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Key words: FDI, imports, services, panel data, substitution and complementary effects.

# Trade through FDI: investing in services

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Abstract

The type of relationship between different modes of trading services across international borders is of great interest, not only for the academic literature but also for the formulation trade liberalization offers under the GATS. Even more than for trade in goods, it is thus important to know whether cross-border trade and trade through commercial presence abroad act as complements or substitutes in services. The most commonly used analytical tool in the empirical analysis of this question is the gravity model of trade. This paper offers a consistent theoretical foundation for the application of the gravity model to services and to commercial presence, using a composite demand model with offers testable hypothesis about the complementary or substitutive relationship between different modes of supply. It further links the results to policy variables like market regulations which may act directly or implicitly as barriers to trade. Our empirical test for the sample of OECD countries over the decade 1994-2004 yields robust complementary effects in the short-run, which is reinforced in the long-run by an increased potential for cross-border imports based on previous FDI inflows. A detailed analysis by individual service sectors highlights business, communication and financial services as showing the largest potential for cross-border trade when market regulations are reduced and when commercial presence increases.

Keywords: FDI, imports, services, panel data, substitution and complementary effects.
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## Introduction

The question whether trade and FDI act as complements or substitutes in delivering goods across borders is not a new one and has been studied extensively. For instance, Fontagné and Pajot (1999) provide a comprehensive overview of the rich pool of literature dealing with this subject. They point out that this relationship depends on the level of analysis: at the firm level one will expect them to be substitutes, while there are compelling reasons - based on New Trade Theory arguments - for a complementary relationship at the macro-level (Pfaffermayr 1996). Given these distinctions, which are extended in Egger and Pfaffermayr (2005) to include further the magnitude of plant set-up costs compared to trade costs, the empirical findings up to date have remained inconclusive. Fontagné and Pajot (1999) have ascribed this to a confusion of effects at different levels of the economy (firm, industry and macro level) and to differences between vertical and horizontal FDI, two points that are both widely accepted in the literature (Zarotiadis and Mylonidis 2005, Egger and Pfaffermayr (2005), among others). Reading through the empirical literature suggests that the case for complementarity between trade and FDI is stronger, which is associated with vertical FDI and rather low trade costs. This is intuitively compelling given that the majority of FDI takes place between high developed countries, where vertical FDI is expected to play a greater role than between partners at different levels of economic development.

Both types of relationship are consistent with viewing trade and FDI as two equivalent modes for the international provision of goods. Thus, like in services trade, these two channels can be seen as two modes for trade. While this is not as explicitly recognized when talking about merchandise trade, the GATS explicitly lists even four different modes of delivering services across international borders, including as the most prominent means of international services provision cross-border trade (mode 1) and sales through local establishments, i.e. through FDI (mode 3). Mainly due to data limitations, the questions whether these different modes act as complements or substitutes in services trade has rarely been dealt with in the literature. Traditionally this has been tested for in a gravity framework. Examples are Fortagné (1999) and Magaläes and Africano (2007) at the macroeconomic level, Hejazi and Safarian (2001) and Bos and van de Laar (2004) for the service sector finding complementarity between the

two modes; Buch and Lipponer (2007) for German banks, Moshirian (2001) and Moshirian et al (2005) for IIT banking,or Li et al (2003) for IIT insurance services.

The relationship between cross-border trade and FDI may well be different in the service sector as compared to merchandise goods. Banga (2005) points out that while the determinants for FDI are generally found to be the same for goods producing firms and for services delivering ones, the importance of these determinants differ strongly between the two sectors. Government regulations, policies, cultural distance and the tradability of services (influenced by technological progress as well as by economic policy and regulatory measures) are the prime factors influencing FDI in services. In contrast, market size, barriers to trade and cost differentials in production are the main determinants for FDI in goods. Other studies found a substitutive relationship, such us Moshirian (1997) for insurance services; also Kolstad and Villanger (2004) found substitution for a disaggregate set of four service sectors.

