0.1</b>			<b>Proxy : restriction on insurance services</b>	<b>0.1</b>		
Restrictions on providing some types of insurance services.	0.1	1		restriction on either value of the insurance policy or term of insurance policy or both	0.1	1	
No restriction on providing any type of insurance services.	0.1	0		no restriction on either value of the insurance policy or term of insurance policy	0.1	0	
<b>Joint venture arrangements</b>	<b>0.1</b>			<b>Joint venture arrangements</b>	<b>0.1</b>		
Issues no new insurance license and no entry is allowed through a joint-venture with a domestic insurance company.	0.1	1		No entry is allowed through a joint venture with a domestic insurance company	0.1	1	
Foreign company entry is only through a joint venture with a domestic insurance company.	0.1	0.5		There are specific requirements for foreign firms to enter the local market through a joint venture ( none of the following forms of establishment is allowed: (a) Green field branch, (b) Greenfield Subsidiary, (c) Acquisition (d) there is a maximum foreign equity permitted which imposes a de facto joint venture requirement).	0.1	0.5	
No requirement for an insurance company to enter through a joint-venture with a domestic insurance company.	0.1	0		No restriction	0.1	0	
<b>Permanent movement of people</b>	<b>0.02</b>			<b>Permanent movement of people ( we used information on permanent movement of people for accounting services)</b>	<b>0.02</b>		
No entry of executives, senior managers and/or specialists.	0.02	1		Intra Cooperate transfer (ICT) is not allowed	0.02	1	
Executives, specialists and/or senior managers can stay up to 1 year.	0.02	0.8		Intra Cooperate transfer (ICT) is allowed up to 1 year	0.02	0.8	
Executives, specialists and/or senior managers can stay up to 2 years.	0.02	0.6		Intra Cooperate transfer (ICT) is allowed up to 2 years	0.02	0.6	
Executives, specialists and/or senior managers can stay up to 3 years.	0.02	0.4		Intra Cooperate transfer (ICT) is allowed up to 3 years	0.02	0.4	
Executives, specialists and/or senior managers can stay up to 4 years.	0.02	0.2		Intra Cooperate transfer (ICT) is allowed up to 4 years	0.02	0.2	
Executives, specialists and/or senior managers can stay a period of 5 years or more.	0.02	0		Intra Cooperate transfer (ICT) is allowed over 4 years	0.02	0	

**Table 4 Continued. Mapping: Insurance Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Cross-border Trade</b>				<b>Cross-border Trade</b>			
<b>Cross-border insurance supply by foreign insurance companies</b>	<b>0.2</b>			<b>Cross-border insurance supply by foreign insurance companies</b>	<b>0.2</b>		
Foreign insurance companies are not permitted to provide the host country residents with any type of cross-border insurance services.	0.2	1		Market entry is not allowed (mode 1)	0.2	1	
Foreign insurance companies are permitted to provide the host country residents with certain types of cross-border insurance services.	0.2	0.75		Market entry is allowed but it domestic unavailability of service desired is required	0.2	0.75	
Foreign insurance companies are permitted to provide the host country residents with any type of cross-border insurance services with licenses.	0.2	0.5		Market entry is allowed but both the following restrictions apply: (a) restriction on sector of the firm using the service, (b) other forms of restrictions	0.2	0.5	
Foreign insurance companies are permitted to provide the host country residents with any type of cross-border insurance services without restrictions.	0.2	0		Market entry is allowed but one the following restrictions apply: (a) restriction on sector of the firm using the service, (b)other forms of restrictions	0.2	0.25	
Foreign insurance companies are permitted to provide the host country residents with any type of cross-border insurance services without restrictions.	0.2	0		Market entry is allowed but none the following restrictions apply: (a) restriction on sector of the firm using the service, (b) other forms of restrictions	0.2	0	
<b>Other Restrictions</b>				<b>Other Restrictions</b>			
<b>Other business of insurances - banking and securities -</b>	<b>0.1</b>			<b>Proxy: Other restrictions on foreign insurance companies</b>	<b>0.1</b>		
Insurance companies can only provide insurance services.	0.1			Restriction on repatriation of earning	0.01	0.33	
Insurance companies can provide insurance services plus one other type of business - banking or security services –	0.1			Difference in licensing criteria for foreign and domestic applicants	0.01	0.33	
Insurance companies have no restrictions on conducting other lines of business. Score is taken from column H of the World Bank matrix	0.1			Other forms of discrimination	0.01	0.33	
				Sum			
<b>Expanding the number of insurance outlets</b>	<b>0.05</b>			<b>Expanding the number of insurance outlets</b>	<b>0.05</b>		
One insurance outlet with no new insurance outlet permitted.	0.05	1		Restriction on the number of branches	0.05	1	
Number of insurance outlets is limited in number and location.	0.05	NA					
Expansion of insurance outlets in subject to non-prudential regulatory approval.	0.05	NA					
No restriction for insurance companies expanding operations	0.05	0		No restriction on the number of branches	0.05	0	
<b>Composition of the board of directors</b>	<b>0.02</b>			<b>Composition of the board of directors</b>	<b>0.02</b>		
The score is inversely proportional to the percentage of the board that can comprise foreigners.	0.02	1-b		The score is inversely proportionately to the percentage of the board that can comprise foreigners. If b = maximum percentage of the board that can comprise foreigners.	0.02	1-b	
<b>Temporary movement of people</b>	<b>0.01</b>			<b>Temporary movement of people ( we used information on temporary movement of people for accounting services)</b>	<b>0.01</b>		
No temporary entry of executives, senior managers and/or specialists.	0.01	1		No limitation on the duration of stay initially allowed for IPC	0.01	1	
Temporary entry of executives, senior managers and/or specialists up to 30 days.	0.01	0.75		Duration of stay initially allowed for IPC is up to 1 month	0.01	0.75	
Temporary entry of executives, senior managers and/or specialists up to 60 days.	0.01	0.5		Duration of stay initially allowed for IPC is up to 2 month	0.01	0.5	
Temporary entry of executives, senior managers and/or specialists up to 90 days.	0.01	0.25		Duration of stay initially allowed for IPC is up to 3 month	0.01	0.25	
Temporary entry of executives, senior managers and/or specialists over 90 days.	0.01	0		Duration of stay initially allowed for IPC is over 3 month	0.01	0	
<b>Total</b>	<b>1</b>				<b>1</b>		

**Table.5. Mapping: Fixed-line Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Restrictions on Commercial Presence</b>				<b>Restrictions on Commercial Presence</b>			
<b>Licensing of fixed line services</b>				<b>Licensing of fixed line services</b>			
<b>(a) Regional Line Service</b>							
No new license is allowed.	0.2/3	1		Market entry is not allowed (mode 3)	0.2	1	
Licenses are issued through complicated (discriminately) and costly procedure.	0.2/3	0.75		Market entry is allowed but three of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.75	
Licenses are generally issued with application fee and several requirements.	0.2/3	0.2		Market entry is allowed but two of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.2	
Licenses are generally issued with application fee.	0.2/3	0.1		Market entry is allowed but one of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.1	
Licenses are automatically issued upon application without any cost.	0.2/3	0		Market entry is allowed but none of the following restrictions apply: (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not always granted if publicly available criteria fulfilled.	0.2	0	
<b>(b) Domestic Long Distance Line Service</b>							
No new license is allowed.	0.2/3	1		Market entry is not allowed (mode 3)	0.2	1	
Licenses are issued through complicated (discriminately) and costly procedure.	0.2/3	0.75		Market entry is allowed but three of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.75	
Licenses are generally issued with application fee and several requirements.	0.2/3	0.2		Market entry is allowed but two of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.2	
Licenses are generally issued with application fee.	0.2/3	0.1		Market entry is allowed but one of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.1	
Licenses are automatically issued upon application without any cost.	0.2/3	0		Market entry is allowed but none of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not always granted if publicly available criteria fulfilled.	0.2	0	
<b>(c) International Line Service</b>							
No new license is allowed.	0.2/3	1		Market entry is not allowed (mode 3)	0.2	1	
Licenses are issued through complicated (discriminately) and costly procedure.	0.2/3	0.75		Market entry is allowed but three of the following restrictions apply: (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.75	
Licenses are generally issued with application fee and several requirements.	0.2/3	0.2		Market entry is allowed but two of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.2	
Licenses are generally issued with application fee.	0.2/3	0.1		Market entry is allowed but one of the following restriction apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.1	
Licenses are automatically issued upon application without any cost.	0.2/3	0		Market entry is allowed but none of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not always granted if publicly available criteria fulfilled.	0.2	0	
<b>Form of commercial presence</b>				<b>Form of commercial presence</b>			
<b>(a) Regional Line Service</b>							
Measures which restrict or require a specific type of establishments.	0.1/3	1		One of the following form of establishment is restricted : (a) Green field branch , (b) Joint venture ,( c) Greenfield Subsidiary, (d) Acquisition	0.1	1	
No restriction on establishment.	0.1/3	0		None of the following form of establishment is restricted : (a) Green field branch , (b) Joint venture ,( c) Greenfield Subsidiary, (d) Acquisition	0.1	0	
<b>(b) Domestic Long Distance Line Service</b>							
Measures which restrict or require a specific type of establishments.	0.1/3	1		One of the following form of establishment is restricted : (a) Green field branch , (b) Joint venture ,( c) Greenfield Subsidiary, (d) Acquisition	0.1	1	
No restriction on establishment.	0.1/3	0		None of the following form of establishment is restricted : (a) Green field branch , (b) Joint venture ,( c) Greenfield Subsidiary, (d) Acquisition	0.1	0	
<b>(c) International Line Service</b>							
Measures which restrict or require a specific type of establishments.	0.1/3	1		One of the following form of establishment is restricted : (a) Green field branch , (b) Joint venture ,( c) Greenfield Subsidiary, (d) Acquisition	0.1	1	
No restriction on establishment.	0.1/3	0		None of the following form of establishment is restricted : (a) Green field branch , (b) Joint venture ,( c) Greenfield Subsidiary, (d) Acquisition	0.1	0	

**Table 5 Continued. Mapping: Fixed-line Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Direct Investment: equity participation permitted</b>	<b>0.2</b>			<b>Direct Investment: equity participation permitted</b>	<b>0.2</b>		
The score is inversely proportional to the maximum equity participation permitted in an existing domestic company	0.2	1-s		The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm. If s = maximum foreign equity participation permitted in a professional firm	0.2	1-s	
<b>Direct investment: restrictions on certain types of services</b>	<b>0.1</b>			<b>Direct investment: restrictions on certain types of services</b>	<b>0.1</b>		
Restrictions on providing some types of telephone services.	0.1	1*		VOIP operation is not allowed.	0.1	0.5	
* Score above is the sum of the two lines of the World Bank scoring				Operators are not permitted to own and operate international gateway	0.1	0.5	
No restriction on providing any type of telephone services.	0.1	0					
<b>Joint venture arrangements</b>	<b>0.1</b>			<b>Joint venture arrangements</b>	<b>0.1</b>		
Issues no new license and no entry is allowed through a joint venture with a domestic company.	0.1	1		No entry is allowed through a joint venture with a domestic fixed-line operator	0.1	1	
Foreign company can enter only through a joint venture with a domestic company.	0.1	0.5		There are specific requirements for foreign firms to enter the local market through a joint venture ( none of the following forms of establishment is allowed: (a) Green field branch, (b) Greenfield Subsidiary, (c) Acquisition (d) there is a maximum foreign equity permitted which imposes a de facto joint venture requirement).	0.1	0.5	
No requirement for foreign companies to enter through a joint venture with a domestic company.	0.1	0		No restriction	0.1	0	
<b>Permanent movement of people</b>	<b>0.02</b>			<b>Permanent movement of people ( we used information on permanent movement of people for accounting services)</b>	<b>0.02</b>		
No entry of executives, senior managers and/or specialists.	0.02	1		Intra Cooperate transfer (ICT) is not allowed	0.02	1	
Executives, specialists and/or senior managers can stay up to 1 year.	0.02	0.8		Intra Cooperate transfer (ICT) is allowed up to 1 year	0.02	0.8	
Executives, specialists and/or senior managers can stay up to 2 years.	0.02	0.6		Intra Cooperate transfer (ICT) is allowed up to 2 years	0.02	0.6	
Executives, specialists and/or senior managers can stay up to 3 years.	0.02	0.4		Intra Cooperate transfer (ICT) is allowed up to 3 years	0.02	0.4	
Executives, specialists and/or senior managers can stay up to 4 years.	0.02	0.2		Intra Cooperate transfer (ICT) is allowed up to 4 years	0.02	0.2	
Executives, specialists and/or senior managers can stay a period of 5 years or more.	0.02	0		Intra Cooperate transfer (ICT) is allowed over 4 years	0.02	0	
<b>Other Restrictions</b>				<b>Other Restrictions</b>			
<b>Third party resale of lease line</b>	<b>0.1</b>			<b>Acquisition domestic private entity -max. ownership allowed by a group of entities</b>	<b>0.1</b>		
Resale is not permitted.	0.1	1		The score is inversely proportional to the maximum foreign equity participation permitted allowed by a group of entities in acquisition. If d = maximum foreign equity participation permitted allowed by a group of entities in acquisition	0.1	1-d	
Resale is permitted in any market.	0.1	0					
<b>End user tariff</b>	<b>0.05</b>			<b>Proxy: Other forms of discrimination</b>			
End user tariff is determined by rate of return regulation.	0.05	1		Restriction on repatriation of earning	0.05	0.33	
End user tariff is determined by price cap rule established by the authority.	0.05	0.5		Difference in licencing criteria for foreign and domestic applicants	0.05	0.33	
End user tariff is determined by market force (no regulation).	0.05	0		Other forms of discrimination	0.05	0.33	

