Services trade, regulation, and regional integration: Evidence from sectoral data

Van Der Marel, Erik and Shepherd, Ben

GEM, Sciences Po, Developing Trade Consultants Ltd.

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Services Trade, Regulation, and Regional Integration: Evidence from Sectoral Data

Erik van der Marel[1] and Ben Shepherd[2, 3]

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Abstract: Regulatory measures constitute a significant barrier to cross-border services trade in sectors including transport, communications, business services, insurance, and recreation. However, regulation has weaker effects on trade in financial services, distribution, and construction. Entry barriers and conduct regulations have heterogeneous effects across sectors, as do particular measures such as licensing requirements, economic needs tests, restrictions on business form, and limitations on advertising. In addition, regional trade agreements (RTAs) are trade creating in communications, finance, and distribution, but have only weak effects in other sectors. Contrary to findings for goods markets, trade diversion is relatively limited for services RTAs.

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[1] Research Fellow, Groupe d'Économie Mondiale (GEM), Sciences-Po Paris; erik.vandermarel@sciences-po.org

[2] Principal, Developing Trade Consultants Ltd; Ben@Developing-Trade.com.

1.   Introduction

World trade in services has increased substantially during the last two decades. Especially since 2001-2002, world services trade has expanded with an annual average growth rate of 10.7% against a similar growth rate of 6.6% for the period 1990 to 1999. There is little doubt that declining entry barriers and regulation-related costs, as well as the increased use of information and communication technology, have helped to expand the scope of this trade. At the same time, starting from around 2001 the number of regional trade agreements (RTAs) with a services component has started to increase (Figure 1).

Two types of regulations need to be addressed when liberalizing services trade or negotiating services agreements. First are economy-wide regulations that are important for the whole domestic economy, which also affect the total amount of services trade. However, services are heterogeneous in nature, and as a result sector-specific regulations are at least as important from a trade perspective. Both types of regulations are comprised of many sub-levels of regulation with each of them having different effects on services trade. In principle, all these types of regulation are being negotiated in RTAs to facilitate special access to services imports and exports. Yet, RTA negotiations need to be "deep" as well as sectorally broad in order to make meaningful trade contributions.

Against this background, this paper addresses the question of the extent to which regulation and regional integration in services constitute drivers of bilateral services trade. We assess this question by focusing on detailed regulations at the sector level that affect sector-specific services trade. We also include measures of trade creation and trade diversion of services RTAs, including the EU. This allows us to evaluate what types of regulation for which services sectors drive trade expansion, and whether or not negotiated RTAs play a contributing role in that process.

Our paper makes three specific contributions relative to the existing literature. First, we map all available policy data to sector-specific services trade flows using nine different services sectors.

Most work on services trade flows using gravity as an empirical framework does not use any sectoral disaggregation, or work with policy variables that are developed at the sectoral level. Second, this paper uses new data on services trade developed by Francois et al. (2009), and which have been collected from many different data sources. Availability of services trade data remains a significant constraint for researchers, but this new database—which is relatively unexploited in the literature—significantly improves country and sector coverage. Last, the data allow us to use panel data techniques to control for unobserved heterogeneity across countries and through time, while still retaining data on policy measures.

The paper by Kox and Nordas (2007) is closest to our line of research, but those authors only analyze how domestic regulation affecting total costs has an impact on trade in business services and financial services. It is not clear to what extent more detailed regulatory factors affect trade flows by way of separating fixed entry and variable costs for more sectors, such as transport, insurance, or telecommunication services. The empirical services trade literature on RTAs using gravity is even scarcer, although Marchetti (2009) finds in a cross-section of countries that for total services, the trade effect of RTAs is not any different from deep integration initiatives such as the EU. However, that study does not take stock of any third country effects, such as trade diversion.

The paper proceeds as follows. The next section reviews the existing gravity literature on services trade, focusing on policy variables, sectoral disaggregation, and regional integration. Section 3 presents our empirical strategy and data, and provides some preliminary non-parametric evidence on the importance of cross-sectoral heterogeneity. Section 4 discusses the results of our analysis and, finally, the last section concludes, discusses policy implications, and presents directions for future research.

2.   Literature Review

There remains a split in the services literature between contributions dealing with regulatory policy indicators on the one hand, and those dealing with regional integration on the other. To date no work has tried to connect these two strands of the literature. Moreover, work that has estimated the impact of regulatory variables on services trade focuses only on aggregate flows, thus obscuring the possibility of significant cross-sectoral heterogeneity in the responsiveness of trade flows to policy.

Earlier work that has analyzed services trade flows using a gravity framework has shown that standard variables from the goods literature also generally apply to aggregate services trade, albeit with some differences in coefficients and variable significance.[4] However, empirical techniques vary considerably across papers; the earlier work, in particular, does not tend to incorporate theory-based gravity model specifications, such as the one developed by Anderson and Van Wincoop (2003).

Sector specific analyses using gravity are uncommon in the literature, and tend only to cover a small number of sectors. Kox and Nordas (2009), for instance, look at transport and business services, and their interaction with an overall regulatory indicator. Other contributions, such as Kox and Nordas (2007), include financial services and other business services. A study by Francois et al. (2007) also only covers some sectors such as transport services, producer services, other business services, and other non-trade services. Fink (2009) has by far the most sectoral detail, but the model only includes data for European countries combined with basic gravity variables. Some studies (e.g. Kox et al., 2005; Schwellnus, 2007; Lennon, 2009; and Head et al., 2009) only choose as an alternative to total services trade the category of other commercial services: this classification excludes specific

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[4] Examples include: Francois (1993); Freund and Weinhold (2002); Grünfeld and Moxnes (2003); Kimura and Lee (2004); Lennon (2008); Kox and Nordas (2007); Schwellnus (2007); and Walsh (2004). Differences between services and goods are notably found in distance, language and contiguity.

producer services such as transport, but is so broad that it still masks possible heterogeneity among, for example, telecommunications, finance, and construction services.

Aggregation is also a notable feature of previous work when it comes to the use of policy variables. Even Kox et al. (2009) and Schwellnus (2007), which use some level of sectoral disaggregation, only use the OECD's Product Market Regulation (PMR) indicator as an economy-wide indicator of policy barriers. In fact, the PMR database encompasses many different sub-level indicators such as state control, barriers to enterprise, and barriers to trade and investment—a feature that we exploit in this paper. Kox and Lejour (2006) use the more disaggregate sub-levels of this indicator in a cross-sectional setting for other commercial services, but with mixed results. Francois et al. (2007) use three higher level indicators for their different categories of services sectors, and find that barriers to entrepreneurship form the most important barrier to services imports, especially for producer and other business services. However, more sector-specific analysis remains unexplored in their study and the authors call for more in-depth analysis using the regulatory policy indicators.

In a similar manner, Kox and Nordas (2007) estimate total costs of entering and servicing a market within the OECD area by collecting various economy-wide regulatory policy variables. Their analysis includes a detailed list of general policies. At the extensive margin, they find that for both total and other business services, trade regulation matters for both the importer and exporter sides. At the intensive margin, business services trade is more sensitive to economy-wide regulatory restrictions than total services trade.

Our work builds on and extends this area of research in several ways. First, we include detailed sector-level services trade data along with a rich set of sector-level regulatory policy variables. Second, by doing so we are also able to not only measure regulation proxies for fixed entry costs but also explore how these detailed levels of regulation affect the variable cost structure, and hence act as a barrier for services trade at the intensive margin.

The second strand of research that we develop in the paper deals with the impact of regional integration on services trade flows. We include a set of variables that measure the extent of regional services integration in our country sample. Our motivation for doing so comes from Miroudot et al. (2010), who find that trade costs are usually higher in services than in goods, but that RTAs with a services component tend to result in lower trade costs for members and third parties alike. The reason may lie in the nature of regulatory barriers to services trade, which are often applied universally. Thus, even regional reforms tend to be applied in a way that is relatively non-discriminatory compared with the situation in goods markets.