Thus, the question whether these two modes of international service delivery act as complements or substitutes is not only largely unanswered – some studies find no evidence, like Brenton et al (1999) for the aggregate, or even mixed results when individual products or countries are studied, like Bloningen (2001), Pain and Wakelin (1998) or Fontagné and Pajot (2000) - it is further of great importance in the present GATS negotiations. Offering schedules are often reluctant to include mode 3 in the lists. However, when the two modes are acting complementary, this would act as a backlash on opening up to trade through mode 1 (cross-border trade).

This paper is intended to fill this gap, using a newly constructed dataset that combines data for modes 1, 2 and 3 for 28 OECD countries over the period 1994 to 2004, distinguishing between total services and seven individual service sectors. Our theoretical basis for the empirical analysis of this relationship departs from the idea of a composite delivery of a service involving different modes of provision. This is based on a Melitz-Krugman-Ethier type model for demand in services, which incorporates elements of new trade theory. The next section describes the data set in more detail thereby revealing an important short-run interaction between cross-border trade and FDI in the service sector. Section 2 derives our theoretical composite demand model for analysing this relationship. Section 3 offers evidence

of the short-run relationship between trade and FDI in services, at the aggregate level and by service, both in the traditional and the new composite demand approaches. The complementarity between FDI and cross-border trade is corroborated in section 4 by a long-run analysis, which seems to be particularly relevant for services imports. The paper finishes with the main conclusions.

## 1. Description of the Data Set and Further Motivation

We collected data from different sources (IMF, OCED, World Bank). Our data for service imports, covering basically modes 1 and 2, comes from published IMF Balance of Payments Statistics, compiled according to BOP Manual 5. FDI stock data, as a proxy for mode 3 trade, is taken from OECD Source and classified by the OECD's own industry classification based on ISIC, revision 3. The time period covered ranges from 1994-2004. The combination of the two datasets implies that the sample covers 28 OECD countries.[1] The data is mapped to individual service sectors according to the BOP classification. We left out sectors where the number of missing observations exceeded the observations that were actually reported. Thus, we focus on the following categories: total services, transport, travel, communication, construction, finance, and other business services. We have approximately 200 observations per service category. All other data come from the World Development Indicators published by the World Bank (i.e. GDP, value added, purchasing power parities), while distance is taken from CEPII's distance dataset and exchange rates are from the IMF International Financial Statistics.

In this paper we focus on the interaction between the two modes of supply, namely across the border (including here also movement of consumers) and through foreign establishment. We would ideally measure mode 3 trade by the sales of foreign affiliates in the service sector. However, this type of statistic exists up to date only for very few countries. The U.S. is more or less the only country which publishes a comprehensive FATS statistic. Thus, we can only use service sector FDI stocks in the country as a very rough proxy for service supply through

[1] While cross-border trade at the sectoral level (BOP classification) is in principle available for 178 countries in the world, detailed and comparable FDI data by sectors is only available for the OECD members. Consequently our sample contains all OECD countries without Belgium and Luxembourg.

foreign establishment. Implicitly we are therefore assuming that foreign affiliate sales are an invariant function of the value of foreign direct investment. Estimates by the World Bank (Hoekman 2006) yield that for the US the ratio between inward FDI stocks in services and trade through foreign affiliates in the same sector is about 3:1, i.e. we can roughly quantify the importance of mode 3 trade by a third of FDI stocks. This scaling effects has to be considered when interpreting the figures presented below.

Trade in services has in general risen in the OECD over the past decade. Figure 1 displays the growth in import volume and FDI inward stocks for total services. We see the over-proportionate increase in FDI stocks, which despite the fact that only a third of them can be seen as Mode 3 trade still implies a relative shift towards trade through commercial presence. While a decade ago cross-border trade was by far the most important mode for trade in services (0.84 million USD of service sector FDI stocks corresponding to 0.28 million USD of mode 3 trade as compared to 0.77 million USD of cross-border service imports), by 2004 FDI stocks amounted to 3.3 million USD while service imports have just about doubled to 1.3 million USD for the OECD in total. Thus, towards the end of the observation period, the two modes have attained equal importance.