\*Score for this category is the sum of column G from the World Bank components

**Table 5 Continued. Mapping: Fixed-line Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Regulation of network interconnection</b>	<b>0.05</b>			<b>Regulation of network interconnection</b>	<b>0.1</b>		
Interconnection is completely regulated by the authority*.	0.05	1		Interconnection agreements/prices are publicly available	0.1	0.5	
Interconnection is determined private negotiations in general, but general terms are determined by the authority.	0.05	0.5		Operators are required to publish Reference Interconnection Offer	0.1	0.5	
Interconnection is completely determined by private negotiations (no regulation).	0.05	0					
*The score for this category is the sum of the World Bank scores							
<b>Market structure</b>	<b>0.05</b>			<b>Right to Appeal Regulatory Decisions</b>	<b>0.05</b>		
<b>(a) Regional Line Service</b>							
Monopoly.	0.05/3	1		No right to appeal regulatory decisions	0.1	1	
Competition among plural providers.	0.05/3	0		Right to appeal regulatory changes but no prior notice of regulatory changes	0.1	0.5	
Competition among plural providers.	0.05/3	0		Right to appeal regulatory changes and prior notice of regulatory changes	0.1	0	
<b>(b) Domestic Long Distance Line Service</b>							
Monopoly.	0.05/3	1		No right to appeal regulatory decisions	0.1	1	
Competition among plural providers.	0.05/3	0		Right to appeal regulatory changes but no prior notice of regulatory changes	0.1	0.5	
Competition among plural providers.	0.05/3	0		Right to appeal regulatory changes and prior notice of regulatory changes	0.1	0	
<b>(c) International Line Service</b>							
Monopoly.	0.05/3	1		No right to appeal regulatory decisions	0.1	1	
Competition among plural providers.	0.05/3	0		Right to appeal regulatory changes but no prior notice of regulatory changes	0.1	0.5	
Competition among plural providers.	0.05/3	0		Right to appeal regulatory changes and prior notice of regulatory changes	0.1	0	
<b>Composition of the board of directors</b>	<b>0.02</b>			<b>Composition of the board of directors</b>	<b>0.02</b>		
The score is inversely proportionately to the percentage of the board that can comprise foreigners.	0.02	1-b		The score is inversely proportionately to the percentage of the board that can comprise foreigners. If b = maximum percentage of the board that can comprise foreigners.	0.02	1-b	
<b>Temporary movement of people</b>	<b>0.01</b>			<b>Temporary movement of people ( we used information on temporary movement of people for accounting services)</b>	<b>0.01</b>		
No temporary entry of executives, senior managers and/or specialists.	0.01	1		No limitation on the duration of stay initially allowed for IPC	0.01	1	
Temporary entry of executives, senior managers and/or specialists up to 30 days.	0.01	0.75		Duration of stay initially allowed for IPC is up to 1 month	0.01	0.75	
Temporary entry of executives, senior managers and/or specialists up to 60 days.	0.01	0.5		Duration of stay initially allowed for IPC is up to 2 month	0.01	0.5	
Temporary entry of executives, senior managers and/or specialists up to 90 days.	0.01	0.25		Duration of stay initially allowed for IPC is up to 3 month	0.01	0.25	
Temporary entry of executives, senior managers and/or specialists over 90 days.	0.01	0		Duration of stay initially allowed for IPC is over 3 month	0.01	0	
<b>Total</b>	<b>1</b>				<b>1</b>		

**Table 6 Continued. Mapping: Mobile line Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Restrictions on Commercial Presence</b>				<b>Restrictions on Commercial Presence</b>			
<b>Licensing of mobile phone services</b>	<b>0.2</b>			<b>Licensing of mobile phone services</b>	<b>0.2</b>		
No new license is allowed.	0.2	1		Market entry is not allowed (mode 3)	0.2	1	
Licenses are issued through complicated (discriminately) and costly procedure.	0.2	0.75		Market entry is allowed but three of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body, (c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.75	
Licenses are generally issued with application fee and several requirements.	0.2	0.2		Market entry is allowed but two of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body, (c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.2	
Licenses are generally issued with application fee.	0.2	0.1		Market entry is allowed but one of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body, (c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.1	
Licenses are automatically issued upon application without any cost.	0.2	0		Market entry is allowed but none of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body, (c) licence is not always granted if publicly available criteria fulfilled.	0.2	0	
<b>Form of commercial presence</b>				<b>Form of commercial presence</b>			
Measures which restrict or require a specific type of establishments.	0.1	1		One of the following form of establishment is restricted : (a) Green field branch , (b) Joint venture ,( c) Greenfield Subsidiary, (d) Acquisition	0.1	1	
No restriction on establishment.	0.1	0		Non of the following form of establishment is restricted : (a) Green field branch , (b) Joint venture ,( c) Greenfield Subsidiary, (d) Acquisition	0.1	0	
<b>Direct investment: equity participation permitted</b>				<b>Direct investment: equity participation permitted</b>			
The score is inversely proportional to the maximum equity participation permitted in an existing domestic company	0.2	1-s		The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm. If s = maximum foreign equity participation permitted in a professional firm	0.2	1-s	
<b>Direct investment: restrictions on certain types of services</b>				<b>Direct investment: restrictions on certain types of services</b>			
Restrictions on providing some types of telephone services.	0.1	1*		VOIP operation is not allowed.	0.1	0.5	
* Score above is the sum of the two lines of the World Bank scoring				Operators are not permitted to own and operate international gateway	0.1	0.5	
No restriction on providing any type of telephone services.	0.1	0		No restriction	0.1	0	
<b>Joint venture arrangements</b>				<b>Joint venture arrangements</b>			
Issues no new license and no entry is allowed through a joint venture with a domestic company.	0.1	1		No entry is allowed through a joint venture with a domestic mobile operator	0.1	1	
Foreign company can enter only through a joint venture with a domestic company.	0.1	0.5		There are specific requirements for foreign firms to enter the local market through a joint venture ( none of the following forms of establishment is allowed: (a) Green field branch, (b) Greenfield Subsidiary, (c) Acquisition (d) there is a maximum foreign equity permitted which imposes a de facto joint venture requirement).	0.1	0.5	
No requirement for foreign companies to enter through a joint venture with a domestic company.	0.1	0		No restriction	0.1	0	
<b>Permanent movement of people</b>				<b>Permanent movement of people</b>			
No entry of executives, senior managers and/or specialists.	0.02	1		Percentage of domestic residents/citizens on the board of directors required is 100%	0.02	1	
Executives, specialists and/or senior managers can stay up to 1 year.	0.02	0.8		Percentage of domestic residents/citizens on the board of directors required is above 75% and below 100%	0.02	0.8	
Executives, specialists and/or senior managers can stay up to 2 years.	0.02	0.6		Percentage of domestic residents/citizens on the board of directors required is above 50% and below 75%	0.02	0.6	
Executives, specialists and/or senior managers can stay up to 3 years.	0.02	0.4		Percentage of domestic residents/citizens on the board of directors required is above 25% and below 50%	0.02	0.4	
Executives, specialists and/or senior managers can stay up to 4 years.	0.02	0.2		Percentage of domestic residents/citizens on the board of directors required is above 0% and below 25%	0.02	0.2	
Executives, specialists and/or senior managers can stay a period of 5 years or more.	0.02	0		Percentage of domestic residents/citizens on the board of directors required is 0%	0.02	0	

**Table 6 Continued. Mapping: *Mobile line Services***

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Other Restrictions</b>				<b>Other Restrictions</b>			
<b>Regulation of interconnection between fixed line and mobile or between mobiles</b>	<b>0.05</b>			<b>Regulation of network interconnection</b>	<b>0.05</b>		
Interconnection is completely regulated by the authority*.	0.05	1		Interconnection agreements/prices are publicly available	0.05	0.5	
Interconnection is determined by private negotiations in general, but general terms are determined by the authorities.	0.05	0.5		Operators are required to publish Reference Interconnection Offer	0.05	0.5	
Interconnection is completely determined by private negotiations (no regulation).	0.05	0					
*The score for this category is the sum of the World Bank scores							
<b>End user tariff</b>	<b>0.1</b>			<b>Proxy: Discrimination on Foreigners</b>	<b>0.1</b>		
End user tariff is determined by rate of return regulation.	0.1	1		Restriction on repatriation of earning	0.1	0.33	
End user tariff is determined by price cap rule established by the authority.	0.1	0.5		Difference in licensing criteria for foreign and domestic applicants	0.1	0.33	
End user tariff is determined by market force (no regulation).	0.1	0		Other forms of discrimination	0.1	0.33	
*Score for this category is the sum of column G from the World Bank components							
<b>Allocation of radio spectrum</b>	<b>0.05</b>			<b>Allocation of radio spectrum</b>	<b>0.05</b>		
Allocation is discriminately decided by the authority.	0.05	1		Spectrum use is not publicly available and gateway licence fee is required	0.05	1	
Allocated by auction with application fee.	0.05	0.2		Spectrum use is not publicly available and gateway licence fee is not required	0.05	0.5	
Allocated by auction without application fee.	0.05	0.1		Spectrum use is publicly available but gateway licence fee is required	0.05	0.25	
Radio frequencies are obtained with mobile services.	0.05	0		Spectrum use is publicly available and gateway licence fee is not required	0.05	0	
<b>Market structure</b>	<b>0.05</b>			<b>Proxy: Right to Appeal Regulatory Decisions</b>	<b>0.05</b>		
Monopoly.	0.05	1		No right to appeal regulatory decisions	0.05	1	
Competition among plural providers.	0.05	0		Right to appeal regulatory changes but no prior notice of regulatory changes	0.05	0.5	
Competition among plural providers.	0.05	0		Right to appeal regulatory changes and prior notice of regulatory changes	0.05	0	
<b>Composition of the board of directors</b>	<b>0.02</b>			<b>Composition of the board of directors</b>	<b>0.02</b>		
The score is inversely proportional to the percentage of the board that can comprise foreigners	0.02	1-b		The score is inversely proportionately to the percentage of the board that can comprise foreigners. If b = maximum percentage of the board that can comprise foreigners.	0.02	1-b	
<b>Temporary movement of people</b>	<b>0.01</b>			<b>Temporary movement of people ( we used information on temporary movement of people for accounting services)</b>	<b>0.01</b>		
No temporary entry of executives, senior managers and/or specialists.	0.01	1		No limitation on the duration of stay initially allowed for IPC	0.01	1	
Temporary entry of executives, senior managers and/or specialists up to 30 days.	0.01	0.75		Duration of stay initially allowed for IPC is up to 1 month	0.01	0.75	
Temporary entry of executives, senior managers and/or specialists up to 60 days.	0.01	0.5		Duration of stay initially allowed for IPC is up to 2 month	0.01	0.5	
Temporary entry of executives, senior managers and/or specialists up to 90 days.	0.01	0.25		Duration of stay initially allowed for IPC is up to 3 month	0.01	0.25	
Temporary entry of executives, senior managers and/or specialists over 90 days.	0.01	0		Duration of stay initially allowed for IPC is over 3 month	0.01	0	
<b>Total</b>	<b>1</b>				<b>1</b>		

**Table 7 Continued. Mapping: Maritime transport Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Restrictions on Commercial Presence and Cross-Border Trade</b>				<b>Restrictions on Commercial Presence and Cross-Border Trade</b>			
<b>Conditions on the right to fly the national flag</b>				<b>Conditions on the right to fly the national flag</b>			
Commercial presence required in the domestic economy	0.15	0.4		Greenfield branch is not allowed	0.15	0.4	
50 per cent or more of equity participation must be domestic	0.15	0.3		50 per cent or more of equity participation must be domestic	0.15	0.3	
50 per cent or more of the crew are required to be domestic	0.15	0.2		50 percent or more of employees are required to be domestic	0.15	0.2	
Ship must be registered	0.15	0.1		Licence required	0.15	0.1	
<b>Form of commercial presence</b>				<b>Form of commercial presence</b>			
Measures which restrict or require a specific type of legal entity or joint venture arrangement	0.1	1		One of the following form of establishment is restricted : (a) joint venture, (b) Greenfield Subsidiary, (c) Acquisition	0.1	1	
Shipping service suppliers must be represented by an agent	0.1	NA					
No restrictions on establishment	0.1	0		Non of the following form of establishment is restricted : (a) joint venture, (b) Greenfield Subsidiary, (c) Acquisition	0.1	0	
<b>Direct investment in shipping services suppliers</b>				<b>Direct investment in shipping services suppliers</b>			
The score is inversely proportional to the maximum equity participation permitted in an existing services supplier	0.1	1-s		The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm. If s = maximum foreign equity participation permitted in a professional firm	0.1	1-s	
<b>Direct investment in onshore maritime services suppliers</b>				<b>Proxy:Acquisition domestic private entity -max. ownership allowed by a group of entities</b>			
The score is inversely proportional to the maximum equity participation permitted in an existing onshore maritime service supplier	0.1	0		The score is inversely proportional to the maximum foreign equity participation permitted allowed by a group of entities in acquisition. If d = maximum foreign equity participation permitted allowed by a group of entities in acquisition	0.1	1-d	
<b>Permanent movement of people</b>				<b>Permanent movement of people</b>			
No entry of executives, senior managers and/or specialists	0.02	1		Percentage of domestic residents/citizens on the board of directors required is 100%	0.02	1	
Executives, specialists and/or senior managers can stay a period of up to 1 year	0.02	0.8		Percentage of domestic residents/citizens on the board of directors required is above 75% and below 100%	0.02	0.8	
Executives, specialists and/or senior managers can stay a period of up to 2 year	0.02	0.6		Percentage of domestic residents/citizens on the board of directors required is above 50% and below 75%	0.02	0.6	
Executives, specialists and/or senior managers can stay a period of up to 3 year	0.02	0.4		Percentage of domestic residents/citizens on the board of directors required is above 25% and below 50%	0.02	0.4	
Executives, specialists and/or senior managers can stay a period of up to 4 year	0.02	0.2		Percentage of domestic residents/citizens on the board of directors required is above 0% and below 25%	0.02	0.2	
Executives, specialists and/or senior managers can stay a period of up to 5 year or more	0.02	0		Percentage of domestic residents/citizens on the board of directors required is 0%	0.02	0	
<b>Cabotage</b>				<b>Proxy: Market entry</b>			
Foreigners that fly the national flag can provide domestic maritime services	0.1	1		Market entry is not allowed (mode 3)	0.1	1	
Restrictions on type and length of time cargoes can be carried	0.1	0.5		Market entry is allowed but two of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not granted if publicly available criteria fulfilled.	0.1	0.5	
No cabotage restrictions	0.1	0		Market entry is allowed but none of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body(c) licence is not granted if publicly available criteria fulfilled.	0.1	0	
<b>Transportation on non-commercial cargoes</b>				<b>Proxy: quotas on cargos</b>			
Private shipping service suppliers cannot carry non-commercial cargoes	0.1	1		There are quotas for government cargos in bulk	0.1	0.25	
National flag shipping service suppliers can carry non-commercial cargoes	0.1	0.5		There is quotas for private cargos in bulk	0.1	0.25	
No restrictions on access to non-commercial cargoes	0.1	0		There is quotas forgovernmentliner cargos	0.1	0.25	
				There is quotas for private liner cargos	0.1	0.25	
Score will be sum of Column G for World Bank score weighted by 0.1	0.1			Sum of the above 4			