Recent studies on services trade in the regional context (e.g. Marchetti, 2009; Shingal, 2010; and Guillin, 2010) tend to include an RTA dummy for total services trade flows, and find that it has a positive and statistically significant coefficient. However, they do not deal with the possibility of trade diversion, which is a point we take up explicitly here. Francois and Hoekman (2009) is the only exception: the authors take account of possible trade diversion, and conclude that at the sector level trade diversion takes place for business and ICT services within the EU bloc.

Studies that include an EU dummy as one example of an RTA are more common. Examples include Park (2002), Walsh (2006), Kox and Nordas (2007; 2009), Francois and Hoekman (2009), and van der Marel (2011). Results have been mixed, however. Fink (2009) goes furthest in detail, and finds that most services sectors exhibit a significant EU15 effect, except travel, transport, and financial and insurance services.[5] However, the results of most regional integration dummies in services are largely dependent on what type of fixed effects, data, and estimation techniques are used.

3.   Methodology and Data

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[5] There are also several in-depth studies that analyze the general effect of European market integration for specific services, such as Cummings and Rubio-Misas (2006) for the insurance sector, or Maijoor et al. (1998) for auditing. Lejour and de Paiva Verheyden (2004), as well as Kox and Lejour (2006), search for a general trade effect within the EU.

3.1   Gravity Model Specification

As in much of the empirical trade literature for both goods and services, our starting point for the

analysis is the standard theory-based gravity model of Anderson and van Wincoop (2003; 2004). It

takes the following form:

$$(1)\ \log\big(X^{\,k}_{ijt}\big) = \log\big(E^k_{jt}\big) + \log\big(Y^k_{it}\big) - \log\big(Y^k_t\big) + (1-s)\log\big(t^k_{ijt}\big) - (1-s)\log\big(P^k_{jt}\big)$$

$$- (1-s)\log\big(\Pi^{\,k}_{it}\big) + e^k_{ijt}$$

where X^k_{ijt} is exports from economy *i* to economy *j* in sector *k* at time period *t*; E^k_{jt} is sectoral

expenditure; Y^k_{it} is sectoral production; t^k_{ijt} is bilateral trade costs; *s* is the intra-sectoral elasticity of

substitution (between varieties within a sector); and e^k_{ijt} is a random error term satisfying standard

assumptions. The P^k_{jt} and $\Pi^{\,k}_{it}$ terms represent multilateral resistance, which means that trade

patterns are determined by the level of bilateral trade costs relative to trade costs elsewhere in the

world. Inward multilateral resistance $(P^k_{jt})^{(1-s)} = \sum_{i=1}^{N}\big(\Pi^{\,k}_{it}\big)^{(s-1)} w_{it}\big(t^k_{ijt}\big)^{(1-s)}$ captures the

dependence of economy *j*'s imports on trade costs across all suppliers. Outward multilateral

resistance $(\Pi^{\,k}_{it})^{(1-s)} = \sum_{i=1}^{N}\big(P^k_{jt}\big)^{(s-1)} w_{jt}\big(t^k_{ijt}\big)^{(1-s)}$ captures the dependence of economy *i*'s

exports on trade costs across all destination markets. The *w* terms in both these equations are

weights equivalent to each economy's share in global output or expenditure.

Empirical work based on equation (1) should ideally account for multilateral resistance by, for

example, using fixed effects. However, this is not fully possible in the present case since the analysis

focuses on regulatory data that vary by exporting country, but not across importing country for a

given exporter. In other words, these variables are monadic rather than dyadic, and would thus be

perfectly collinear with the fixed effects.

A second-best estimation alternative in this context is to use fixed effects to account for inward multilateral resistance, and random effects for outward multilateral resistance as presented in the following equation:[6]

$$(2)\ \log(X_{ijt}^{\,k}) = r_{jt}^{k} + \log(Y_{jt}^{k}) + f_{it}^{k} - \log(Y_{t}^{k}) + (1-s)\log(t_{ijt}^{k}) + e_{ijt}^{k}$$

with $r_{jt}^{k} \sim N(0,v)$. In equation (2) the random effects specification puts more structure on the data than fixed effects, because it assumes that outward multilateral resistance can be adequately summarized by a random variable that follows a normal distribution. A fixed effects specification for inward multilateral resistance, however, allows for unconstrained variation. This mixed effects model with fixed effects by exporter and random effects by importer represents an acceptable compromise in this instance between research objectives and empirical rigor. Of note, since we are dealing with panel data, is that for both the fixed and random effects, we follow Baldwin and Taglioni (2006) in recognizing that since trade costs vary over time, so too must the terms that capture multilateral resistance.

The final part of the gravity model is the trade costs function t. Our specification of this cost function is presented in equation (3) and includes a measure of services sector regulatory policies taken from several data sources of the OECD (see further below).

$$(3)\ \log(t_{ijt}^{k}) = b_1 \text{Regulation}_{jt}^{k} + b_2 RTA\_d_{ijt} + b_3 RTA\_d\_d_{ijt} + b_4 EU\_d_{ijt} + b_5 EU\_d\_d_{ijt}$$

$$+ b_6 \log(Dist_{ij}) + b_7 Contig_{ij} + b_8 Colony_{ij} + b_9 Language_{ij}$$

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[6] We also performed estimations which show that fixed effects formulations produce generally similar results to those provided here. These additional results are available upon request. However, it is necessary to average policy variable across the exporting and importing economies to obtain some form of dyadic expression for the regulatory policy variables. This actually makes results much more difficult to interpret in a policy sense.

where the variable called regulation in equation (3) is equal to each of the detailed regulatory variables sequentially. We include regulation for the importing country only since it is on this side of the bilateral trade relationship that the regulatory measures are most likely to act as barriers to trade.

To account for regional trade integration forces in services we apply two types of measures. The first is a dummy variable equal to unity when both members of a country pair belong to the same RTA (RTA_d_{ij}). This is to capture the average effect of being in an RTA. Additionally, an EU dummy is included to verify whether the EU has any effect beyond the world average (EU_d_{ij}). To have a consistent approach with the theoretical literature, we also account for the possibility of trade diversion associated with regional integration. Following Frankel (1997), we therefore include a dummy that takes the value of one whenever one member of a country pair is part of an RTA or the EU but the other is not ($RTA\_d\_d_{ijt}$ and $EU\_d\_d_{ijt}$). These variables measure the extent of trade between members and non-members of these agreements.

Finally, we include standard trade costs proxies from the gravity model literature, to take account of "natural" trade costs. We include international distance, as well as dummy variables for countries that share a common border, common colonial heritage, or common language.

To estimate the model we substitute equation (3) into equation (2) and enter the fixed effects as dummy variables. We then estimate the model by GLS.[7]

3.2   Data Sources and Description

The dependant variable (exports) comes from the Trade in Services Database (Francois et al., 2009). This dataset combines primary data from various sources such as the OECD, Eurostat, and IMF

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[7] In the spirit of Santos Silva and Tenreyro (2006), we tried estimating a Poisson mixed effects model as well. However, estimates failed to converge in a number of cases, probably due to the large number of fixed and random effects present. GLS estimates are therefore the best available, given numerical constraints.

Balance of Payments statistics, and uses mirroring techniques to produce the most complete dataset currently available on bilateral services trade. It uses a sectoral disaggregation that follows the GTAP scheme commonly used in general equilibrium modeling. As such, there are nine different sectors, namely business services, construction, communication, finance, insurance, public services, recreation comprised of travel services and recreation services, trade services, and finally transport services. Table 1 provides summary statistics for all sector specifications. For our analysis, we take annual data from 1992 to 2006.