**Table 7 Continued. Mapping: *Maritime transport Services***

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score
<b>Other restrictions</b>				<b>Other restrictions</b>		
<b>Port services</b>	<b>0.1</b>			<b>Port services</b>	<b>0.1</b>	
Some restrictions on access to ports	0.1	0.8		All the following restriction apply: (a) Cargo handling own ships allowed, (b) cargo handling other ships allowed, (c) storage/warehousing own ships allowed, (d) storage/warehousing other ships allowed, (e) customs clearance own ships allowed, (f) customs clearance other ships allowed, (g) container station/ depot own ships allowed, (h) container station/ depot other ships allowed, (I) freight forwarding own ships allowed (J) freight forwarding other ships allowed.	0.1	1
Mandatory use of berthing services	0.1	0.05		All the following restriction apply except one: (a) Cargo handling own ships allowed, (b) cargo handling other ships allowed, (c) storage/warehousing own ships allowed, (d) storage/warehousing other ships allowed, (e) customs clearance own ships allowed, (f) customs clearance other ships allowed, (g) container station/ depot own ships allowed, (h) container station/ depot other ships allowed, (I) freight forwarding own ships allowed (J) freight forwarding other ships allowed.	0.1	0.9
Mandatory use of pilotage	0.1	0.2		All the following restriction apply except two: (a) Cargo handling own ships allowed, (b) cargo handling other ships allowed, (c) storage/warehousing own ships allowed, (d) storage/warehousing other ships allowed, (e) customs clearance own ships allowed, (f) customs clearance other ships allowed, (g) container station/ depot own ships allowed, (h) container station/ depot other ships allowed, (I) freight forwarding own ships allowed (J) freight forwarding other ships allowed.	0.1	0.8
Mandatory use of towing	0.1	0.15		All the following restriction apply except three: (a) Cargo handling own ships allowed, (b) cargo handling other ships allowed, (c) storage/warehousing own ships allowed, (d) storage/warehousing other ships allowed, (e) customs clearance own ships allowed, (f) customs clearance other ships allowed, (g) container station/ depot own ships allowed, (h) container station/ depot other ships allowed, (I) freight forwarding own ships allowed (J) freight forwarding other ships allowed.	0.1	0.7
Mandatory use of tug assistance	0.1	0.1		Six of the following restriction apply: (a) Cargo handling own ships allowed, (b) cargo handling other ships allowed, (c) storage/warehousing own ships allowed, (d) storage/warehousing other ships allowed, (e) customs clearance own ships allowed, (f) customs clearance other ships allowed, (g) container station/ depot own ships allowed, (h) container station/ depot other ships allowed, (I) freight forwarding own ships allowed (J) freight forwarding other ships allowed.	0.1	0.6
Mandatory use of navigational aids	0.1	0.05		Five of the following restriction apply: (a) Cargo handling own ships allowed, (b) cargo handling other ships allowed, (c) storage/warehousing own ships allowed, (d) storage/warehousing other ships allowed, (e) customs clearance own ships allowed, (f) customs clearance other ships allowed, (g) container station/ depot own ships allowed, (h) container station/ depot other ships allowed, (I) freight forwarding own ships allowed (J) freight forwarding other ships allowed.	0.1	0.5
Mandatory use of waste disposal	0.1	0.05		Four of the following restriction apply: (a) Cargo handling own ships allowed, (b) cargo handling other ships allowed, (c) storage/warehousing own ships allowed, (d) storage/warehousing other ships allowed, (e) customs clearance own ships allowed, (f) customs clearance other ships allowed, (g) container station/ depot own ships allowed, (h) container station/ depot other ships allowed, (I) freight forwarding own ships allowed (J) freight forwarding other ships allowed.	0.1	0.4
Mandatory use of anchorage	0.1	0.05		Three of the following restriction apply: (a) Cargo handling own ships allowed, (b) cargo handling other ships allowed, (c) storage/warehousing own ships allowed, (d) storage/warehousing other ships allowed, (e) customs clearance own ships allowed, (f) customs clearance other ships allowed, (g) container station/ depot own ships allowed, (h) container station/ depot other ships allowed, (I) freight forwarding own ships allowed (J) freight forwarding other ships allowed.	0.1	0.3
Mandatory use of casting off	0.1	0.05		Two of the following restriction apply: (a) Cargo handling own ships allowed, (b) cargo handling other ships allowed, (c) storage/warehousing own ships allowed, (d) storage/warehousing other ships allowed, (e) customs clearance own ships allowed, (f) customs clearance other ships allowed, (g) container station/ depot own ships allowed, (h) container station/ depot other ships allowed, (I) freight forwarding own ships allowed (J) freight forwarding other ships allowed.	0.1	0.2
				One of the following restriction apply: (a) Cargo handling own ships allowed, (b) cargo handling other ships allowed, (c) storage/warehousing own ships allowed, (d) storage/warehousing other ships allowed, (e) customs clearance own ships allowed, (f) customs clearance other ships allowed, (g) container station/ depot own ships allowed, (h) container station/ depot other ships allowed, (I) freight forwarding own ships allowed (J) freight forwarding other ships allowed.	0.1	0.1
Score is taken from the World Bank score for this category				None of the following restriction apply: (a) Cargo handling own ships allowed, (b) cargo handling other ships allowed, (c) storage/warehousing own ships allowed, (d) storage/warehousing other ships allowed, (e) customs clearance own ships allowed, (f) customs clearance other ships allowed, (g) container station/ depot own ships allowed, (h) container station/ depot other ships allowed, (I) freight forwarding own ships allowed (J) freight forwarding other ships allowed.	0.1	0

**Table 7 Continued. Mapping: Maritime transport Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Discretionary imposition or restrictions, including for retaliatory purposes</b>	<b>0.05</b>			<b>Discretionary imposition or restrictions, including for retaliatory purposes</b>	<b>0.05</b>		
Governments are able to impose selective restrictions	0.05	1		Restriction on repatriation of earning	0.5	0.25	
Governments are unable to impose selective restrictions	0.05	0		Difference in licensing criteria for foreign and domestic applicants	0.5	0.25	
				Other forms of discrimination	0.5	0.25	
				No right to appeal regulatory decisions	0.5	0.25	
<b>Score will be sum of Column G for World Bank score weighted by 0.05</b>	<b>0.5</b>						
<b>United Nations Liner Code</b>	<b>0.05</b>			<b>United Nations Liner Code</b>	<b>0.05</b>		
Economy is party of the code and applies to Article 2 of the code.	0.05	1		Economy is party of the code and applies to Article 2 of the code	0.05	1	
Economy is party to the code but does not apply Article 2 of the code.	0.05	0.75		Economy is party to the code but does not apply Article 2 of the code	0.05	0.75	
Economy is not party to code	0.05	0		Economy is not party to code	0.05	0	
<b>Government permits conference</b>	<b>0.05</b>			<b>Government permits conference</b>	<b>0.1</b>		
Governments permits the operation of conferences	0.05	1		There is exemption of carrier agreements from competition law	0.05	1	
Conferences are subject to effective competition	0.05	0		Exemption of carrier agreements from competition law does not exist	0.05	0	
<b>Bilateral maritime services agreements on cargo sharing</b>	<b>0.05</b>						
The score for an economy is taken from the 35 by 35 matrix of bilateral agreements on cargo sharing	0.05	1					
<b>Composition of the board of directors</b>	<b>0.02</b>			<b>Composition of the board of directors</b>	<b>0.02</b>		
The score is inversely proportional to the percentage of the board that can comprise foreigners	0.02	0		The score is inversely proportionately to the percentage of the board that can comprise foreigners. If b = maximum percentage of the board that can comprise foreigners.	0.02	1-b	
<b>Temporary movement of people</b>	<b>0.01</b>			<b>Temporary movement of people ( we used information on temporary movement of people for accounting services)</b>	<b>0.01</b>		
No temporary entry of executives, senior managers and/or specialists	0.01	1		No limitation on the duration of stay initially allowed for IPC	0.01	1	
Temporary entry of executives, senior managers and/or specialists up to 30 days	0.01	0.75		Duration of stay initially allowed for IPC is up to 1 month	0.01	0.75	
Temporary entry of executives, senior managers and/or specialists up to 60 days	0.01	0.5		Duration of stay initially allowed for IPC is up to 2 month	0.01	0.5	
Temporary entry of executives, senior managers and/or specialists up to 90 days	0.01	0.25		Duration of stay initially allowed for IPC is up to 3 month	0.01	0.25	
Temporary entry of executives, senior managers and/or specialists over 90 days	0.01	0		Duration of stay initially allowed for IPC is over 3 month	0.01	0	
	<b>1</b>				<b>1</b>		

**Table 8. Mapping: Air transport Services**

Australian categories	Weight	Score	Weighted score	Score	Weight score	Score	Weighted score
<b>Restrictions on Commercial Presence and Cross-Border Trade</b>				<b>Restrictions on Commercial Presence and Cross-Border Trade</b>			
<b>Form of commercial presence</b>	<b>0.1</b>			<b>Form of commercial presence</b>	<b>0.1</b>		
Measures which restrict or require a specific type of legal entity or joint venture arrangement.	0.1	1		One of the following form of establishment is restricted : (a) joint venture, (b) Greenfield Subsidiary, (c) Acquisition	0.1	1	
Air transport service suppliers must be represented by an agent.	0.1	NA					
No restrictions on establishment.	0.1			Non of the following form of establishment is restricted : (a) joint venture, (b) Greenfield Subsidiary, (c) Acquisition	0.1	0	
<b>Direct investment in international air transport service suppliers</b>	<b>0.1</b>			<b>Direct investment in international air transport service suppliers</b>	<b>0.1</b>		
The score is inversely proportional to the maximum equity participation permitted in an existing air transport service supplier.	0.1	1-s		The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm. If s = maximum foreign equity participation permitted in a professional firm.	0.1	1-s	
<b>Direct investment in domestic air transport service suppliers</b>	<b>0.1</b>			<b>Proxy: Acquisition domestic private entity -max. ownership allowed by a group of entities</b>	<b>0.1</b>		
The score is inversely proportional to the maximum equity participation permitted in an existing domestic air transport service supplier.	0.1	1-d		The score is inversely proportional to the maximum foreign equity participation permitted allowed by a group of entities in acquisition. If d = maximum foreign equity participation permitted allowed by a group of entities in acquisition	0.1	1-d	
<b>Permanent movement of people</b>	<b>0.02</b>			<b>Permanent movement of people ( we used information on permanent movement of people for accounting services)</b>	<b>0.02</b>		
No entry of executives, senior managers and/or specialists.	0.02	1		Intra Cooperate transfer (ICT) is not allowed	0.02	1	
Executives, specialists and/or senior managers can stay a period of up to 1 year.	0.02	0.8		Intra Cooperate transfer (ICT) is allowed up to 1 year	0.02	0.8	
Executives, specialists and/or senior managers can stay a period of up to 2 years.	0.02	0.6		Intra Cooperate transfer (ICT) is allowed up to 2 years	0.02	0.6	
Executives, specialists and/or senior managers can stay a period of up to 3 years.	0.02	0.4		Intra Cooperate transfer (ICT) is allowed up to 3 years	0.02	0.4	
Executives, specialists and/or senior managers can stay a period of up to 4 years.	0.02	0.2		Intra Cooperate transfer (ICT) is allowed up to 4 years	0.02	0.2	
Executives, specialists and/or senior managers can stay a period of up to 5 years or more.	0.02	0		Intra Cooperate transfer (ICT) is allowed over 4 years	0.02	0	
<b>International air transport</b>	<b>0.1</b>			<b>Market entry in international air transport</b>	<b>0.1</b>		
Foreigners generally cannot provide international air transport services.	0.1	1		Market entry is not allowed in air passenger service	0.1	1	
Foreigners can provide international air transport services with intergovernmental agreement, ASA.	0.1	0.5		Domestic acquisition allowed, but less than 100 percent ownership.	0.1	0.5	
No restriction on international air transport services.	0.1	0		Market entry is allowed without restrictions	0.1	0	
<b>International charter flight</b>	<b>0.1</b>			<b>Proxy: Market entry in international air transport</b>	<b>0.1</b>		
Foreigners generally cannot provide international charter flight services.	0.1	1		Market entry is not allowed in air passenger service	0.1	1	
Foreigners can provide international charter flight services upon agreements.	0.1	0.5		Domestic acquisition allowed, but less than 100 percent ownership	0.1	0.5	
No restriction on international charter flights services.	0.1	0		Market entry is allowed without restrictions	0.1	0	
<b>Domestic air transport</b>	<b>0.1</b>			<b>Market entry in domestic air transport</b>	<b>0.1</b>		
Foreigners generally cannot provide domestic air transport services.	0.1	1		Market entry is not allowed in air passenger service	0.1	1	
Foreigners can provide domestic air transport services with agreements.	0.1	0.5		Domestic acquisition allowed, but less than 100 percent ownership	0.1	0.5	
No restriction on domestic air transport services.	0.1	0		Market entry is allowed	0.1	0	
<b>Domestic charter flight</b>	<b>0.1</b>			<b>Proxy: Market entry in domestic air transport</b>	<b>0.1</b>		
Foreigners generally cannot provide domestic charter flight services.	0.1	1		Market entry is not allowed in air passenger service	0.1	1	
Foreigners can provide domestic charter flight services upon agreements.	0.1	0.5		Domestic acquisition allowed, but less than 100 percent ownership	0.1	0.5	
No restriction on domestic charter flight services.	0.1	0		Market entry is allowed	0.1	0	

**Table 8 Continued. Mapping: Air transport Services**

Australian categories	Weight	Score	Weighted score	Score	Weight score	Score	Weighted score
<b>Other Restrictions*</b>				<b>Other Restrictions</b>			
<b>Air port services</b>	<b>0.1</b>			<b>Proxy: Limit on number of licenses available</b>	<b>0.1</b>		
Foreigners generally cannot own airports.	0.1	0.4		No licence available	0.1	1	
Foreigners generally cannot provide fuel supply services.	0.1	0.15		Licence available but all the following restriction apply :(a) there is a limit on the number of licences available, (b) licences allocated at the discretion of regulatory authority, (c) there is no requirement to provide licencing decision within a time framework	0.1	0.75	
Foreigners generally cannot provide repair and maintenance services of aircraft.	0.1	0.15		Licence available but two of the following restriction apply :(a) there is a limit on the number of licences available, (b) licences allocated at the discretion of regulatory authority, (c) there is no requirement to provide licencing decision within a time framework	0.1	0.5	
Foreigners generally cannot provide air services trade and marketing.	0.1	0.15		Licence available but one of the following restriction apply: (a) there is a limit on the number of licences available, (b) licences allocated at the discretion of regulatory authority, (c) there is no requirement to provide licencing decision within a time framework	0.1	0.25	
Foreigners generally cannot provide computer reservation system.	0.1	0.15		Licence available but none of the following restriction apply : (a) there is a limit on the number of licences available, (b) licences allocated at the discretion of regulatory authority, (c) there is no requirement to provide licencing decision within a time framework	0.1	0	
No restriction.	0.1	0					
This category has been replaced with the category "Limit on number of licenses available" and score is taken from the World Bank score for this category.							
<b>Discretionary imposition of restrictions, including for retaliatory purposes</b>	<b>0.05</b>			<b>Difference in licensing criteria for foreign and domestic applicants</b>	<b>0.05</b>		
Governments are able to impose selective restrictions.	0.05	1		There is difference in licencing criteria for foreign and domestic applicants	0.05	1	
Governments are unable to impose selective restrictions.	0.05	0		There is no difference in licencing criteria for foreign and domestic applicants	0.05	0	
<b>Discretionary imposition of subsidy to protect domestic air companies</b>	<b>0.05</b>			<b>Proxy: Discrimination on foreign firms</b>	<b>0.05</b>		
Government directly subsidizes only domestic companies.	0.05	1		Both of the following restrictions apply: (a) restrictions on repatriation of earning, (b) "other" forms of discrimination	0.05	1	
Government indirectly subsidizes only domestic companies.	0.05	0.75		One of the following restriction apply: (a) restrictions on repatriation of earning, (b) "other" forms of discrimination	0.05	0.75	
Government does not subsidize either domestic companies or foreign companies.	0.05	0		None of the following restriction apply: (a) restrictions on repatriation of earning, (b) "other" forms of discrimination	0.05	0	
<b>Inter-governmental ASA agreement.</b>	<b>0.05</b>			<b>Proxy: Existence of regulatory authority for the sector</b>	<b>0.05</b>		
The score for an economy is calculated, based on the number of participating airline companies in each ASA.	0.05			There exist regulatory authority for the sector	0.05	1	
				There is no regulatory authority for the sector	0.05	0	
* Score is taken from the World Bank score for this category							
<b>Composition of the board of directors</b>	<b>0.02</b>			<b>Composition of the board of directors</b>	<b>0.02</b>		
The score is inversely proportionately to the percentage of the board that can comprise foreigners.	0.02	1-b		The score is inversely proportionately to the percentage of the board that can comprise foreigners. If b = maximum percentage of the board that can comprise foreigners.	0.05	1-b	
<b>Temporary movement of people</b>	<b>0.01</b>			<b>Temporary movement of people ( we used information on temporary movement of people for accounting services)</b>	<b>0.01</b>		
No temporary entry of executives, senior managers and/or specialists.	0.01	1		No limitation on the duration of stay initially allowed for IPC	0.01	1	
Temporary entry of executives, senior managers and/or specialists up to 30 days.	0.01	0.75		Duration of stay initially allowed for IPC is up to 1 month	0.01	0.75	
Temporary entry of executives, senior managers and/or specialists up to 60 days.	0.01	0.5		Duration of stay initially allowed for IPC is up to 2 month	0.01	0.5	
Temporary entry of executives, senior managers and/or specialists up to 90 days.	0.01	0.25		Duration of stay initially allowed for IPC is up to 3 month	0.01	0.25	
Temporary entry of executives, senior managers and/or specialists over 90 days.	0.01	0		Duration of stay initially allowed for IPC is over 3 month	0.01	0	
<b>Total</b>	<b>1</b>				<b>1</b>		

**Table 9. Mapping : Road transport**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Restrictions on Commercial Presence</b>				<b>Restrictions on Commercial Presence</b>			
<b>Market entry</b>	<b>0.25</b>				<b>0.25</b>		
completely closed, i.e. no entry allowed at all	0.25	1		Market entry is not allowed	0.25	1	
virtually closed but with very limited opportunities to enter and operate	0.25	0.75		Market entry is allowed but three of the following restriction apply : (a) Green field branch, (b) joint venture , (c) Greenfield Subsidiary, (d) Acquisition	0.25	0.75	
allow entry and operations but impose restrictions that are neither trivial nor stringent	0.25	0.5		Market entry is allowed but two of the following restriction apply : (a) Green field branch, (b) joint venture , (c) Greenfield Subsidiary, (d) Acquisition	0.25	0.5	
virtually open but with minor restrictions	0.25	0.25		Market entry is allowed but one of the following restriction apply : (a) Green field branch, (b) joint venture , (c) Greenfield Subsidiary, (d) Acquisition	0.25	0.25	
completely open, i.e. no restrictions at all	0.25	0		Market entry is allowed but none of the following restriction apply : (a) Green field branch, (b) joint venture , (c) Greenfield Subsidiary, (d) Acquisition	0.25	0	
<b>Greenfield Investment (maximum ownership allowed)</b>	<b>0.2</b>			<b>Greenfield Investment (maximum ownership allowed)</b>	<b>0.2</b>		
score is 1 minus that share of foreign ownership allowed	1-s			The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm. If s = maximum foreign equity participation permitted in a professional firm	0.2	1-s	
<b>Acquisition domestic private entity -max. ownership allowed by a group of entities</b>	<b>0.1</b>			<b>Acquisition domestic private entity -max. ownership allowed by a group of entities</b>	<b>0.1</b>		
score is 1 minus that share of foreign ownership allowed	1-d			The score is inversely proportional to the maximum foreign equity participation permitted allowed by a group of entities in acquisition. If d = maximum foreign equity participation permitted allowed by a group of entities in acquisition	0.1	1-d	
<b>Difference in licensing criteria for foreign and domestic applicants</b>	<b>0.2</b>			<b>Difference in licensing criteria for foreign and domestic applicants</b>	<b>0.2</b>		
completely closed, i.e. no entry allowed at all	0.2	1		There is difference in licensing criteria for foreign and domestic applicants	0.2	1	
virtually closed but with very limited opportunities to enter and operate	0.2	0.75		There is no difference in licensing criteria for foreign and domestic applicants but two of the following restriction apply : (a) restrictions on repatriation of earning, (b) other forms of discrimination	0.2	0.75	
allow entry and operations but impose restrictions that are neither trivial nor stringent	0.2	0.5		There is no difference in licensing criteria for foreign and domestic applicants but one of the following restriction apply : (a) restrictions on repatriation of earning, (b) Other forms of discrimination	0.2	0.5	
virtually open but with minor restrictions	0.2	NA					
completely open, i.e. no restrictions at all	0.2	0		There is no difference in licensing criteria for foreign and domestic applicants and none of the following restriction apply : (a) restrictions on repatriation of earning, (b) Other forms of discrimination	0.2	0	

**Table 9 Continued. Mapping : Road transport**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Limit on number of licenses available</b>	<b>0.1</b>			<b>Limit on number of licenses available</b>	<b>0.1</b>		
completely closed, i.e. no entry allowed at all	0.1	1		No licence available	0.1	1	
virtually closed but with very limited opportunities to enter and operate	0.1	0.75		Licence available but all the following restriction apply : there is a limit on the number of licences available (b)licences allocated at the discretion of regulatory authority,(c)there is no requirement to provide licencing decision within a time framework	0.1	0.75	
allow entry and operations but impose restrictions that are neither trivial nor stringent	0.1	0.5		Licence available but two of the following restriction apply : there is a limit on the number of licences available (b)licences allocated at the discretion of regulatory authority,(c)there is no requirement to provide licencing decision within a time framework	0.1	0.5	
virtually open but with minor restrictions	0.1	0.25		Licence available but one of the following restriction apply : there is a limit on the number of licences available (b)licences allocated at the discretion of regulatory authority,(c)there is no requirement to provide licencing decision within a time framework	0.1	0.25	
completely open, i.e. no restrictions at all	0.1	0		Licence available but none of the following restriction apply : there is a limit on the number of licences available (b)licences allocated at the discretion of regulatory authority,(c)there is no requirement to provide licencing decision within a time framework	0.1	0	
<b>Nationality Requirement for Board of Directors</b>	<b>0.05</b>			<b>Nationality Requirement for Board of Directors</b>	<b>0.05</b>		
completely closed, i.e. no foreign Directors allowed at all	0.05	1		Percentage of domestic residents/citizens on the board of directors required is 100%	0.05	1	
allow foreign Directors but impose restrictions that are neither trivial nor stringent	0.05	0.5*		Percentage of domestic residents/citizens on the board of directors required is above 75% and below 100%	0.05	0.8	
				Percentage of domestic residents/citizens on the board of directors required is above 50% and below 75%	0.05	0.6	
				Percentage of domestic residents/citizens on the board of directors required is above 25% and below 50%	0.05	0.4	
				Percentage of domestic residents/citizens on the board of directors required is above 0% and below 25%	0.05	0.2	
completely open, i.e. no restrictions at all	0.05	0		Percentage of domestic residents/citizens on the board of directors required is 0%	0.05	0	
<b>Right to Appeal Regulatory Decisions</b>	<b>0.1</b>			<b>Right to Appeal Regulatory Decisions</b>	<b>0.1</b>		
completely closed, i.e. no appeal allowed at all	0.1	1		No right to appeal regulatory decisions	0.1	1	
allow entry and operations but impose restrictions that are neither trivial nor stringent	0.1	0.5		Either licence is required or there is restriction on length of licence or both	0.1	0.5	
completely open, i.e. no restrictions at all	0.1	0		no licences is required, and there is no restriction on length of licence	0.1	0	
<b>Total</b>	<b>1</b>				<b>1</b>		

**Table 10. Mapping: Rail transport**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Restrictions on Commercial Presence</b>				<b>Restrictions on Commercial Presence</b>			
<b>Market entry</b>	<b>0.25</b>				<b>0.25</b>		
completely closed, i.e. no entry allowed at all	0.25	1		Market entry is not allowed	0.25	1	
virtually closed but with very limited opportunities to enter and operate	0.25	0.75		Market entry is allowed but three of the following restriction apply : (a) Green field branch, (b) joint venture , (c) Greenfield Subsidiary, (d) Acquisition	0.25	0.75	
allow entry and operations but impose restrictions that are neither trivial nor stringent	0.25	0.5		Market entry is allowed but two of the following restriction apply : (a) Green field branch, (b) joint venture , (c) Greenfield Subsidiary, (d) Acquisition	0.25	0.5	
virtually open but with minor restrictions	0.25	0.25		Market entry is allowed but one of the following restriction apply : (a) Green field branch, (b) joint venture , (c) Greenfield Subsidiary, (d) Acquisition	0.25	0.25	
completely open, i.e. no restrictions at all	0.25	0		Market entry is allowed but none of the following restriction apply : (a) Green field branch, (b) joint venture , (c) Greenfield Subsidiary, (d) Acquisition	0.25	0	
<b>Greenfield Investment (maximum ownership allowed)</b>	<b>0.2</b>			<b>Greenfield Investment (maximum ownership allowed)</b>	<b>0.2</b>		
score is 1 minus that share of foreign ownership allowed	1-s			The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm. If s = maximum foreign equity participation permitted in a professional firm	0.2	1-s	
<b>Acquisition domestic private entity -max. ownership allowed by a group of entities</b>	<b>0.1</b>			<b>Acquisition domestic private entity -max. ownership allowed by a group of entities</b>	<b>0.1</b>		
score is 1 minus that share of foreign ownership allowed	1-d			The score is inversely proportional to the maximum foreign equity participation permitted allowed by a group of entities in acquisition. If d = maximum foreign equity participation permitted allowed by a group of entities in acquisition	0.1	1-d	
<b>Difference in licensing criteria for foreign and domestic applicants</b>	<b>0.2</b>			<b>Difference in licensing criteria for foreign and domestic applicants</b>	<b>0.2</b>		
completely closed, i.e. no entry allowed at all	0.2	1		There is difference in licencing criteria for foreign and domestic applicants	0.2	1	
virtually closed but with very limited opportunities to enter and operate	0.2	0.75		There is no difference in licencing criteria for foreign and domestic applicants but two of the following restriction apply : (a) restrictions on repatriation of earning, (b) other forms of discrimination	0.2	0.75	
allow entry and operations but impose restrictions that are neither trivial nor stringent	0.2	0.5		There is no difference in licencing criteria for foreign and domestic applicants but one of the following restriction apply : (a) restrictions on repatriation of earning, (b) Other forms of discrimination	0.2	0.5	
virtually open but with minor restrictions	0.2	NA					
completely open, i.e. no restrictions at all	0.2	0		There is no difference in licencing criteria for foreign and domestic applicants and none of the following restriction apply : (a) restrictions on repatriation of earning, (b) Other forms of discrimination	0.2	0	



**Table 11. Mapping : Retailing Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Restrictions on establishment</b>				<b>Restrictions on establishment</b>			
<b>Restrictions on commercial land</b>	<b>0.2</b>			<b>Proxy: Greenfield branch allowed</b>	<b>0.2</b>		
Acquisition of commercial land is not permitted.	0.2	1		Greenfield branch is not allowed	0.05	1	
Acquisition of commercial land is permitted, but is restricted to a certain size	0.2	NA					
No restrictions on the acquisition of land	0.2	0		Greenfield branch is allowed	0.02	0	
<b>Direct investment in distribution firms</b>				<b>Direct investment in distribution firms</b>			
The score will be inversely proportional to the maximum foreign equity participation permitted in a domestic distribution firm. For example, equity participation to a maximum of 75 per cent of an existing distribution firm receives a score of 0.25.	0.2	1-s		The score is inversely proportional to the maximum foreign equity participation permitted in a professional firm. If s = maximum foreign equity participation permitted in a professional firm	0.2	1-s	
<b>Restrictions on large-scale stores</b>				<b>Proxy: Expanding the number of retailing outlets</b>			
National legislation prohibits large-scale stores.	0.05	1		Number of retailing outlets is limited	0.05	1	
Regional and local authorities restrict large-scale stores	0.05	NA					
No restrictions on large scale stores	0.05	0		Number of retailing outlets is not limited	0.05	0	
<b>Factors affecting investment</b>				<b>Proxy: Form of commercial presence</b>			
Takeovers are hindered by regulation	0.075	0.3		One of the following form of establishment is restricted : (a) Joint venture , (b) Greenfield Subsidiary, (c) Acquisition	0.075	1	
Investors must meet performance requirements	0.075	0.3		Non of the following form of establishment is restricted : (a) Joint venture , (b) Greenfield Subsidiary, (c) Acquisition	0.075	0	
Establishment subject to an economic needs test	0.075	0.2					
Government screening of investment	0.075	0.2					
Score is taken from the World Bank score for this category							
<b>Local government requirements</b>				<b>Local government requirements</b>			
Establishment subject to a local environmental impact assessment or zoning requirements	0.075	0.4		Nationality requirement for employees	0.075	0.5	
Local employment requirements.	0.075	0.4		Limits on opening only single-brand stores	0.075	0.5	
Restrictions on operating hours	0.075	0.2					
Score is taken from the World Bank score for this category							
<b>Movement of People – Permanent</b>				<b>Permanent movement of people ( we used information on permanent movement of people for accounting services)</b>			
No entry of executives, senior managers or staff.	0.05	1		Intra Cooperate transfer (ICT) is not allowed	0.02	1	
Executives, senior managers or staff can stay a period of up to 1 year	0.05	0.8		Intra Cooperate transfer (ICT) is allowed up to 1 year	0.02	0.8	
Executives, senior managers or staff can stay a period of up to 2 years.	0.05	0.6		Intra Cooperate transfer (ICT) is allowed up to 2 years	0.02	0.6	
Executives, senior managers or staff can stay a period of up to 3 years	0.05	0.4		Intra Cooperate transfer (ICT) is allowed up to 3 years	0.02	0.4	
Executives, senior managers or staff can stay a period of up to 4 years.	0.05	0.2		Intra Cooperate transfer (ICT) is allowed up to 4 years	0.02	0.2	
Executives, senior managers or staff can stay a period of more than 4 years.	0.05	0		Intra Cooperate transfer (ICT) is allowed over 4 years	0.02	0	