The model includes regulatory policy variables taken mainly from the OECD *Indicators of Product Market Regulation* database. This database consists of several sub-databases such as the *Indicators of Economy-wide Regulation (PMR)* which contain indicators of policy regimes, *Indicators of Sectoral Regulation (NMR)* which measure regulatory conditions in professional services and retail trade, and finally we also take regulatory measures in energy, transport, and communications as part of the *ECTR* database. All economy-wide policy variables and sector-level indicators are measured for the years 1998, 2003, and 2008 for mainly OECD countries and some emerging countries such as China and India. The ECTR database holds data from 1975 to 2005 and all variables we select from this database range from 1992 to 2005. All policy variables make a clear distinction between up-front fixed entry costs, measured by entry barriers, and regulations that only affect the operational proceedings of a business once established. Our ability to investigate these issues in a sector-specific context adds value to the previous literature, such as Fillet-Castejón et al. (2008), which focuses on total fixed and variable cost effects. Table 2 provides summary statistics for all general and sector-specific regulatory indicators.

Data on regional trade integration in the form of a services RTA or membership of the EU are taken, respectively, from Miroudot et al. (2010) and from publicly available data on accession to the European Union. Standard gravity model controls measuring natural geographic trade barriers are taken from CEPII. Full details of our data and sources are provided in Table 3.

3.3   Preliminary Evidence

Before moving to a fully specified regression model with sectoral data in the next section, we first present some initial evidence on the links between services policies and trade using non-parametric methods. Figure 2 shows non-parametric regressions of total services imports in two sectors—business services and construction services—and an overall measure of policy restrictiveness from the OECD's PMR database. Both regressions use a pure cross-section for the year 2005. The left hand panel discloses a noticeable negative relationship between policy restrictiveness and trade in business services. The right hand panel, by contrast, shows an essentially flat regression line, which tends to indicate that there is little impact of regulation on trade in construction services. Of course, part of the difference in these two results is due to the different modes of supply that are commonly used for each sector: business services rely heavily on GATS Mode 1, in addition to Mode 3, whereas construction relies more heavily on Mode 4. Since our trade data only capture Mode 1 trade, the weaker connection between regulation and trade in construction services is not unexpected. However, it highlights the potentially important role that cross-sectoral heterogeneity can play when analyzing the impacts of services sector reforms.

4.   Estimation Results

Table 4 presents baseline gravity model results for sector-specific services trade using overall indices of regulatory restrictiveness in each sector, which cover entry barriers and conduct regulations together. Standard gravity model variables such as distance generally have the expected signs and magnitudes, and are statistically significant. R2s indicate that the gravity model has considerable explanatory power for services trade, accounting for between 55% and 79% of the observed variation in bilateral trade flows.

In terms of the variables of main interest—the policy indicators—we find that services trade is clearly sensitive to the level of policy restrictiveness in an overall sense in the transport,

communications, business, insurance, and recreation sectors (columns 1-6 and 12). In transport, we find that regulations affecting road transport and air transport both impact aggregate trade flows in this sector, but that air transport regulations have the strongest impact. Similarly, in communications, it is both telecom and postal regulations that matter for trade, although the latter have a stronger impact. There are no policy data available on business services as such, so we use an indicator of restrictiveness in professional services as a proxy. It is a simple average of restrictions in accounting, architecture, engineering, and legal services. Results clearly indicate that policy measures can have a significant impact on trade in business services, which is an important finding in light of the increasing role played by business process outsourcing in the global services economy. The same is true of insurance services. Again, no policy data are available for recreation services, so we use restrictions on air transport services as a proxy, and find that there is a significant relationship with trade flows. In terms of quantitative magnitude, the strongest relationship between policy and trade flows is in insurance services, followed by business services. Then communication, transport, and recreation are respectively important in size.

In the other sectors, the regulatory index always has the expected negative coefficient, but it is not statistically significant. One possible reason for this result is that there is not a perfect correspondence between the sectoral definitions adopted by the trade data and those used to calculate the restrictiveness indices. This effect weakens the link between the regulatory data and the corresponding trade data.

The other coefficients of interest are the regional integration and EU dummies. In both cases, we find mixed evidence: the impact of preferential liberalization on trade obviously depends greatly on the nature of sectoral commitments by liberalizing countries, as well as on the characteristics of different services sectors. For instance, RTAs tend to be strongly trade creating among members in the communications, finance, and trade services sectors, but not in other sectors. In some cases, there is even evidence of RTAs reducing intra-bloc trade—transport and construction are

examples—but such results should be interpreted with caution due to the fact that cross-modal

issues are important in both cases, and our data only capture primarily GATS Mode 1 trade. One

possibility is that RTAs induce trade in other forms, such as under Mode 3, and that inter-modal

substitution dominates any concomitant complementarities; however, our data do not allow us to

take this hypothesis any further. Interestingly, there is evidence from a number of sectors—

transport, communications, business services, finance, and trade services—that RTAs are also trade

creating with respect to non-members. This result contrasts with the goods literature, in which RTAs

are frequently found to be trade diverting with respect to non-members. As hypothesized by

Miroudot et al. (2010), the difference is likely explained by the fact that RTA commitments in

services tend to be relatively non-discriminatory because they are based on broad regulatory

reforms rather than specific preferences in favor of particular economies. Only in construction

services is there significant evidence of a trade diversion effect vis-à-vis non-members of an RTA.

Although the EU represents probably the deepest services RTA in our sample, results for the EU

dummies are highly mixed. The general conclusion from Table 4 is that the EU does not appear to

create more trade among members than do services RTAs on average, and indeed it may even be

less effective in some sectors, such as transport, communications, and recreation. On the other

hand, there is more evidence of trade diversion with respect to non-members for the EU than for

RTAs on average: the diversion dummy variable has a negative and significant coefficient for

transport, communications, and recreation, but a positive and significant coefficient for business

services, insurance, finance, and trade services. This result again highlights the strong potential for

cross-sectoral heterogeneity in the trade impacts of RTAs such as the EU.

4.1   *Results using Detailed Policy Indicators*

In the remainder of this section, we pursue the same general approach as for the models in Table 4,

but use more detailed policy data than the general indices used previously. The advantage of this

approach is that it allows us to identify with more precision the types of regulations that matter most for particular types of services trade, and at the same time to highlight once again the importance of cross-sectoral heterogeneity in accounting for the effects of policy on services trade. Since results for the RTA and EU dummies are generally in accordance with those from the Table 4 regressions, the discussion here focuses only on the additional policy data.

Results for transport services appear in columns 1-3 of Table 5, using data for air transport policies only. The OECD policy data allow us to distinguish two types of measures: entry barriers, and public ownership. Columns 1-2 enter each variable separately, and column 3 enters them jointly. Model results suggest that both types of policy have a negative and significant effect on trade, but that the impact of entry barriers is slightly stronger.

The remaining columns of Table 5 present results for the communications sector. In this case, the OECD data identify three types of policies: entry barriers, public ownership, and market structure. Although each policy indicator has the expected negative sign and is statistically significant when entered separately into the regression, entering all three together (column 7) results in only entry barriers having a statistically significant marginal impact. The reason is that all three types of measures tend to occur together, and the resulting correlation inflates the estimated standard errors in column 7. Nonetheless, we conclude that entry barriers are the primary policy of concern in relation to communication services.

Table 6 presents results for business services, using data on entry barriers (columns 1-4) and conduct regulations (columns 5-8) separately. The strongest result in terms of entry barriers is for licensing requirements: they are negatively and significantly associated with trade in business services when entered separately into the regression (column 1), and when included with other entry barrier variables (column 4). Education requirements only have a negative and statistically significant coefficient when entered separately (column 2); in the joint regression, they have a negative but

statistically insignificant coefficient, presumably because of correlation with other policy measures. Contrary to expectations, the presence of quotas and economic needs tests is positively associated with trade in business services, although the relationship is only statistically significant in the joint regression (column 4). We do not place too much weight on this result, however, as it might be explained by the fact that such policies apply mostly to trade via GATS Mode 3 (commercial presence), which means that suppliers may indeed have an incentive to undertake greater Mode 1 trade—which is what our data capture—when Mode 3 is relatively restricted. This is only speculation, however, as data on both modes of supply would be required to test such a hypothesis.