**Table 11 Continued. Mapping: Retailing Services**

Australian categories	Weight	Score	Weighted score	The World Bank data	Weight	Score	Weighted score
<b>Restrictions on ongoing operations</b>							
<b>Wholesale import licensing</b>	<b>0.075</b>			<b>Market Entry</b>	<b>0.075</b>		
No new import licenses are available for wholesalers	0.075	1		Market entry is not allowed (mode 3)	0.2	1	
A limited number of new import licenses are available for wholesalers.	0.075	0.5		Market entry is allowed but three of the following restrictions apply: (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body, (c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.75	
A limited number of new import licenses are available for wholesalers.	0.075	0.5		Market entry is allowed but two of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body, (c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.2	
A limited number of new import licenses are available for wholesalers.	0.075	0.5		Market entry is allowed but one of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body, (c) licence is not always granted if publicly available criteria fulfilled.	0.2	0.1	
There are no limits on the issue of import licenses	0.075	0		Market entry is allowed but none of the following restrictions apply : (a) There is a limit on the number of licences available, (b) Licence is allocated at the discretion of regulatory body, (c) licence is not always granted if publicly available criteria fulfilled.	0.2	0	
<b>Limits on the promotion of retail products</b>	<b>0.05</b>			<b>Proxy: other forms of discrimination</b>	<b>0.05</b>		
Distribution firms are prohibited from using advertising and promotion to market retail products.	0.05	1		Restriction on repatriation of earning	0.025	0.33	
Distribution firms are limited in their use of advertising and promotion to market retail products	0.05	0.5		Other forms of discrimination	0.025	0.33	
No restrictions on advertising/promotion of retail products	0.05	0		Difference in licensing criteria for foreign and domestic applicants	0.025	0.33	
Score is taken from the World Bank score for this category							
<b>Statutory government monopolies</b>	<b>0.1</b>			<b>Statutory government monopolies</b>	<b>0.1</b>		
The score for an economy is taken from a table of 16 product categories, in which distribution occurs through statutory government monopolies	0.1			Retailers are restricted from selling some products	0.1	1	
				Retailers are not restricted from selling any products	0.1	0	
<b>Protection of intellectual property rights</b>	<b>0.05</b>			<b>Protection of intellectual property rights</b>	<b>0.05</b>		
An economy is on the USTR priority 301 watch list	0.05	1		An economy is on the USTR priority 301 watch list	0.05	1	
An economy is on the USTR priority watch list	0.05	0.5		An economy is on the USTR priority watch list	0.05	0.05	
Intellectual property rights are not on USTR watch lists.	0.05	0		Intellectual property rights are not on USTR watch lists.	0.05	0	
<b>Licensing requirements on management</b>	<b>0.05</b>			<b>Licensing requirements on management</b>	<b>0.05</b>		
All directors or managers or at least a majority of them must be nationals or residents	0.05	1		Percentage of domestic residents/citizens on the board of directors required is 100%	0.05	1	
At least 1 director/manager must be a national or resident	0.05	0.75		Percentage of domestic residents/citizens on the board of directors required is above 75% and below 100%	0.05	0.8	
Directors and managers must be locally licensed	0.05	0.5		Percentage of domestic residents/citizens on the board of directors required is above 50% and below 75%	0.05	0.6	
Directors and managers must be domiciled in the foreign economy	0.05	0.25		Percentage of domestic residents/citizens on the board of directors required is above 25% and below 50%	0.05	0.4	
				Percentage of domestic residents/citizens on the board of directors required is above 0% and below 25%	0.05	0.2	
Score is taken from the World Bank score for this category				Percentage of domestic residents/citizens on the board of directors required is 0%	0.05	0	
<b>Movement of people – Temporary</b>	<b>0.025</b>			<b>Temporary movement of people ( we used information on temporary movement of people for accounting services)</b>	<b>0.025</b>		
No temporary entry of executives, senior managers or staff.	0.025	1		No limitation on the duration of stay initially allowed for IPC	0.01	1	
Temporary entry of executives, senior managers or staff up to 30 days.	0.025	0.75		Duration of stay initially allowed for IPC is up to 1 month	0.01	0.75	
Temporary entry of executives, senior managers or staff up to 60 days.	0.025	0.5		Duration of stay initially allowed for IPC is up to 2 month	0.01	0.5	
Temporary entry of executives, senior managers or staff up to 90 days.	0.025	0.25		Duration of stay initially allowed for IPC is up to 3 month	0.01	0.25	
Temporary entry of executives, senior managers or staff over 90 days.	0.025	0		Duration of stay initially allowed for IPC is over 3 month	0.01	0	
<b>Total</b>	<b>1</b>				<b>1</b>		

**Table 12. Scoring of Services Trade Restrictive Indices**

Sector	Albania	Algeria	Argentina	Armenia	Australia	Austria	Bahrain	Bangladesh	Belarus	Belgium	Bolivia	Botswana	Brazil	Bulgaria	Burundi	Cote d'Ivoire	Cambodia	Cameroon	Canada	Chile	China
Accounting	0.30	0.71	0.27	0.33	0.42	0.42	0.26	0.13	0.38	0.36	0.33	0.27	0.54	0.23	0.48	0.65	0.52	0.32	0.31	0.24	0.40
Legal Services	0.15	0.66	0.23	0.25	0.28	0.49	0.92	0.66	0.70	0.28	0.34	0.44	0.75	0.51	0.66	0.71	0.92	0.44	0.51	0.35	0.92
Air Transport	0.33	0.75	0.51	0.34	0.17	0.40	0.32	0.15	0.01	0.06	0.02	0.52	0.44	0.14	0.10	0.12	0.03	0.07	0.47	0.06	0.41
Rail Transport	0.35	1.00	0.13	0.26	0.21	0.31	0.25	1.00	1.00	1.00	0.26	0.37	0.10	0.23	1.00	1.00	0.15	0.31	0.21	0.00	0.10
Road Transport	0.28	1.00	0.20	0.23	0.11	0.94	0.25	0.30	0.20	0.94	0.26	0.37	0.10	0.29	0.32	0.34	0.15	0.25	0.14	0.00	0.13
Banking	0.11	0.18	0.02	0.11	0.02	0.02	0.18	0.08	0.17	0.02	0.01	0.22	0.23	0.01	0.26	0.22	0.12	0.01	0.04	0.01	0.28
Insurance	0.15	0.33	0.17	0.17	0.28	0.15	0.30	0.27	0.45	0.13	0.31	0.28	0.21	0.18	0.35	0.17	0.21	0.30	0.17	0.19	0.26
Fixed Line	0.07	0.18	0.14	0.26	0.20	0.27	0.39	0.94	0.83	0.25	0.29	0.61	0.27	0.32	0.40	0.36	0.52	0.14	0.59	0.11	0.58
Mobile Line	0.24	0.09	0.06	0.18	0.22	0.24	0.27	0.33	0.07	0.24	0.05	0.41	0.26	0.23	0.26	0.23	0.44	0.05	0.54	0.10	0.51
Retail	0.11	0.33	0.05	0.05	0.13	0.16	0.11	0.11	0.40	0.00	0.09	0.13	0.09	0.05	0.00	0.05	0.35	0.10	0.16	0.10	0.40
Maritime Transport	0.07	0.26	0.11	n/a	0.37	n/a	0.26	0.40	n/a	0.24	n/a	n/a	0.31	0.23	0.17	0.19	0.21	0.20	0.31	0.19	0.30

**Table 12 Continued. Scoring of Services Trade Restrictive Indices**

Sector	Colombia	Congo, the Democratic Republic of the	Costa Rica	Czech Republic	Denmark	Republic	Ecuador	Egypt	Ethiopia	Finland	France	Georgia	Germany	Ghana	Greece	Guatemala	Honduras	Hungary	India	Indonesia	Iran (Islamic Republic of)
Accounting	0.51	0.37	0.71	0.25	0.64	0.45	0.36	0.71	0.25	0.30	0.30	0.12	0.56	0.37	0.19	0.23	0.28	0.17	0.50	0.64	0.82
Legal Services	0.35	0.46	0.66	0.11	0.47	0.27	0.28	0.92	0.92	0.43	0.25	0.70	0.64	0.32	0.55	0.36	0.20	0.29	0.92	0.92	0.81
Air Transport	0.02	0.13	0.06	0.40	0.41	0.06	0.17	0.42	0.99	0.06	0.41	0.16	0.41	0.02	0.40	0.07	0.45	0.40	1.00	0.46	0.89
Rail Transport	0.00	1.00	0.51	0.31	0.31	0.30	0.19	1.00	0.35	1.00	1.00	0.36	0.31	0.23	1.00	1.00	0.41	0.38	1.00	1.00	0.55
Road Transport	0.00	0.35	0.29	0.94	0.94	0.25	0.13	0.13	1.00	0.00	0.94	0.29	0.94	0.00	0.94	0.30	0.68	0.94	1.00	1.00	0.55
Banking	0.17	0.04	0.23	0.02	0.03	0.21	0.52	0.49	0.99	0.02	0.02	0.09	0.03	0.40	0.02	0.01	0.32	0.02	0.18	0.21	0.99
Insurance	0.30	0.98	0.24	0.14	0.15	0.21	0.40	0.41	0.98	0.14	0.15	0.16	0.15	0.32	0.14	0.32	0.18	0.14	0.44	0.32	0.98
Fixed Line	0.35	0.34	0.28	0.26	0.27	0.28	0.26	0.41	0.94	0.26	0.27	0.13	0.27	0.42	0.26	0.12	0.16	0.41	0.43	0.28	0.94
Mobile Line	0.36	0.34	0.25	0.24	0.25	0.26	0.08	0.35	0.88	0.24	0.25	0.10	0.25	0.38	0.24	0.09	0.05	0.40	0.38	0.25	0.47
Retail	0.11	0.10	0.21	0.02	0.05	0.09	0.08	0.41	0.85	0.02	0.17	0.04	0.05	0.11	0.02	0.09	0.08	0.26	0.48	0.35	0.33
Maritime Transport	0.13	0.32	0.31	n/a	0.32	0.23	0.25	0.64	0.80	0.24	0.62	0.26	0.32	0.37	0.27	0.26	0.24	n/a	0.36	0.47	0.39

**Table 12 Continued. Scoring of Services Trade Restrictive Indices**

Sector	Ireland	Italy	Japan	Jordan	Kazakhstan	Kenya	Korea, Republic of	Kuwait	Kyrgyzstan	Lebanon	Lesotho	Lithuania	Madagascar	Malawi	Malaysia	Mali	Mauritius	Mexico	Mongolia	Morocco	Mozambique
Accounting	0.41	0.46	0.26	0.26	0.29	0.34	0.31	0.52	0.52	0.48	0.20	0.25	0.31	0.42	0.26	0.76	0.13	0.30	0.31	0.35	0.26
Legal Services	0.40	0.43	0.29	0.92	0.39	0.92	0.92	0.83	0.42	0.81	0.16	0.33	0.51	0.62	0.92	0.63	0.83	0.38	0.34	0.59	0.26
Air Transport	0.41	0.43	0.44	0.37	0.06	0.01	0.42	0.42	0.34	0.94	0.15	0.40	0.14	0.33	0.37	0.05	0.06	0.37	0.01	0.06	0.04
Rail Transport	0.31	0.31	0.74	1.00	0.30	1.00	0.22	1.00	1.00	1.00	1.00	0.38	0.35	0.26	1.00	0.23	1.00	1.00	1.00	0.00	0.25
Road Transport	0.94	0.94	0.10	1.00	0.30	0.00	0.10	0.47	0.23	0.45	0.20	0.00	0.43	0.21	0.49	0.23	0.26	1.00	0.00	0.10	0.23
Banking	0.03	0.02	0.02	0.43	0.17	0.02	0.02	0.24	0.01	0.22	0.01	0.02	0.22	0.22	0.38	0.06	0.05	0.02	0.06	0.02	0.01
Insurance	0.15	0.13	0.15	0.16	0.30	0.44	0.43	0.48	0.34	0.36	0.21	0.14	0.28	0.26	0.45	0.26	0.21	0.49	0.16	0.31	0.03
Fixed Line	0.27	0.25	0.25	0.09	0.39	0.45	0.42	0.93	0.16	0.40	0.21	0.26	0.31	0.46	0.53	0.45	0.16	0.32	0.29	0.31	0.88
Mobile Line	0.25	0.24	0.24	0.53	0.25	0.29	0.37	0.55	0.19	0.23	0.25	0.24	0.26	0.45	0.32	0.39	0.23	0.19	0.21	0.25	0.20
Retail	0.17	0.12	0.00	0.17	0.08	0.05	0.16	0.59	0.08	0.22	0.13	0.02	0.04	0.10	0.43	0.07	0.02	0.10	0.08	0.05	0.09
Maritime Transport	0.25	0.33	0.32	0.22	n/a	0.16	0.35	0.44	n/a	0.60	n/a	0.22	0.12	n/a	0.35	n/a	0.20	0.29	n/a	0.48	0.13

**Table 12 Continued. Scoring of Services Trade Restrictive Indices**

Sector	Namibia	Nepal	Netherlands	Zealand	Nicaragua	Nigeria	Oman	Pakistan	Panama	Paraguay	Peru	Philippines	Poland	Portugal	Qatar	Romania	Russian Federation	Rwanda	Saudi Arabia	Senegal	South Africa
Accounting	0.52	0.63	0.32	0.32	0.24	0.38	0.48	0.13	0.62	0.33	0.32	0.99	0.25	0.41	0.40	0.39	0.37	0.27	0.64	0.59	0.41
Legal Services	0.70	0.92	0.48	0.26	0.20	0.34	0.48	0.70	0.92	0.28	0.25	0.92	0.07	0.11	0.69	0.44	0.66	0.19	0.92	0.83	0.92
Air Transport	0.17	0.47	0.41	0.17	0.50	0.25	0.32	0.37	0.40	0.12	0.34	0.42	0.40	0.40	0.36	0.37	0.39	0.07	0.37	0.74	0.43
Rail Transport	0.40	1.00	0.31	0.20	0.43	1.00	1.00	0.10	1.00	0.31	0.20	0.43	0.40	0.31	1.00	0.29	0.09	1.00	0.00	1.00	0.15
Road Transport	0.31	0.25	0.94	0.10	0.74	0.14	0.24	0.10	0.30	0.31	0.20	0.43	0.10	0.94	0.45	0.23	0.00	0.21	1.00	0.19	0.15
Banking	0.22	0.15	0.03	0.02	0.06	0.02	0.26	0.20	0.12	0.19	0.16	0.41	0.02	0.02	0.97	0.06	0.24	0.18	0.20	0.17	0.08
Insurance	0.33	0.33	0.15	0.15	0.30	0.54	0.26	0.34	0.18	0.31	0.28	0.23	0.14	0.14	0.46	0.19	0.50	0.32	0.29	0.17	0.35
Fixed Line	0.60	0.57	0.27	0.26	0.09	0.03	0.93	0.31	0.27	0.32	0.13	0.56	0.26	0.26	0.93	0.22	0.06	0.37	0.42	0.24	0.36
Mobile Line	0.61	0.38	0.31	0.24	0.03	0.05	0.46	0.05	0.11	0.42	0.11	0.37	0.24	0.24	0.88	0.26	0.02	0.35	0.35	0.23	0.42
Retail	0.07	0.13	0.05	0.00	0.09	0.16	0.28	0.40	0.85	0.06	0.08	0.20	0.02	0.02	0.23	0.05	0.28	0.41	0.63	0.05	0.06
Maritime Transport	0.15	n/a	0.27	0.30	0.26	0.13	0.35	0.45	0.23	n/a	0.22	0.49	0.32	0.24	0.30	0.14	0.36	n/a	0.31	0.16	0.19

**Table 12 Continued. Scoring of Services Trade Restrictive Indices**

Sector	Spain	Sri Lanka	Sweden	Tanzania, United Republic of	Thailand	Trinidad and Tobago	Tunisia	Turkey	Uganda	Ukraine	Kingdom of Uttara Pradesh	United States of America	Uruguay	Uzbekistan	Venezuela	Viet Nam	Yemen	Zambia	Zimbabwe
Accounting	0.49	0.80	0.38	0.55	0.83	0.08	1.00	0.95	0.51	0.45	0.27	0.60	0.28	0.35	0.51	0.54	0.83	0.33	0.49
Legal Services	0.48	0.48	0.09	0.66	0.77	0.38	0.87	0.92	0.62	0.28	0.22	0.41	0.24	0.28	0.51	0.66	0.92	0.34	0.61
Air Transport	0.46	0.42	0.40	0.30	0.41	0.12	0.41	0.48	0.01	0.21	0.41	0.45	0.36	0.04	0.67	0.46	0.06	0.09	0.41
Rail Transport	1.00	1.00	0.31	0.46	0.32	1.00	0.40	1.00	0.22	1.00	0.31	0.20	1.00	1.00	0.00	0.58	1.00	0.19	0.60
Road Transport	0.94	0.00	0.11	0.09	0.32	0.14	0.34	0.23	0.20	0.20	0.94	0.13	0.30	0.23	0.00	0.60	0.34	0.30	0.52
Banking	0.03	0.38	0.03	0.16	0.38	0.02	0.13	0.02	0.02	0.16	0.03	0.03	0.08	0.05	0.22	0.06	0.13	0.07	0.28
Insurance	0.15	0.36	0.14	0.39	0.36	0.15	0.35	0.17	0.21	0.30	0.15	0.15	0.31	0.30	0.47	0.33	0.33	0.30	0.37
Fixed Line	0.22	0.37	0.26	0.29	0.62	0.13	0.31	0.30	0.31	0.18	0.27	0.25	0.66	0.31	0.17	0.61	0.61	0.93	0.50
Mobile Line	0.22	0.41	0.25	0.17	0.50	0.24	0.22	0.23	0.65	0.21	0.25	0.24	0.12	0.23	0.22	0.53	0.17	0.25	0.37
Retail	0.17	0.11	0.16	0.09	0.11	0.28	0.35	0.06	0.04	0.19	0.05	0.11	0.04	0.32	0.11	0.43	0.51	0.05	0.70
Maritime Transport	0.25	0.38	0.25	0.34	0.25	0.27	0.53	0.28	n/a	0.18	0.17	0.38	0.29	n/a	0.29	0.29	0.24	n/a	n/a

Note :Note The "n/a" cells in maritime transport sector are referred to "not Applicable" cells where the country is landlocked.

**Table 13: Estimated Ad Valorem Equivalents of Services Barriers**

Sector	Albania	Algeria	Argentina	Armenia	Australia	Austria	Bahrain	Bangladesh	Belarus	Belgium	Bolivia	Botswana	Brazil	Bulgaria	Burundi	Cote d'Ivoire	Cambodia	Cameroon	Canada	Chile	China
Accounting	24	56	21	26	34	33	20	10	30	29	26	21	43	18	38	51	41	26	25	19	32
Legal Services	12	52	18	20	22	39	73	52	55	22	27	35	59	40	52	56	73	34	40	28	73
Air Transport	59	81	74	61	0	18	58	0	0	0	0	75	71	0	0	0	0	0	22	0	68
Rail Transport	62	84	0	42	1	12	37	84	84	35	42	65	0	3	84	84	0	56	1	0	0
Road Transport	47	84	0	20	0	34	37	53	0	34	42	65	0	10	57	60	0	37	0	0	0
Banking	9	14	2	9	2	2	14	6	14	1	1	18	18	1	21	17	9	1	3	1	22
Insurance	11	28	13	13	23	12	24	22	39	10	26	23	17	14	29	13	16	25	14	15	21
Fixed Line	3	10	3	6	2	3	11	915	9	3	17	64	6	5	915	n/a	915	29	5	915	13
Mobile Line	1	0	0	0	1	0	1	2	0	1	0	1	1	0	5	n/a	2	0	2	1	2
Retail	2	5	1	1	2	3	2	2	6	0	2	2	2	1	0	1	6	2	3	2	6
Maritime Transport	0	42	0	n/a	16	n/a	42	68	n/a	4	n/a	n/a	55	3	0	0	6	0	12	0	53

**Table 13 Continued: Estimated Ad Valorem Equivalents of Services Barriers**

Sector	Colombia	Congo, the Democratic of the	Costa Rica	Czech Republic	Denmark	Dominican Republic	Ecuador	Egypt	Ethiopia	Finland	France	Georgia	Germany	Ghana	Greece	Guatemala	Honduras	Hungary	India	Indonesia	Iran (Islamic Republic of)
Accounting	41	29	56	20	50	36	29	56	19	24	24	9	44	29	15	18	22	13	40	50	65
Legal Services	28	36	52	8	37	21	22	73	73	34	19	55	50	25	43	28	16	23	73	73	64
Air Transport	0	0	0	18	19	0	0	69	84	0	19	0	19	0	18	0	71	18	84	72	83
Rail Transport	0	84	74	12	12	53	0	84	62	35	35	64	12	26	35	84	69	17	84	84	76
Road Transport	0	62	50	34	34	37	0	0	84	0	34	50	34	0	34	53	80	34	84	84	76
Banking	14	3	19	1	2	17	46	44	106	2	1	7	2	34	2	1	26	2	14	16	106
Insurance	25	104	20	10	11	16	34	35	105	11	11	13	11	26	10	26	14	10	38	27	105
Fixed Line	11	915	4	5	3	14	9	18	915	5	2	2	2	915	2	5	8	6	191	8	13
Mobile Line	1	1	1	1	1	1	0	1	37	0	1	0	0	1	1	0	0	1	2	1	2
Retail	2	2	3	0	1	1	1	7	14	0	3	1	1	2	0	2	1	4	8	6	5
Maritime Transport	0	58	56	n/a	13	20	39	79	82	5	27	40	13	65	8	43	29	n/a	63	72	67

**Table 13 Continued: Estimated Ad Valorem Equivalents of Services Barriers**

Sector	Ireland	Italy	Japan	Jordan	Kazakhstan	Kenya	Korea, Republic of	Kuwait	Kyrgyzstan	Lebanon	Lesotho	Lithuania	Madagascar	Malawi	Malaysia	Mali	Mauritius	Mexico	Mongolia	Morocco	Mozambique
Accounting	33	36	21	21	23	26	25	41	41	38	16	20	25	33	21	60	10	23	25	27	20
Legal Services	31	34	23	73	31	73	73	65	33	64	13	26	40	49	73	50	65	30	27	47	20
Air Transport	19	20	20	65	0	0	19	69	61	84	0	18	0	59	65	0	0	16	0	0	0
Rail Transport	12	12	30	84	53	84	2	84	84	84	84	17	62	42	84	20	84	35	84	0	37
Road Transport	34	34	0	84	53	0	0	72	20	71	0	0	70	5	73	20	42	35	0	0	20
Banking	2	1	1	37	14	2	2	19	1	18	1	1	18	18	32	4	3	2	5	2	1
Insurance	11	10	12	12	24	38	37	42	28	30	16	10	23	21	39	21	17	43	13	26	2
Fixed Line	3	3	2	5	7	915	3	25	8	9	109	5	915	915	17	915	2	9	22	13	915
Mobile Line	1	0	1	1	1	1	1	1	0	1	1	0	2	6	1	2	1	1	1	1	2
Retail	3	2	0	3	1	1	3	9	1	4	2	0	1	2	7	1	0	2	1	1	1
Maritime Transport	6	13	12	20	n/a	0	15	71	n/a	78	n/a	3	0	n/a	63	n/a	0	10	n/a	73	0

**Table 13 Continued: Estimated Ad Valorem Equivalents of Services Barriers**

Sector	Namibia	Nepal	Netherlands	New Zealand	Nicaragua	Nigeria	Oman	Pakistan	Panama	Paraguay	Peru	Philippines	Poland	Portugal	Qatar	Romania	Russian Federation	Rwanda	Saudi Arabia	Senegal	South Africa	Spain	Sri Lanka	Sweden
Accounting	41	50	25	25	19	30	38	10	49	26	25	78	20	33	31	31	29	21	50	46	32	39	63	30
Legal Services	55	73	38	21	16	27	38	55	73	22	20	73	6	8	54	35	52	15	73	65	73	38	38	7
Air Transport	0	72	19	0	74	37	58	65	67	0	61	70	18	18	64	16	66	0	65	81	70	21	69	18
Rail Transport	68	84	12	0	70	84	84	0	84	56	0	70	18	12	84	10	0	84	0	84	0	35	84	12
Road Transport	56	37	34	0	81	0	30	0	53	56	0	70	0	34	71	3	0	5	84	0	0	34	0	0
Banking	18	12	2	1	5	2	21	16	9	15	13	35	1	1	103	5	19	14	16	13	6	2	32	2
Insurance	27	27	11	12	25	48	21	28	14	26	23	18	10	10	40	15	44	27	24	13	29	11	30	11
Fixed Line	63	759	3	3	10	35	68	64	8	33	6	51	6	3	33	5	1	915	14	60	23	2	10	2
Mobile Line	2	3	1	1	0	0	1	0	0	1	0	1	0	1	2	1	0	3	0	1	1	1	1	1
Retail	1	2	1	0	2	3	4	6	14	1	1	3	0	0	4	1	4	7	10	1	1	3	2	3
Maritime Transport	0	n/a	8	11	43	0	63	71	25	n/a	11	73	13	4	53	0	63	n/a	55	0	0	6	66	6

**Table 13 Continued: Estimated Ad Valorem Equivalents of Services Barriers**

Sector	Tanzania, United Republic of	Thailand	Trinidad and Tobago	Tunisia	Turkey	Uganda	Ukraine	United Kingdom	United States of America	Uruguay	Uzbekistan	Venezuela	Viet Nam	Yemen	Zambia	Zimbabwe
Accounting	44	65	6	79	75	40	36	22	47	22	28	40	43	65	26	39
Legal Services	52	61	30	69	73	49	22	17	33	19	22	40	52	73	27	48
Air Transport	54	69	0	69	22	0	4	19	21	64	0	79	72	0	0	69
Rail Transport	72	57	84	68	35	18	84	12	0	84	84	0	77	84	0	77
Road Transport	0	57	0	60	3	0	0	34	0	53	20	0	77	60	53	75
Banking	13	32	2	10	2	2	13	2	2	6	4	18	4	10	5	23
Insurance	33	30	12	29	14	16	24	11	12	25	24	41	28	28	24	31
Fixed Line	915	37	3	12	6	915	3	2	2	11	25	3	20	160	915	267
Mobile Line	1	1	0	1	1	4	0	0	1	0	1	1	1	1	2	2
Retail	1	2	4	6	1	1	3	1	2	1	5	2	7	8	1	11
Maritime Transport	61	36	45	75	9	n/a	0	0	17	50	n/a	50	51	30	n/a	n/a

Note: The "n/a" cells are referred to "Not Applicable" cells. In maritime transport if the country is landlocked then estimating TRIs and consequently AVEs are not applicable. *For fixed and mobile line sectors "n/a" cells indicate that the supplementary data on the subscription rate is not available.*

\*For the four transport sectors, the ad valorem equivalent (AVE) or the tariff equivalent (TE) we have calculated has the domestic price in the denominator. For other sectors, the tariff equivalent contains the unrestricted shipping margins in the denominator. To make the conversion, if TE is the ad valorem equivalent with restricted country shipping margins in the denominator and TE\* is the ad valorem equivalent with unrestricted country shipping margins in the denominator, then TE\* may be derived from TE as  $TE^* = TE/[1-TE]$ .

**Table 14. Services Trade Restrictions Index (STRI) and Ad valorem Equivalents (AVEs) by Sector and By Level of Development**

Sector	STRIs			AVEs*		
	OECD and other EU countries	Transition and other developing countries	Least developed countries	OECD and other EU countries	Transition and other developing countries	Least developed countries
Accounting	0.37	0.44	0.42	29	35	33
Legal Services	0.39	0.59	0.58	31	46	46
Air Transport	0.35	0.32	0.21	15	44	17
Rail Transport	0.47	0.59	0.59	16	58	56
Road Transport	0.54	0.32	0.30	18	38	31
Banking	0.02	0.21	0.17	2	18	15
Insurance	0.18	0.32	0.35	14	27	31
Fixed Line	0.28	0.37	0.51	35	69	764
Mobile Line	0.26	0.27	0.35	1	1	4
Retail	0.09	0.21	0.19	1	3	3
Maritime Transport	0.29	0.30	0.29	9	40	31

\*For the four transport sectors, the ad valorem equivalent (AVE) or the tariff equivalent (TE) we have calculated has the domestic price in the denominator. For other sectors, the tariff equivalent contains the unrestricted shipping margins in the denominator. To make the conversion, if TE is the ad valorem equivalent with restricted country shipping margins in the denominator and TE\* is the ad valorem equivalent with unrestricted country shipping margins in the denominator, then TE\* may be derived from TE as  $TE^* = TE/[1-TE]$ .

**Table 15: Services Trade Restrictions Index (STRI) and Ad valorem Equivalents (AVEs) by Sector and By Geographical region**

Sector	STRIs							AVEs*						
	North America	Europe and Central Asia	East Asia and the Pacific	South Asia	Latin America and Caribbean	Middle East and North Africa	Sub-Saharan Africa	North America	Europe and Central Asia	East Asia and the Pacific	South Asia	Latin America and Caribbean	Middle East and North Africa	Sub-Saharan Africa
Accounting	0.46	0.33	0.49	0.44	0.35	0.57	0.42	36	26	38	34	27	45	33
Legal Services	0.42	0.43	0.61	0.74	0.42	0.80	0.58	34	34	48	58	33	63	46
Air Transport	0.26	0.23	0.30	0.48	0.31	0.44	0.22	10	24	31	58	37	59	23
Rail Transport	0.26	0.52	0.54	0.82	0.48	0.71	0.51	28	49	45	67	41	66	53
Road Transport	0.19	0.20	0.35	0.33	0.31	0.49	0.25	18	19	35	35	31	56	26
Banking	0.02	0.10	0.14	0.20	0.14	0.34	0.18	1	8	12	16	12	32	16
Insurance	0.23	0.26	0.26	0.35	0.32	0.39	0.32	18	22	21	29	27	34	28
Fixed Line	0.20	0.27	0.37	0.52	0.28	0.53	0.44	16	7	90	388	60	30	545
Mobile Line	0.14	0.18	0.29	0.31	0.20	0.37	0.35	0	0	1	2	1	1	3
Retail	0.11	0.14	0.16	0.25	0.16	0.32	0.17	2	2	3	4	3	5	3
Maritime Transport	0.29	0.21	0.32	0.40	0.26	0.39	0.24	8	16	30	67	34	57	18

\*For the four transport sectors, the ad valorem equivalent (AVE) or the tariff equivalent (TE) we have calculated has the domestic price in the denominator. For other sectors, the tariff equivalent contains the unrestricted shipping margins in the denominator. To make the conversion, if TE is the ad valorem equivalent with restricted country shipping margins in the denominator and TE\* is the ad valorem equivalent with unrestricted country shipping margins in the denominator, then TE\* may be derived from TE as  $TE^* = TE/[1-TE]$ .

## Appendices

### Appendix A: The Ad Valorem Equivalence of Trade in Services Barriers in Different Modes of Transport

In order to be able to convert the estimated TRI indexes estimated in Section 2.3 into tax equivalent, this paper follows modified approach of the study of Kimura (2004a) based on the study by McGuire (2000)<sup>25</sup> as well as the estimations of Kang (2000)<sup>26</sup>. This is done using the study of Kang (2000) and his model of measurement of shipping restrictions on transport margins, also employed by McGuire (2000) and Kimura (2004a).