Interestingly, results for conduct regulations as opposed to entry barriers are somewhat weaker in the case of business services (Table 6 columns 5-8). Although advertising regulations and regulations affecting prices and fees both have negative and significant coefficients when entered separately, it is only the latter that have a statistically significant effect when all three policy variables are entered together. Regulations affecting the type of business form that can be used by foreign entrants do not appear to have any significant effect on trade; however, we again note that such measures tend to affect Mode 3 trade more than Mode 1 trade, and so this finding is not necessarily surprising. Finally, the magnitude of the coefficient on price and fee regulations is noticeably smaller in absolute value than the coefficient on licensing requirements (column 4), which suggests that trade flows in business services may in general be more sensitive to entry barriers than to conduct regulations.

Tables 7 and 8 show results for insurance and financial services respectively. Both licensing and educational requirements play a significant negative role for insurance services when included in the regression separately (columns 1-3) and together (column 4). This finding is in contrast with business services where only licensing requirements as part of entry barriers are significantly important. As for quotas and economic needs test, they are positively associated with insurance trade in the joint regression (column 4). This result is contrary to expectations, but could again be the result of cross-modal substitution. The results for the variables on conduct regulation become significant only when

the variables are taken separately for regulation on advertising (column 6) and prices and fees (column 7). However, no meaningful outcomes appear when taking all the variables on conduct regulation together in column 8.

The results for the financial sector in Table 8 are somewhat different from those for insurance services. Contrary to insurance, regulation on educational requirements appears to have a stronger effect compared to licensing requirements (columns 1-2). This finding is reinforced when taking these variables together (column 4): only educational requirements play a significant role. Regulation on quotas and economic needs tests again have a positive and statistically significant coefficient. As said, data on both modes 1 and 3 of services supply would be required to assess whether substitution effects are present within this sector, but our results strongly suggest that Mode 1 trade in finance is influenced by putting in place measures that are largely targeted for trade under Mode 3. However, results for conduct regulations in finance do not have any meaningful significance when these policy variables are entered separately (columns 5-8) or when considered together (column 8). These latter results are in line with insurance and business services.

Results for construction services are in Table 9. We created a special policy indicator for this sector, consisting of an unweighted average of the sub-level indicators of entry and conduct regulation for architectural and engineering services together. As for the business services regressions, columns 1-4 present results using data on entry barriers, and columns 5-8 use data on conduct regulations. Taking entry barriers first, columns 3-4 show that it is only education requirements that have a negative and statistically significant impact on trade in this sector. This finding contrasts again with business services, in which licensing requirements play a major role. Again, quotas and economic needs tests have an unexpected positive and statistically significant coefficient, but this finding is likely explained by the type of cross-modal substitution discussed in the context of business services. Indeed, such a mechanism is all the more likely to operate since only a small part of the construction

services sector—such as architectural or engineering consulting services—can be traded via GATS Mode 1.

As was the case for business, insurance, and financial services, trade in construction services is also more affected by entry barriers than by conduct regulations. None of the conduct regulation indicators in columns 5-8 has a negative and statistically significant coefficient. The positive and statistically significant coefficient on business form regulations is likely explained by cross-modal substitution: stricter regulations on business form provide operators with an incentive to trade via Mode 1 rather than Mode 3, thereby boosting the level of exports observed in our data.

Columns 1-3 of Table 10 present results for recreation services. We use regulation of the air transport sector as a proxy for sectoral regulations, due to the lack of data specifically covering this sector. We consider two types of regulatory measures that can potentially impede trade in this area: entry barriers, and public ownership. Although both measures have negative and statistically significant coefficients when entered separately in the model (columns 1-2), only public ownership has a statistically significant impact on trade when the two are considered jointly (column 3). This result highlights the important role that market structure can play as a determinant of trade patterns on a sectoral level, and is at least partly in line with our results for the transport sector in Table 4.

The final sector we consider is trade services (Table 10 columns 4-8). For the policy variables, we use OECD data on restrictions in the retail services sector as a proxy for sectoral regulations. Our data cover entry barriers, operating restrictions, and price controls. For this sector, only price controls (column 7) have a negative and statistically significant impact on trade, but this effect disappears when all three policy variables are entered together. As is the case in other sectors, correlation among the various policy indicators makes it difficult to identify the marginal effects of individual measures.

5   Conclusion

This paper has shown that services RTAs, and regulatory policies more broadly, can have very different effects on different sectors. In line with previous work, we find considerable evidence of a link between regulatory restrictiveness and lower trade, but it is only statistically significant in some sectors; in other sectors, there is no evidence of such an effect. Similarly, we find that some sectors respond strongly to regional integration efforts with a services component, but that others do not. Interestingly, the data disclose relatively little evidence of trade diversion effects associated with services RTAs irrespective of the sector being analyzed, which is quite different from the main findings of the literature on trade in goods.

From a policy point of view, our findings are important for two reasons. First, they highlight the importance of addressing sector-specific regulatory issues in addition to the general regulatory stance of a country with respect to the services sector as a whole. The breadth of the services sector, and the important role played by cross-sectoral heterogeneity, make the job of services negotiators a very difficult one, be it in multilateral or regional forums. There is a need in both cases for sectoral regulatory bodies to be involved in any broad-based efforts at services liberalization, which poses significant capacity issues for many developing countries.

The second policy issue of interest that arises from our results relates to the role of services RTAs. The data strongly suggest that regional integration efforts have been effective in some sectors, but not in others. Although outside the scope of the present paper, it will be important for future work to play closer attention to the different levels of commitments undertaken in different sectors in services RTAs. Casual empiricism suggests that countries often approach different sectors with different levels of ambition in terms of liberalization. It therefore remains to be seen whether our findings are driven by heterogeneity in the application of similar liberalization approaches across

economically different sectors, or whether they simply reflect the very partial nature of many services RTAs in terms of sectoral scope and depth.

In addition to investigating that issue further, future work could expand on our results in one important respect. We have relied on the best data currently available to obtain sectoral measures of policy restrictiveness. However, the OECD and the World Bank both currently have projects underway that intend to provide much more comprehensive policy coverage than existing OECD data. It is to be hoped that the results of their efforts will be made public in a timely manner, and that future research can identify with greater precision the types of policy measures that matter most for particular types of services trade.