In Kang (2000)<sup>27</sup>, shipping margins are used as the proxy for shipping price. The shipping margins from country  $i$  (exporter) to country  $j$  (importer),  $M_{ij}$  are defined as

$$M_{ij} = \frac{IM_{ji}}{EX_{ij}} \quad (1)$$

Where  $IM_{ji}$  represents the observed CIF value reported by importing country  $j$  for all products imported from country  $i$ , and  $EX_{ij}$  represents the observed FOB value of all exports reported by the  $i$ 'th country as exported to the  $j$ 'th country.

The shipping margin  $M_{ij}$  are function of bilateral restrictions  $R_{ij}$ , the distance between the trading partners  $D_{ij}$  and the scale of bilateral trade  $SC_{ij}$ . Since it is assumed that this function is of a Cobb-Douglas form, the natural logarithmic form represents the following linear relationship:

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<sup>25</sup> McGuire, Greg, Michelle Schuele and Tine Smith, 2000, "Restrictiveness of international trade in maritime services", in Findlay, Christopher and Tony Warren (eds), *Impediments to Trade in Services: Measurement and Policy Implications*, (London: Routledge)

<sup>26</sup> Kang, Joog-Soon (2000), "Price Impact of Restrictiveness on Maritime Transportation Services," in Findlay, Christopher and Tony Warren (eds), *Impediments to Trade in Services: Measurement and Policy Implications*, (London: Routledge).

<sup>27</sup> Kang, Joog-Soon (2000), "Price Impact of Restrictiveness on Maritime Transportation Services," in Findlay, Christopher and Tony Warren (eds), *Impediments to Trade in Services: Measurement and Policy Implications*, (London: Routledge).

$$\ln(M_{ij}) = C + \alpha \ln(R_{ij}) + \beta \ln(D_{ij}) + \gamma \ln(SC_{ij}) + e_{ij} \quad (2)$$

Due to the fact that  $R_{ij}$  represents restrictions both for the importing country as well as for the exporting one, equation 2 can be rewritten in the following form

$$\ln(M_{ij}) = C + \alpha_1 \ln(R_i) + \alpha_2 \ln(R_j) + \beta \ln(D_{ij}) + \gamma \ln(SC_{ij}) + e_{ij} \quad (3)$$

The restrictions can be further divided into restrictions on commercial presence, identified with a superscript  $c$  in the equation below, and other restrictions, identified with  $o$  superscript  $o$ . With this under consideration, the fully extended form of the equation is

$$\ln(M_{ij}) = C + \alpha_{11} \ln(R_i^o) + \alpha_{12} \ln(R_i^c) + \alpha_{21} \ln(R_j^o) + \alpha_{22} \ln(R_j^c) + \beta \ln(D_{ij}) + \gamma \ln(SC_{ij}) + e_{ij} \quad (4)$$

Kang (2000) obtains measures of the regulatory barriers for 35 economies and considers the differences between developing and industrialized countries by estimating separate regressions for the two groups. After construction of  $M_{ij}$  and  $SC_{ij}$  comparable statistics were used for 23 economies.

The variable representing the restrictions on commercial presence for country  $j$  and the variable representing other form of restrictions for country  $i$  are highly correlated and because of multicollinearity problems are not included in equation 2 at the same time. In addition, the results of various estimations obtained by Kang (2000) show that restrictions on commercial presence of maritime services in importing countries ( $R_j^c$ ) have no significant impact on the shipping margins of exported products and the exclusion of this variable slightly improves the fitness. As a result, the obtained estimated coefficients for  $i$  developing countries, and  $i$  industrialized countries based on equation 2 are the following:

$$\ln(M_{ij}) = 0.3388 + 0.1416\ln(R_i) + 0.0443\ln(R_j^o) + 0.0011\ln(D_{ij}) - 0.0049\ln(SC_{ij}) + e_{ij}$$

For all  $i =$  developing countries.

(5.1)

$$\ln(M_{ij}) = 0.1414 + 0.0225\ln(R_i) + (0.0443 \sim 0.0128)\ln(R_j^o) + 0.0011\ln(D_{ij}) - 0.0049\ln(SC_{ij}) + e_{ij}$$

For all  $i =$  industrialized countries

(5.2)

We assume that when the restrictiveness index in country  $i$  changes, the other variables in equations 5.1 and 5.2 (restrictiveness index in country  $j$  for other than commercial presence, the distance between trading partners and the intensity of trading among partners) do not change. Further, we follow Kimura et al., (2004a) and estimate the shipping margins for countries that are not in the sample of Kang. Following Kimura et al., we assume that for countries outside the Kang sample, the differences in shipping margins between country  $i$  and the average for the group, differ only due to differences in the restrictiveness indices. Then, in equations 6 below, we may ignore the values for  $R_j^o$ ,  $D_{ij}$ , and  $S_{ij}$  in calculating the change in the shipping margin in country  $i$  due to a change in the restrictiveness index in country  $i$ .

**Table A.1. Indexes of restrictiveness of international trade in maritime services for other economies**

Industrialized Economies	Developing Economies
Singapore	0.207 Argentina 0.331
United Kingdom	0.239 Colombia 0.469
Denmark	0.284 Mexico 0.478
Finland	0.315 Chile 0.503
Canada	0.32 Malaysia 0.52
New Zealand	0.352 Brazil 0.521
Germany	0.39 Indonesia 0.558
Hong Kong SAR, China	0.403 Korea, Rep. 0.582
Japan	0.408 Thailand 0.601
Sweden	0.415 India 0.605
Australia	0.416 Philippines 0.644
United States	0.6

Source: Jong-Soon Kang (2000) Table 11.2

Original source: McGuire et al (2000)

Based on the regression of Kang (2000) we may find the expected logarithm of the shipping margin<sup>28</sup> for each country of interest using the average logarithm of shipping margins with restrictions for each classification of countries (developed countries, and developing countries) in which the country of interest is classified; and the average logarithm of degree of restrictiveness index for each group of countries.:

$$E[\ln(M_i)] = (\ln(M))_{average}^{developing\_countries} - 0.1416 \cdot [(\ln(TRI))_{average}^{developing\_countries} - \ln(TRI_i)] \quad (6.1)$$

i = developing country

$$E[\ln(M_i)] = (\ln(M))_{average}^{industrialized\_countries} - 0.0225 \cdot [(\ln(TRI))_{average}^{industrialized\_countries} - \ln(TRI_i)] \quad (6.2)$$

i = industrialized countries

In 6.1 and 6.2, given that the equation was estimated based on Kang's data, we calculate the average logarithm of shipping margins with restriction for industrialized countries as well as developing based on Kang (2000, table 11.1), not the entire sample. In the case of the restrictiveness indices, we calculate the average logarithm of TRI index for group of developed countries, and industrialized countries are -0.65, and -1.10, respectively (Kang 2000, table 11.2) for developed (or industrialized) countries<sup>29</sup>. We take the simple average of the natural log of the TRIs for each group of countries, i.e. we calculate  $\sum_{i=1}^d \ln(TRI_i) / d$  for maritime transport sectors. Here, d refers to the number of countries at each level of development. Accordingly, the average logarithm of shipping margins with restrictions for developing countries and industrialized countries are 0.1777 and 0.0795, respectively. Further the average logarithm of TRI index for group of developed countries, and industrialized countries are -0.65, and -1.10, respectively.

One potential problem may occur due to the fact that in 6 and thus in 5.1 and 5.2 nothing forbids  $M_i$  to lie below 1, but it is inconsistent with economic logic of shipping margins, so in that case we set  $E[\ln(M_i)] = 0$ .

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<sup>28</sup>Mathematical expectation of logarithm of shipping margin.

As described earlier in order to estimate shipping margin for each country when all restrictions are removed, we assume that a country has no restrictions if its restrictiveness index is as low as the index of Singapore (or lower). Therefore, in equation 7, we use the value of Singapore's restrictiveness index to predict the lowest possible shipping margin as a function of the restrictiveness index. Building on equation 6.1 (as Singapore was grouped by Kang in the developing countries group), we have the lowest predicted shipping margin as follows:

$$E[\ln(M_{developing\_Country}^{unrestricted})] = (\ln(M))_{average}^{developing\_countries} - 0.1416 \cdot [\ln(TRI)_{average}^{developing\_countries} - \ln(TRI_{Singapore})] \quad (7.1)$$

$$E[\ln(M_{developed\_Country}^{unrestricted})] = (\ln(M))_{average}^{developed\_countries} - 0.0225 \cdot [\ln(TRI)_{average}^{developed\_countries} - \ln(TRI_{Singapore})] \quad (7.2)$$

, where  $TRI_{Singapore} = 0.21$  from Kang.

Based on the restricted and unrestricted shipping margins for each country, we may estimate the ad valorem equivalents, but first we need to correctly calculate the predicted levels of  $M_i$  and  $M_{Country}^{unrestricted}$ . Note that Kang's shipping margins are analyzed in logarithmic linear regression approach, so it is indirectly assumed that  $M$  has log normal distribution. We will not follow Kimura (2004a) in applying a linear approximation approach to estimating the ad valorem equivalence. As Idrisov (2010) has shown, we may employ a non-linear formula which allows us to avoid the linear approximation error. In that case, levels of shipping margins may be found as follows

$$E[M_i] = \exp(E[\ln(M_i)] + 0.5 \text{var}(e_i)) \quad (8)$$

$$E[M_i^{unrestricted}] = \exp(E[\ln(M_i^{unrestricted})] + 0.5 \text{var}(e_i)) \quad (9)$$

where  $\text{var}(e_i)$  is the estimate of the variance of the errors from Kang's regression and  $\exp$  is exponent. In order to find estimated variance of errors we need to use statistical relations among  $\text{var}(e_i)$ , adjusted R squared and observed dependent variable in regression ( $n$  - number of observation,  $p$  - number of independent variables):

$$\text{var}(e_i) = \frac{\sum_{i=1}^n e_i^2}{n} \quad (10)$$

$$R_{adj}^2 = 1 - \frac{\frac{1}{n-p-1} \sum_{i=1}^n e_i^2}{\frac{1}{n-1} \sum_{i=1}^n (\ln(M_i) - \ln(M)_{average})^2} \quad (11)$$

So one may derive  $\text{var}(e_i)$  as a function of  $R_{adj}^2$ ,  $n$ ,  $p$  and dependent variable sample:

$$\text{var}(e_i) = (1 - R_{adj}^2) \frac{(n-p-1) \sum_{i=1}^n ((\ln(M_i) - \ln(M)_{average}))^2}{n(n-1)} \quad (12)$$

Using Kang's data we have  $n = 23$ ,  $p = 7$ ,  $R_{adj}^2 = 0.3238$ ,  $\sum_{i=1}^n ((\ln(M_i) - \ln(M)_{average}))^2 = 0.13074$ ,

thus the estimated variance of the errors is 0.00262.

Based on the equations above, the ad valorem equivalence on a net basis (%), TE, is calculated as follows:

$$TE = \{[(E(M_i) - 1) - (E(M_{developing\_country}^{unrestricted}) - 1)] / (E(M_i) - 1)\} * 100, i = \text{developing country} \quad (13a)$$

$$TE = \{[(E(M_i) - 1) - (E(M_{developed\_country}^{unrestricted}) - 1)] / (E(M_i) - 1)\} * 100, i = \text{developed country} \quad (13b)$$

Equations 13a and 13b are used to calculate the ad valorem equivalence for the TRI index in the different transport services sectors, and these are the values we report. In (13a and 13b), we use the own country shipping margins in the denominator. The impact of the barrier is part of the denominator, which reduces the calculated AVE. If we use (13), the upper bound is unity or 100 percent TE or AVE. Consistent with the view that barriers are lowest in Singapore, if we calculate the  $TRI_j < TRI_s$ , we assume that  $AVE = 0$ .

Finally, note that it is straightforward to convert the TE in (14) to one with unrestricted shipping margins in the denominator. In particular, if  $TE^*$  is the ad valorem equivalent with unrestricted country shipping margins in the denominator, then  $TE^*$  may be derived from (13) as

$$TE^* = TE/[1-TE] \quad (14)$$

To illustrate an example, consider the detailed calculation of AVE for air and rail transport services sector in Albania and the USA where the following raw data are obtained from Kang (2000), except for TRI which comes from our estimation in present study.

**Table A.2: Variables, Elasticities And Parameters**

<b>Variables</b>	
Trade Restrictiveness Index of Albania in air transport, TRI(Albania)	0.327
Trade Restrictiveness Index of the USA in air transport, TRI(USA)	0.4487
Trade Restrictiveness Index of Albania in rail transport, TRI(Albania)	0.5375
Trade Restrictiveness Index of the USA in rail transport, TRI(USA)	0.3875
<b>Elasticities and Parameters</b>	
Trade Restrictiveness of Singapore, TRI(Singapore)	0.207
Ln[TRI(Singapore)]	-1.575
Estimated Variance of the errors [ $\text{var}(e_i)$ ]	0.00262
<i>Elasticity of policy index</i>	
Elasticity Of Policy Index In Developed (Industrialized) Countries, e(I)	-0.0225
Elasticity Of Policy Index In Developing Countries. e(D)	-0.1416
	0.207
<i>Average Logarithm of Shipping Margins</i>	
Ln(M)_developing country average (as used in equation 6.1)_	0.1777
Ln(M)_ developed country average (as used in equation 6.2)	0.0795
<i>Average Natural Log on the Trade Restrictiveness Indices</i>	
Ln(TRI)_developing country average (as used in equation 6.1)	-0.65
Ln(TRI)_ developed country average (as used in equation 6.2)	-1.1

***Calculation of TE for air transport services in Albania.***

Based on equations (6.1) and (7.1), expected logarithm of restricted shipping margins in Albania,  $E[\ln(M_{Albania})]$ , and the expected logarithm of unrestricted shipping margins in Albania,  $E[\ln(M_{Albania}^{unrestricted})]$ , are calculated.

$$\begin{aligned}
E[\ln(M_{Albania})] &= (\ln(M))_{average}^{developing\_countries} - 0.1416 \cdot [(\ln(TRI))_{average}^{developing\_countries} - \ln(TRI_{Albania})] \\
&= 0.1777 + [-0.1416 \cdot (-0.65 - (-1.1177951))] = 0.1114602
\end{aligned} \tag{15}$$

$$\begin{aligned}
E[\ln(M_{Albania}^{unrestricted})] &= (\ln(M))_{average}^{developing\_countries} - 0.1416 \cdot [(\ln(TRI))_{average}^{developing\_countries} - \ln(TRI_{Singapore})] \\
&= 0.1777 + [-0.1416 \cdot (-0.65 - (-1.575036486))] = 0.0467148
\end{aligned} \tag{16}$$

Note that the left hand side “expected log of the unrestricted shipping margin,” is independent of the individual developing country. That is, this value applies to all developing countries. Thus, it is unnecessary to recalculate it for other developing countries.

Consequently, based on the equations (8) and (9), the average of restricted shipping margins ( $E[M_{Albania}]$ ) and the average of unrestricted shipping margins ( $E[M_i^{unrestricted}]$ ) are estimated, respectively, as follows:

$$\begin{aligned}
E[M_{Albania}] &= \text{EXP}[E[\ln(M_{Albania})] + 0.5 \text{var}(e_i)] = \text{EXP}[0.1114602 + (0.5 \cdot 0.00262)] = \\
&1.1192193
\end{aligned} \tag{17}$$

$$\begin{aligned}
E[M_{Albania}^{unrestricted}] &= \text{EXP}[E[\ln(M_{Albania}^{unrestricted})] + 0.5 \text{var}(e_i)] = \text{EXP}[0.0467148 + (0.5 \cdot 0.00262)] = \\
&1.0491332
\end{aligned} \tag{18}$$

Note that the left hand side of equation 20 is independent of the particular developing country. That is, the value of the expected value of the unrestricted shipping margin in equation 20 applies to all developing countries. Thus, we need not recalculate it for other developing countries.