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Tables and Figures

Figure 1: Number of Services RTAs and Level of Entry Barriers
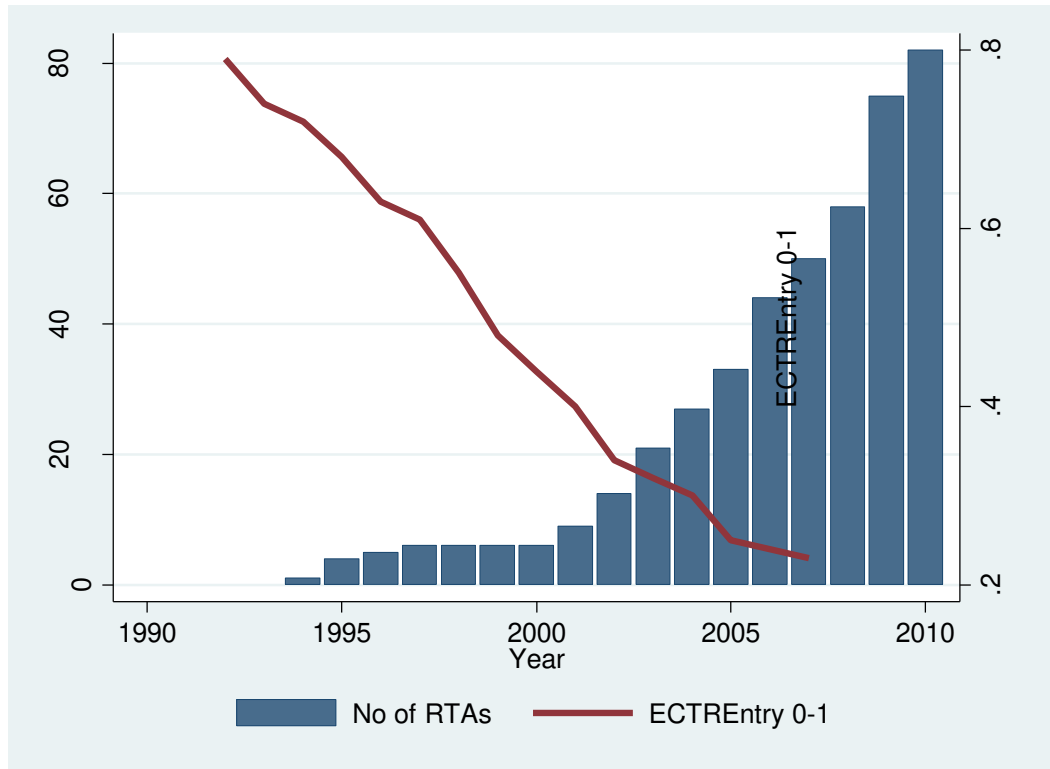
Source: Authors' calculations. Entry barriers (sourced from the OECD's ECTR database) cover all countries in our data sample and are rescaled from 0-1. The RTAs in services represent any type of RTA with a services component. Years are for the date of notification. Data are taken from the WTO's RTA database.

Figure 2: Total Imports of Business and Construction Services, and Level of Regulatory Restrictiveness, 2003.
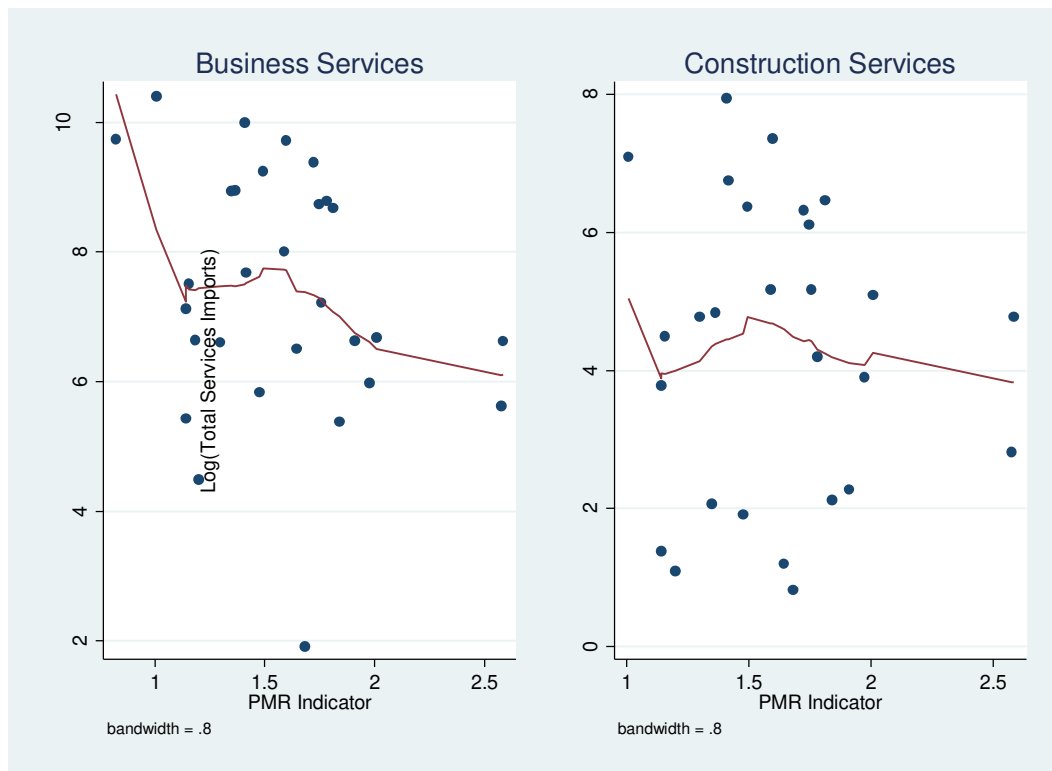
Table 1: Summary Statistics for Total and Sectoral Services Trade

Sector	Obs	Mean($m)	Std. Dev.	Min	Max
Business	19227	96.2749	554.3159	-1.12744	14456
Construction	18488	10.12213	51.10917	0	1529
Communication	18705	5.946343	32.30766	0	1099
Finance	18583	17.87175	156.3826	0	6514.336
Insurance	18622	16.43861	229.0777	0	12685.31
Public	19046	10.509	129.1836	0	7004
Recreation	18632	5.842693	52.96298	0	2387
Trade	4770	30.8305	150.6006	0	3379.606
Transport	19826	143.1378	507.1419	0	9136
Total	35110	184.1891	1067.294	-791.087	32824.34

Table 2: Summary Statistics for Regulatory Indicators

Regulation	Obs	Mean	Std. Dev.	Min	Max
PMR HL partner	19673	1.688564	0.4963851	0.82434	3.969725
Admin. regulation HL	19673	1.712375	0.6075586	0.8134595	3.911994
Domestic regulation HL	19673	2.333285	0.6004705	1.230521	4.510083
State control ML	19673	2.527102	0.7719463	1.192639	4.862542
Barriers to entrepr. ML	19673	1.790134	0.4859598	0.9537903	3.720589
Barriers to invest. ML	19673	0.7484577	0.4950023	0.1984321	4.2033
Airlines regulation	116271	2.182192	1.654495	0	6
Telecom regulation	114759	2.077928	1.306062	0.1555921	6
Post regulation	112680	3.319764	0.8219214	1.5	6
Rail regulation	109711	4.184592	1.323794	0.375	6
Road regulation	111123	1.631237	1.458576	0	6
Accounting regulation	19529	2.454276	0.8514644	0	5.056624
Architectural regulation	19529	1.699389	1.211898	0	4.412179
Engineering regulation	19529	1.65898	1.336414	0	4.445513
Legal regulation	19529	2.848653	1.070884	0	4.866667
Retail regulation	18697	2.501305	1.10134	0.5043904	5.194862

Table 3: Data Sources

Variable	Variable description	Source	Period
X	Export value in US$	Trade in Services Database (Francois et al., 2009)	1992-2006
Regulation	Overall regulation	OECD Indicators of Product Market Regulation (PMR)	1998, 2003, 2008
Regulation	Accounting, architectural, engineering, legal and retail regulation	OECD Indicators of Sectoral Regulation (NMR)	1998, 2003, 2009
Regulation	Airline, road, rail, telecom and post regulation	OECD ECTR database (Electricity, Communications, Transport and Retail)	1992-2005
Dist, Contig, Colony, Language	Distance, sharing a similar border, colonial links or language	CEPII	1992-2006
RTA_d, RTA_d_d	Dummy equal to unity for country pairs sharing a services RTA; or equal to unity when only one country is a member of a services RTA	Miroudot et al. (2010)	1992-2006
EU_d, EU_d_d	Dummy equal to unity for country pairs being member of the EU; or equal to unity when only one country is a member of the EU.	European Union (www.europa.eu)	1992-2006

Table 4: Baseline Estimation Results

	(1) Transport	(2) Transport	(3) Commun.	(4) Commun.	(5) Business	(6) Insurance	(7) Finance	(8) Trade	(9) Construc.	(10) Construc.	(11) Construc	(12) Recreat.
ln(distance)	-1.052***	-1.040***	-1.203***	-1.197***	-0.976***	-0.997***	-0.725***	-1.246***	-1.324***	-0.958***	-0.958***	-0.696***
	(0.0391)	(0.0428)	(0.0545)	(0.0540)	(0.128)	(0.155)	(0.177)	(0.206)	(0.158)	(0.119)	(0.119)	(0.0520)
Contiguity	0.210***	0.175**	0.214**	0.216**	0.635**	-0.0602	-0.255	-0.716	0.865***	0.968***	0.968***	0.471***
	(0.0747)	(0.0767)	(0.0986)	(0.102)	(0.293)	(0.448)	(0.388)	(0.589)	(0.322)	(0.310)	(0.310)	(0.0966)
Colony	0.704***	0.730***	0.441***	0.486***	0.185	-0.189	-0.0890	0.222	-0.00719	0.0417	0.0417	0.307***
	(0.0558)	(0.0585)	(0.0816)	(0.0809)	(0.189)	(0.400)	(0.410)	(0.522)	(0.367)	(0.331)	(0.331)	(0.0723)
Language	0.128**	0.0957	0.346***	0.368***	0.558***	1.480***	1.202***	0.535	-0.382	-0.769***	-0.769***	0.343***
	(0.0590)	(0.0602)	(0.0869)	(0.0861)	(0.181)	(0.514)	(0.342)	(0.369)	(0.282)	(0.252)	(0.252)	(0.0816)
ln(GDP importer)	0.864***	0.920***	0.738***	0.809***	1.010***	0.888***	0.690**	1.101***	1.109***	0.715***	0.715***	0.700***
	(0.0251)	(0.0319)	(0.0440)	(0.0451)	(0.0645)	(0.140)	(0.290)	(0.226)	(0.107)	(0.0739)	(0.0739)	(0.0542)
RTA trade creation	-0.240*	0.00234	0.825***	0.776***	0.746	0.310	1.729**	1.790*	0.697	-1.130**	-1.130**	0.350
	(0.142)	(0.165)	(0.209)	(0.211)	(0.517)	(0.615)	(0.871)	(1.037)	(0.605)	(0.523)	(0.523)	(0.278)
RTA trade diversion	0.0721	0.243*	0.542***	0.535***	0.571*	0.502	1.288***	1.385**	0.325	-0.866**	-0.866**	0.115
	(0.133)	(0.144)	(0.166)	(0.165)	(0.312)	(0.476)	(0.412)	(0.681)	(0.366)	(0.397)	(0.397)	(0.201)
EU trade creation	-0.645***	-0.419**	-0.460*	-0.647**	0.421	1.569**	1.763	-	0.298	-0.679	-0.679	-0.661**
	(0.164)	(0.200)	(0.240)	(0.260)	(0.530)	(0.671)	(1.454)	-	(0.364)	(0.514)	(0.514)	(0.333)
EU trade diversion	-0.647***	-0.542***	-0.266**	-0.389***	0.586***	1.153***	1.355*	1.452*	0.725**	-0.0611	-0.0611	-0.405**
	(0.117)	(0.136)	(0.128)	(0.137)	(0.226)	(0.447)	(0.707)	(0.742)	(0.349)	(0.380)	(0.380)	(0.168)
Airlines regulation importer	-0.319***											-0.207***
	(0.0263)											(0.0360)
Road regulation importer		-0.112***										
		(0.0261)										
Telecom regulation importer			-0.253***									
			(0.0446)									
Post regulation importer				-0.331***								
				(0.0715)								
Prof. serv. regulation importer					-0.378***	-0.547***	-0.315		-0.114			
					(0.112)	(0.205)	(0.276)		(0.0832)			
Retail regulation importer								-0.352				
								(0.300)				
Architect. regulation importer										-0.345		
										(0.210)		
Engineering regulation imp.											-0.443	
											(0.325)	
Fixed Effects	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs
Random Effects	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs
Observations	9220	8836	4313	4236	995	591	635	273	487	438	438	3613
R-squared	0.760	0.734	0.713	0.719	0.792	0.651	0.642	0.708	0.674	0.554	0.554	0.686

Notes: The dependent variable in all cases is exports (X_{ijt}^{k}), and estimation is by GLS. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Robust standard errors corrected for clustering by country-pair appear in parentheses beneath the parameter estimates.

Table 5: Estimation Results—Transport and Communication Services

	(1) Transport	(2) Transport	(3) Transport	(4) Commun.	(5) Commun.	(6) Commun.	(7) Commun.
ln(distance)	-1.026***	-1.053***	-1.051***	-1.199***	-1.179***	-1.165***	-1.204***
	(0.0400)	(0.0401)	(0.0396)	(0.0540)	(0.0546)	(0.0536)	(0.0545)
Contiguity	0.231***	0.213***	0.211***	0.213**	0.223**	0.285***	0.212**
	(0.0754)	(0.0751)	(0.0746)	(0.0984)	(0.0985)	(0.0973)	(0.0987)
Colony	0.719***	0.696***	0.705***	0.448***	0.462***	0.423***	0.442***
	(0.0561)	(0.0549)	(0.0561)	(0.0815)	(0.0807)	(0.0806)	(0.0819)
Language	0.149***	0.109*	0.130**	0.354***	0.364***	0.360***	0.347***
	(0.0577)	(0.0613)	(0.0591)	(0.0867)	(0.0863)	(0.0829)	(0.0878)
ln(GDP importer)	0.995***	0.802***	0.876***	0.765***	0.811***	0.734***	0.737***
	(0.0288)	(0.0271)	(0.0268)	(0.0429)	(0.0459)	(0.0472)	(0.0469)
RTA trade creation	-0.109	-0.110	-0.246*	0.804***	0.838***	0.878***	0.801***
	(0.139)	(0.155)	(0.142)	(0.201)	(0.213)	(0.197)	(0.202)
RTA trade diversion	0.147	0.140	0.0694	0.546***	0.535***	0.522***	0.537***
	(0.127)	(0.143)	(0.132)	(0.162)	(0.167)	(0.149)	(0.163)
EU trade creation	-1.241***	-0.102	-0.716***	-0.530**	-0.406	-0.311	-0.513**
	(0.193)	(0.180)	(0.197)	(0.245)	(0.249)	(0.246)	(0.244)
EU trade diversion	-0.950***	-0.362***	-0.685***	-0.313**	-0.252*	-0.213*	-0.299**
	(0.130)	(0.127)	(0.133)	(0.127)	(0.132)	(0.125)	(0.126)
Airline entry barriers importer	-0.259***		-0.177***				
	(0.0252)		(0.0252)				
Airline publ. ownership importer		-0.207***	-0.147***				
		(0.0195)	(0.0184)				
Telecom entry barriers importer				-0.194***			-0.166***
				(0.0304)			(0.0387)
Telecom publ. own. importer					-0.0490*		-0.0154
					(0.0278)		(0.0258)
Telecom market struct. importer						-0.268***	-0.0760
						(0.0530)	(0.0637)
Fixed Effects	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs
Random Effects	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs
Observations	9262	9222	9220	4313	4313	4423	4313
R-squared	0.753	0.749	0.761	0.722	0.706	0.717	0.721

Notes: The dependent variable in all cases is exports (X_{ijt}^{k}), and estimation is by GLS. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Robust standard errors corrected for clustering by country-pair appear in parentheses beneath the parameter estimates.