Finally, the ad valorem equivalence on a net basis (%), TE, is calculated based on equation (13a) as follows:

$$AVE = 100 * [(E[M_{Albania}] - 1) - (E[M_{Albania}^{unrestricted}] - 1)] / [(E[M_{Albania}] - 1)] = 58.787564 \quad (19)$$

**Other example:**

Rail transport services in Albania: TRI = 0.5375

Substitute TRI = 0.5375 in equation 13. We get  $E[\ln(M_{Albania})] = 0.1818$

Using  $E[\ln(M_{Albania})] = 0.1818$  in equation 15, we get  $E[M_{Albania}] = 1.201$

From equation 16, we have the unrestricted shipping margin of 1.049.

With these values, we may calculate the AVE from equation 17 at  $AVE = 0.755$  or 75.5 percent.

***Calculation of AVE for air transport services sector in the USA***

Based on equations (6.2) and (7.2), expected logarithm of restricted shipping margins in the USA,  $E[\ln(M_{USA})]$ , and the expected logarithm of unrestricted shipping margins in the USA,  $E[\ln(M_{USA}^{unrestricted})]$ , are calculated.

$$E[\ln(M_{USA})] = (\ln(M))_{average}^{developed} - 0.0225 \cdot [(\ln(TRI))_{average}^{developed} - \ln(TRI_{USA})] = 0.0795 - [0.0225 \cdot (-1.1 + 1.575036486)] = 0.068811679 \quad (20)$$

$$E[\ln(M_{USA}^{unrestricted})] = (\ln(M))_{average}^{developed} - 0.0225 \cdot [(\ln(TRI))_{average}^{developed} - \ln(TRI_{Singapore})] = 0.0795 - [0.0225 \cdot (-1.1 + 1.575036486)] = 0.068811679 \quad (21)$$

Note that the left hand side “expected log of the unrestricted shipping margin,” is independent of the individual developed country. That is, this value applies to all developed countries. Thus, it is unnecessary to recalculate it for other developed countries.

Consequently, based on the equations (8) and (9), the average of restricted shipping margins ( $E[M_{USA}]$ ) and the average of unrestricted shipping margins ( $E[M_{USA}^{unrestricted}]$ ) are estimated, respectively, as follows:

$$E[M_{USA}] = \exp(E[\ln(M_{USA})] + 0.5 \text{var}(e_i)) = \text{EXP}[0.086219383 + (0.5 * 0.00262)] = 1.091355439 \quad (22)$$

$$E[M_{USA}^{unrestricted}] = \exp[E[\ln(M_{USA}^{unrestricted})] + 0.5 \text{var}(e_i)] = \text{EXP}[0.068811679 + (0.5 * 0.00262)] = 1.072544454 \quad (23)$$

Note that the left hand side of equation 23 is independent of the particular developed country. That is, the value of the expected value of the unrestricted shipping margin in equation 25 applies to all developed countries. Thus, we need not recalculate it for other developed countries.

Finally, the ad valorem equivalence on a net basis (%), TE, is calculated based on equation (11b) as follows:

$$\text{AVE} = 100 * [(E[M_{USA}] - 1) - (E[M_{USA}^{unrestricted}] - 1)] / [(E[M_{USA}] - 1)] = 21 \quad (24)$$

Other example:

Rail transport services in the USA: TRI = 0.3875

Substitute TRI = 0.3875 in equation 18. We get  $E[\ln(M_{USA})] = 0.083$

Using  $E[\ln(M_{USA})] = 0.083$  in equation 20, we get  $E[M_{USA}] = 1.088$

From equation 21, we have the unrestricted shipping margin of 1.073.

With these values, we may calculate the AVE from equation 22 at AVE = 0.17 or 17 percent.

## Appendix B: The Ad Valorem Equivalence of Trade in Services Barriers in in Telecom Services Sectors

Using the estimated TRI indexes for the fixed line and mobile phone sectors, the ad valorem equivalents are calculated using the methodology and coefficients obtained by Warren (2000)<sup>30</sup>. In Warren (2000), the penetration rates of the fixed and mobile networks in country  $i$  are represented by equations (25) and (27) and the estimated equations (26) and (28), respectively.

$$Q_i^f = f(Y_i, Y_i^2, Y_i^3, HD_i, UD_i, Qual_i, [M_i^f]) \quad (25)$$

$$Q_i^f = \alpha + Y_i\beta_1^f + Y_i^2\beta_2^f + Y_i^3\beta_3^f + HD_i\beta_4^f + UD_i\beta_5^f + Qual_i\beta_6^f + [M_i^f]\beta_7^f + \varepsilon_i \quad (26)$$

$$Q_i^m = f(Y_i, Y_i^2, PD_i, [M_i^m]) \quad (27)$$

$$Q_i^m = \alpha + Y_i\beta_1^m + Y_i^2\beta_2^m + PD_i\beta_3^m + [M_i^m]\beta_4^m + \varepsilon_i \quad (28)$$

where,  $Q_i^f$  is the quantity of fixed lines per 100 inhabitants and  $Q_i^m$  is the quantity of mobile phones per 100 inhabitants,  $\alpha$  is a constant,  $Y$  represents the GDP per capita in USD,  $HD_i$  is the household density,  $UD_i$  is the waiting list for connection to the public switch network,  $Qual_i$  is the percentage of mainlines attached to a digital switch in the economy,  $PD_i$  is the population density and  $M_i^f$  and  $M_i^m$  are policy variables. The results of Warren (2000) estimation are reported in Table B.1.

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<sup>30</sup> Warren, Tony (2000), "The impact on output of impediments to trade and investment in telecommunications services", in Findlay, Christopher and Tony Warren (eds), *Impediments to Trade in Services: Measurement and Policy Implications*, (London: Routledge).

**Table B.1. Estimated results by Warren for the fixed and mobile penetration models**

Policy variable	Fixed penetration model	Mobile penetration model
Policy	5.26** (3.11)	3.05** (1.85)
Y	0.004*** (0.0003)	0.0008*** (0.00005)
Y <sup>2</sup>	-6.3E-8*** (0.0)	-1.9E-9*** (0.0)
Y <sup>3</sup>	1.3E-13*** (0.0)	
HD	0.003 (0.003)	
UD	-0.08* (0.05)	
Qual	-0.13*** (0.03)	
PD		0.001** (0.0006)
Constant	12.26*** -2.66	-1.3* (0.70)
Adj. R-squared	0.89	0.78

Notes: the reported figures are estimated coefficients  
figures in parenthesis represent standard errors

\*=coefficient estimates are at the 90% significance level

\*\*=coefficient estimates are at the 95% significance level

\*\*\*=coefficient estimates are at the 99% significance level

Source: Warren (2000) Model 5 in Table 6.5 and Model 7 in Table 6.6

The policy variable can be separated in the following equations

$$Q_i^f = f(Y_i, Y_i^2, Y_i^3, HD_i, UD_i, Qual_i) + b^f * [M_i^f] \quad (29)$$

$$Q_i^m = f(Y_i, Y_i^2, PD_i) + b^m * [M_i^m] \quad (30)$$

where b is vector of estimated coefficients on the vector of actual policy measures.

Substituting  $[M_i^f]$  with  $[M_i^f]^*$  and  $[M_i^m]$  with  $[M_i^m]^*$ , which are the indexes of the maximum policy measures affecting the mobile lines network:

$$Q_i^{f*} = f(Y_i, Y_i^2, Y_i^3, HD_i, UD_i, Qual_i) + b^f * [M_i^f]^* \quad (31)$$

$$Q_i^{m*} = f(Y_i, Y_i^2, PD_i) + b^m * [M_i^m]^* \quad (32)$$

Define  $[(Q_i^{m*} - Q_i^m) / Q_i^m] = QI_i^m$  and  $[(P_i^{m*} - P_i^m) / P_i^m] = PI_i^m$ : and,  $(Q_i^{f*} - Q_i^f) / Q_i^f = QI_i^f$ , and  $(P_i^{f*} - P_i^f) / P_i^f = PI_i^f$

where P is price.

We note that since the price without restrictions must be non-negative, we impose the following constraint:  $PI_i^f > -1$ , and  $PI_i^m > -1$ .

We use this constraint below for a few outlier countries with very low values of Q.

First subtract (29) from (31) for fixed line and equation (29) from (31) for the mobile phones sector. That yields:

$$(Q_i^{f*} - Q_i^f) = b^f (M_i^{f*} - M_i^f) \quad (33a)$$

$$(Q_i^{m*} - Q_i^m) = b^m (M_i^{m*} - M_i^m) \quad (33b)$$

Now divide (33a) and (33b) by (29) and (30) respectively. We get:

$$(Q_i^{f*} - Q_i^f) / Q_i^f = QI_i^f = b^f (M_i^{f*} - M_i^f) / Q_i^f \quad (34a)$$

$$(Q_i^{m*} - Q_i^m) / Q_i^m = QI_i^m = b^m (M_i^{m*} - M_i^m) / Q_i^m \quad (34b)$$

Further, following Kimura (2004c), we consider that a higher index of the policy variable means a more liberalized sector. For this reason we define (1-TRI) as a proxy for the policy variables.

Then, as in Warren (2000),  $M_i^{m*}$  and  $M_i^{f*}$  are policy measure indexes when they are most liberal. The most liberal measure for us is when TRI is 0. So,  $M_i^* = 1 - \text{TRI} = 1 - 0 = 1$ , and consequently,  $M_i^* - M_i = 1 - (1 - \text{TRI}_i) = \text{TRI}_i$

Thus, we may rewrite (43a) and (43b) as

$$(Q_i^{f*} - Q_i^f) / Q_i^f = QI_i^f = b^f * \text{TRI}_i^f / Q_i^f \quad (35a)$$

$$(Q_i^{m*} - Q_i^m) / Q_i^m = QI_i^m = b^m * \text{TRI}_i^m / Q_i^m \quad (35b)$$

From the definition of elasticity of demand, we have:

$$QI_i^f = e_i PI_i^f \quad \text{for } PI_i^f > -1. \quad (36a)$$

$$QI_i^m = e_i PI_i^m \quad \text{for } PI_i^m > -1 \quad (36b)$$

We use the elasticity of substitution -1.2 from Kimura (2004c).

Based on the results of equations (36a) and (36b) the tariff equivalent can then be estimated to equal

$$\left[ \frac{1}{(PI_i^f + 1)} - 1 \right] \cdot 100 = \left[ \frac{(P_i^f - P_i^{f*})}{P_i^{f*}} \right] \cdot 100 = TE_i^f (\%) \quad \text{if } PI_i^f > -1 \quad (37a)$$

$$\left[ \frac{1}{(PI_i^m + 1)} - 1 \right] \cdot 100 = \left[ \frac{(P_i^m - P_i^{m*})}{P_i^{m*}} \right] \cdot 100 = TE_i^m (\%) \quad \text{if } PI_i^m > -1 \quad (37b)$$

For a few countries, the initial fixed line penetration rate is so low that combined with a high TRI equation 45a yields a value of  $PI_i^f$  that is less than negative one. In this case, we can not use equation 45a, since it implies a negative price of fixed line telecom services without restrictions. Since it occurs in cases of either extremely high barriers or extremely low fixed line penetration rates, we assign a TE in these cases equal to the highest TE for countries in our sample for which

we can calculate a TE. That value is: 915%, based on the estimate for Cambodia.

Note that in equation 37 the price without restrictions is in the denominator, so the TE can exceed 100 percent.

So to calculate the TE, we use equations (37a) and (37b). Start with (35a) and (35b), we need data on Q (which varies by country), the estimated value of b from Warren (5.26 for fixed line and 3.05 for mobile) and our value of TRI, which is estimated in Section 2.3. This gives us QI. Note that following Idrisov (2010), we used the number of quantity of fixed/mobile lines per 100 inhabitants in each country as a proxy for Q. We took this data from an International telecommunication Union website at: <http://www.itu.int/ITU-D/ict/statistics/> for the year 2010.

Then, with QI and the elasticity of substitution value -1.2 (from Dee and others), we get the value of PI from (36a) and (36b). Then with PI, we get the TE% in (37a) and (37b).

To illustrate an example, consider the detailed calculation of AVE for fixed line and mobile line services sectors in Albania.

**Table B.2: Variables, Elasticities And Parameters**

<b>Variables</b>	<b>Value</b>
Trade Restrictiveness Index of Albania in fixed line telecom, TRI(Albania)	0.07
Trade Restrictiveness Index of Albania in mobile line telecom, TRI(Albania)	0.24
Current quantity of fixed line per 100 inhabitants in Albania ( $QI_{Albania}^m$ )	10.39
Current quantity of mobile line per 100 inhabitants in Albania ( $QI_{Albania}^f$ )	84.02
<b>Elasticities and Parameters</b>	
The estimated value of b from Warren for fixed line telecom services (e <sub>i</sub> )	5.26
The estimated value of b from Warren for mobile line telecom services (e <sub>i</sub> )	3.05
Substitution elasticity from Dee and others (b)	-1.2

**Calculation of AVE in fixed line telecom services in Albania**

Based on equation 35 (a), the quantity index in fixed line services in Albania (  $QI_{Albania}^f$  ) is calculated:

$$(Q_{Albania}^{f*} - Q_{Albania}^f) / Q_{Albania}^f = b^f * TRI_{Albania}^f / Q_{Albania}^f = (5.26 * 0.24) / 10.39 = 0.035438$$

Based on Equation (36a) and considering the value of  $QI_{Albania}^f$  estimated in (36a), and the obtained elasticity ( e= -1.2 ), we have :

$$PI_{Albania}^f = QI_{Albania}^f / e = 0.035438 / (-1.2) = -0.0295316$$

Substituting the value of  $PI_{Albania}^f$  into (37a) results in

$$TE_{Albania}^f (\%) = \left[ \frac{1}{(PI_{Albania}^f + 1)} - 1 \right] \cdot 100 = \left[ \frac{1}{(-0.0295316 + 1)} - 1 \right] = 3.0 (\%)$$

### Calculation of AVE in mobile line telecom services in Albania

Based on (35b), the quantity index in mobile line services in Albania ( $QI_{Albania}^m$ ) is calculated

$$(Q_i^{m*} - Q_i^m) / Q_i^m = b^m * TRI_i^m / Q_i^m = (3.05 * 0.07) / 84.2 = 0.008712$$

Based on Equation (36b), and considering the value of  $QI_{Albania}^m$  estimated in (35b) and the obtained elasticity ( $e = -1.2$ ), we have :

$$PI_{Albania}^m = QI_{Albania}^m / e = 0.008712 / (-1.2) = -0.00726018$$

Substituting the value of  $PI_{Albania}^m$  into (37b) results in

$$TE_{Albania}^m (\%) = \left[ \frac{1}{(PI_{Albania}^m + 1)} - 1 \right] \cdot 100 = \left[ \frac{1}{(-0.00726018 + 1)} - 1 \right] = 0.7 (\%)$$