Table 6: Estimation Results—Business Services

	(1) Business	(2) Business	(3) Business	(4) Business	(5) Business	(6) Business	(7) Business	(8) Business
ln(distance)	-0.940***	-0.914***	-0.953***	-0.940***	-0.947***	-0.929***	-1.054***	-1.054***
	(0.119)	(0.139)	(0.149)	(0.120)	(0.150)	(0.138)	(0.152)	(0.160)
Contiguity	0.575*	0.547*	0.412	0.485	0.491	0.497	0.634**	0.653**
	(0.298)	(0.307)	(0.319)	(0.308)	(0.311)	(0.317)	(0.302)	(0.309)
Colony	0.309*	0.297	0.281	0.329**	0.285	0.225	0.122	0.148
	(0.164)	(0.195)	(0.216)	(0.163)	(0.215)	(0.214)	(0.225)	(0.217)
Language	0.544***	0.641***	0.803***	0.567***	0.771***	0.767***	0.600***	0.625***
	(0.176)	(0.205)	(0.229)	(0.178)	(0.233)	(0.223)	(0.200)	(0.215)
ln(GDP importer)	1.014***	0.996***	1.021***	1.010***	0.999***	1.011***	1.042***	1.044***
	(0.0587)	(0.0654)	(0.0620)	(0.0607)	(0.0666)	(0.0685)	(0.0676)	(0.0729)
RTA trade creation	0.867**	0.992*	1.161**	0.812**	1.170**	0.986*	0.887	0.971*
	(0.440)	(0.544)	(0.554)	(0.410)	(0.544)	(0.592)	(0.577)	(0.541)
RTA trade diversion	0.518*	0.642**	0.768**	0.485*	0.814**	0.690**	0.753**	0.789**
	(0.296)	(0.293)	(0.321)	(0.264)	(0.324)	(0.340)	(0.340)	(0.312)
EU trade creation	-0.0514	0.451	0.514	-0.0226	0.589	0.587	0.555	0.466
	(0.474)	(0.587)	(0.606)	(0.463)	(0.627)	(0.611)	(0.598)	(0.602)
EU trade diversion	0.396	0.380	0.398	0.377	0.468	0.526*	0.617**	0.556**
	(0.249)	(0.254)	(0.296)	(0.246)	(0.345)	(0.308)	(0.245)	(0.278)
Licensing requirement importer	-0.243***			-0.238***				
	(0.0639)			(0.0734)				
Education requirement importer		-0.242**		-0.0415				
		(0.103)		(0.111)				
Quota & econ. need test importer			0.0787	0.127*				
			(0.0547)	(0.0752)				
Business form reg. importer					-0.0183			0.113
					(0.0972)			(0.114)
Reg. on advertising importer						-0.163*		-0.0420
						(0.0926)		(0.128)
Reg. on prices & fees importer							-0.175**	-0.187*
							(0.0722)	(0.104)
Fixed Effects	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs
Random Effects	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs
Observations	1007	1007	1007	1007	976	988	988	976
R-squared	0.805	0.789	0.783	0.808	0.781	0.788	0.797	0.794

Notes: The dependent variable in all cases is exports (X_{ijt}^{k}), and estimation is by GLS. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Robust standard errors corrected for clustering by country-pair appear in parentheses beneath the parameter estimates.

Table 7: Estimation Results—Insurance Services

	(1) Insurance	(2) Insurance	(3) Insurance	(4) Insurance	(5) Insurance	(6) Insurance	(7) Insurance	(8) Insurance
ln(distance)	-0.988***	-0.858***	-0.929***	-0.916***	-0.934***	-0.902***	-1.034***	-0.980***
	(0.135)	(0.167)	(0.193)	(0.146)	(0.182)	(0.174)	(0.186)	(0.171)
Contiguity	-0.240	-0.144	-0.403	-0.257	-0.376	-0.330	-0.247	-0.226
	(0.433)	(0.474)	(0.438)	(0.459)	(0.433)	(0.445)	(0.444)	(0.452)
Colony	0.0665	-0.139	-0.150	0.0666	-0.0599	-0.221	-0.147	-0.213
	(0.381)	(0.386)	(0.439)	(0.363)	(0.390)	(0.345)	(0.402)	(0.359)
Language	1.307***	1.685***	1.821***	1.348***	1.825***	1.990***	1.699***	1.828***
	(0.506)	(0.501)	(0.574)	(0.492)	(0.542)	(0.552)	(0.535)	(0.511)
ln(GDP importer)	0.866***	0.886***	0.856***	0.868***	0.837***	0.873***	0.861***	0.885***
	(0.135)	(0.135)	(0.142)	(0.121)	(0.151)	(0.151)	(0.145)	(0.168)
RTA trade creation	0.828	0.895	0.824	0.948	0.543	0.392	0.429	0.225
	(0.568)	(0.617)	(0.572)	(0.581)	(0.657)	(0.490)	(0.602)	(0.555)
RTA trade diversion	0.645	0.791**	0.727*	0.731*	0.546	0.574*	0.655	0.554
	(0.442)	(0.380)	(0.413)	(0.385)	(0.506)	(0.345)	(0.455)	(0.468)
EU trade creation	0.769	1.560**	1.902***	0.822	2.035***	1.944***	1.935***	1.989***
	(0.793)	(0.712)	(0.679)	(0.678)	(0.702)	(0.615)	(0.683)	(0.676)
EU trade diversion	0.811*	0.877**	1.088**	0.728*	1.243**	1.144***	1.222**	1.246**
	(0.473)	(0.405)	(0.461)	(0.396)	(0.507)	(0.418)	(0.491)	(0.509)
Licensing requirement importer	-0.334***			-0.241**				
	(0.116)			(0.0998)				
Education requirement importer		-0.438**		-0.354**				
		(0.200)		(0.164)				
Quota & econ. need test importer			0.0712	0.166*				
			(0.0507)	(0.100)				
Business form reg. importer					-0.163			-0.000238
					(0.155)			(0.190)
Reg. on advertising importer						-0.310**		-0.224
						(0.152)		(0.212)
Reg. on prices & fees importer							-0.166*	-0.120
							(0.0926)	(0.132)
Fixed Effects	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs
Random Effects	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs
Observations	600	600	600	600	586	595	595	586
R-squared	0.666	0.646	0.622	0.678	0.626	0.640	0.640	0.641

Notes: The dependent variable in all cases is exports (X_{ijt}^k), and estimation is by GLS. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Robust standard errors corrected for clustering by country-pair appear in parentheses beneath the parameter estimates.

Table 8: Estimation Results—Financial Services

	(1) Finance	(2) Finance	(3) Finance	(4) Finance	(5) Finance	(6) Finance	(7) Finance	(8) Finance
ln(distance)	-0.716***	-0.606***	-0.736***	-0.575***	-0.728***	-0.773***	-0.800***	-0.877***
	(0.152)	(0.176)	(0.201)	(0.190)	(0.201)	(0.192)	(0.218)	(0.223)
Contiguity	-0.327	-0.166	-0.643	-0.408	-0.571	-0.592	-0.431	-0.415
	(0.362)	(0.406)	(0.443)	(0.400)	(0.461)	(0.449)	(0.384)	(0.410)
Colony	0.152	0.146	0.0257	0.271	0.0993	0.204	0.0570	0.0600
	(0.358)	(0.394)	(0.431)	(0.364)	(0.448)	(0.456)	(0.452)	(0.471)
Language	1.035***	1.056**	1.475***	0.974***	1.558***	1.502***	1.338***	1.403***
	(0.341)	(0.429)	(0.489)	(0.316)	(0.459)	(0.469)	(0.388)	(0.362)
ln(GDP importer)	0.706**	0.680**	0.733**	0.643**	0.703***	0.734***	0.721**	0.733***
	(0.288)	(0.282)	(0.287)	(0.284)	(0.273)	(0.270)	(0.296)	(0.273)
RTA trade creation	2.030***	1.839**	2.027**	1.863***	2.184**	2.287**	1.870*	2.252**
	(0.762)	(0.770)	(0.846)	(0.685)	(0.873)	(0.902)	(0.973)	(0.954)
RTA trade diversion	1.440***	1.323***	1.397***	1.354***	1.523***	1.570***	1.432***	1.653***
	(0.336)	(0.353)	(0.406)	(0.265)	(0.469)	(0.441)	(0.440)	(0.476)
EU trade creation	0.985	1.652	1.861	1.285	1.820	1.809	1.866	1.763
	(1.585)	(1.353)	(1.357)	(1.628)	(1.374)	(1.315)	(1.370)	(1.369)
EU trade diversion	0.926	1.013	1.250*	0.758	1.218*	1.220*	1.389**	1.307*
	(0.827)	(0.616)	(0.706)	(0.717)	(0.708)	(0.652)	(0.648)	(0.698)
Licensing requirement importer	-0.267*			-0.0969				
	(0.161)			(0.233)				
Education requirement importer		-0.480**		-0.567*				
		(0.212)		(0.343)				
Quota & econ. need test importer			0.157**	0.318***				
			(0.0718)	(0.120)				
Business form reg. importer					0.0771			0.0771
					(0.284)			(0.290)
Reg. on advertising importer						0.146		0.272
						(0.251)		(0.241)
Reg. on prices & fees importer							-0.113	-0.174
							(0.153)	(0.196)
Fixed Effects	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs
Random Effects	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs
Observations	647	647	647	647	629	641	641	629
R-squared	0.658	0.661	0.644	0.681	0.641	0.648	0.650	0.652

Notes: The dependent variable in all cases is exports (X_{ijt}^{k}), and estimation is by GLS. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Robust standard errors corrected for clustering by country-pair appear in parentheses beneath the parameter estimates.

Table 9: Estimation Results – Construction Services

	(1) Construc.	(2) Construc.	(3) Construc.	(4) Construc.	(5) Construc.	(6) Construc.	(7) Construc.	(8) Construc.
ln(distance)	-1.366***	-1.299***	-1.327***	-1.220***	-1.300***	-1.330***	-1.386***	-1.393***
	(0.134)	(0.140)	(0.143)	(0.145)	(0.143)	(0.144)	(0.144)	(0.140)
Contiguity	0.850**	0.967***	0.863**	0.882**	0.943***	0.900**	0.917**	0.971***
	(0.356)	(0.364)	(0.378)	(0.386)	(0.360)	(0.362)	(0.360)	(0.355)
Colony	0.177	0.293	0.136	0.380	0.174	0.127	0.0651	0.0315
	(0.386)	(0.385)	(0.396)	(0.384)	(0.397)	(0.396)	(0.411)	(0.401)
Language	-0.490	-0.615*	-0.341	-0.604*	-0.389	-0.354	-0.419	-0.529*
	(0.317)	(0.332)	(0.309)	(0.333)	(0.307)	(0.303)	(0.312)	(0.301)
ln(GDP importer)	1.103***	1.126***	1.099***	1.144***	1.093***	1.102***	1.123***	1.143***
	(0.110)	(0.103)	(0.111)	(0.100)	(0.114)	(0.109)	(0.106)	(0.115)
RTA trade creation	0.881	0.645	0.751	0.316	0.775	0.762	0.724	0.571
	(0.602)	(0.602)	(0.609)	(0.515)	(0.603)	(0.620)	(0.637)	(0.670)
RTA trade diversion	0.416	0.404	0.308	0.213	0.306	0.335	0.370	0.275
	(0.352)	(0.394)	(0.380)	(0.351)	(0.373)	(0.374)	(0.357)	(0.386)
EU trade creation	-0.163	-0.289	0.401	-0.261	0.315	0.408	0.398	0.155
	(0.520)	(0.416)	(0.354)	(0.445)	(0.389)	(0.345)	(0.361)	(0.411)
EU trade diversion	0.530	0.362	0.718**	0.276	0.621*	0.725**	0.751**	0.561
	(0.369)	(0.341)	(0.343)	(0.325)	(0.375)	(0.329)	(0.339)	(0.398)
Licensing requirement importer	-0.0817			0.0787				
	(0.0594)			(0.0847)				
Education requirement importer		-0.218**		-0.383***				
		(0.0865)		(0.128)				
Quota & econ. need test importer			0.0362	0.161**				
			(0.0548)	(0.0702)				
Business form reg. importer					0.0951			0.239*
					(0.117)			(0.132)
Reg. on advertising importer						-0.0134		-0.0676
						(0.0765)		(0.102)
Reg. on price & fee importer							-0.0452	-0.0950
							(0.0622)	(0.0632)
FE	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs
RE	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs
Observations	468	468	468	468	460	468	468	460
R-squared	0.676	0.686	0.673	0.695	0.672	0.672	0.674	0.678

Notes: The dependent variable in all cases is exports (X_{ijt}^{k}), and estimation is by GLS. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Robust standard errors corrected for clustering by country-pair appear in parentheses beneath the parameter estimates.

Table 10: Estimation Results—Recreation and Distribution Services

	(1) Recreation	(2) Recreation	(3) Recreation	(4) Trade	(5) Trade	(6) Trade	(7) Trade	(8) Trade
ln(distance)	-0.683***	-0.701***	-0.701***	-1.246***	-1.268***	-1.311***	-1.261***	-1.234***
	(0.0512)	(0.0530)	(0.0529)	(0.206)	(0.230)	(0.269)	(0.243)	(0.228)
Contiguity	0.466***	0.477***	0.477***	-0.716	-0.732	-0.738	-0.871	-0.834
	(0.0965)	(0.0965)	(0.0965)	(0.589)	(0.602)	(0.658)	(0.595)	(0.628)
Colony	0.322***	0.305***	0.306***	0.222	0.193	0.178	-0.0952	-0.0192
	(0.0723)	(0.0723)	(0.0722)	(0.522)	(0.514)	(0.497)	(0.619)	(0.546)
Language	0.361***	0.330***	0.329***	0.535	0.504	0.589	0.785*	0.709*
	(0.0818)	(0.0816)	(0.0817)	(0.369)	(0.371)	(0.413)	(0.407)	(0.400)
ln(GDP importer)	0.788***	0.644***	0.659***	1.101***	1.127***	1.111***	1.102***	1.102***
	(0.0515)	(0.0592)	(0.0592)	(0.226)	(0.238)	(0.258)	(0.213)	(0.220)
RTA trade creation	0.433	0.385	0.364	1.790*	1.817	1.667*	1.063	1.259
	(0.284)	(0.275)	(0.278)	(1.037)	(1.170)	(1.002)	(0.957)	(1.059)
RTA trade diversion	0.160	0.120	0.114	1.385**	1.406**	1.358*	1.052	1.132*
	(0.202)	(0.200)	(0.201)	(0.681)	(0.714)	(0.697)	(0.644)	(0.638)
EU trade creation	-0.946***	-0.198	-0.379	-	-	-	-	-
	(0.355)	(0.334)	(0.372)	-	-	-	-	-
EU trade diversion	-0.551***	-0.160	-0.255	1.452*	1.071	1.306	0.968	1.067
	(0.185)	(0.169)	(0.193)	(0.742)	(0.865)	(1.016)	(0.821)	(0.958)
Airline entry barriers importer	-0.134***		-0.0446					
	(0.0387)		(0.0443)					
Airline publ. ownership importer		-0.162***	-0.147***					
		(0.0257)	(0.0299)					
Retail overall regulation importer				-0.352				
				(0.300)				
Retail entry barriers importer					-0.195			-0.0959
					(0.268)			(0.313)
Retail operat. restr. importer						-0.171		0.0145
						(0.220)		(0.281)
Retail price controls importer							-0.383*	-0.347
							(0.209)	(0.214)
Fixed Effects	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs	Exp-yrs
Random Effects	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs	Imp-yrs
Observations	3624	3613	3613	273	273	273	273	273
R-squared	0.679	0.686	0.687	0.708	0.702	0.697	0.717	0.718

Notes: The dependent variable in all cases is exports (X_{ijt}^{k}), and estimation is by GLS. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Robust standard errors corrected for clustering by country-pair appear in parentheses beneath the parameter estimates.