Figure 2 shows a sectoral breakdown of imports through either mode by three main sectors, transport, travel and the sum of the remaining five categories listed above. We shall call the latter group henceforth "producer services".[2] It becomes evident from Figure 2 that this category is strongly responsible for the high growth of FDI in the service sector. The tremendous growth in service sector FDI is almost entirely driven by producer related services. Also it is the most important category for cross-border trade in services in the OECD. Growth through modes 1 and 2 has not been as impressive as through FDI, however, trade flows have nevertheless doubled over the past decade in all three categories. Thus, we observe an increase in trade in services through either mode. This clearly positive trend implies a shift towards trade through foreign affiliates, however the rough data do not allow

[2] This refers to the sum of communication, construction, finance, insurance and other business services. Due to too many missing observations, this group does not reflect all categories usually labelled "producer related services". Specifically we are missing out here: computer and information services and royalties and license fees.

us to speculate at this point whether this implies a substitute relationship or a form of complementarity.

More details about this relationship between different modes of services supply is given in Figure 3, which plots FDI inward stocks against service imports for all 28 countries for each service sector separately. The graph shows the average level of cross-border imports and FDI stocks in current US-Dollar over the period 2001-2004. For all service sectors with the exception of construction services, we see a positive relationship. Thus, more inward FDI in a country is observed together with more service imports in the same sector. This very preliminary look at the data thus reveals a contemporaneous complementarity between trade and FDI in services.[3]

## 2. Theoretical backing of the gravity approach for modelling FDI and trade in the service sector: a composite demand approach

Conceptually, cross-border services trade and foreign affiliate sales may be substitutes or complements. There are several reasons to expect that they are often gross complements in production (i.e. joint inputs) though with some degree of substitution possible. For example, because services require interaction between provider and consumer (Hill 1977, Francois 1990), it will usually be the case that cross-border trade in services requires some local value added to facilitate interaction between provider and consumer. In addition, from available balance of payments and trade data, we observe both trade and FDI across service sectors. If we are willing to assume that FDI in services is a legitimate measure of affiliate sales in the service sector, this means we observe both cross-border and affiliate sales.

We start with a general representation of services S as a composite of cross-border inputs T and affiliate activities F. This may, for example, involve a banking product supported by

[3] For the period 1994-1997, the same positive relationship was observed for all services sectors, also for construction services. We had to omit insurance services from the analysis, since data for the complete sample was available only for one year and hence the small number of observations did not allow a meaningful econometric analysis.

headquarter activities but sold and serviced through a local office. Formally, we can represent total foreign sales of services as in equation (1), where $\sigma=1/(1-\rho)$ is the Allen-elasticity of substitution.

$$S = f(F,T) = A\left(a_F(F)^{\rho} + a_T(T)^{\rho}\right)^{1/\rho}, \quad 0 \le \rho \le 1 \tag{1}$$

If sales through affiliates and trade (F and T) are prefect substitutes, then

$$S = A\left(a_F F + a_T T\right), \quad \rho = 1 \tag{2}$$

In more general terms, from the first order conditions for cost-minimization we will have the following:

$$\begin{aligned} F &= SA^{-1}\left(\frac{a_F}{P_F}\right)^{\sigma} P^{\sigma} = SA^{-(1+\sigma)}\left(\frac{a_F}{P_F}\right)^{\sigma}\left(a_F^{\sigma}P_F^{1-\sigma} + a_T^{\sigma}P_T^{1-\sigma}\right)^{\sigma/(1-\sigma)} \\ T &= SA^{-1}\left(\frac{a_T}{P_T}\right)^{\sigma} P^{\sigma} = SA^{-(1+\sigma)}\left(\frac{a_T}{P_T}\right)^{\sigma}\left(a_F^{\sigma}P_F^{1-\sigma} + a_T^{\sigma}P_T^{1-\sigma}\right)^{\sigma/(1-\sigma)} \end{aligned} \tag{3, 4}$$

$$P = A^{-1}\left(a_F^{\sigma}P_F^{1-\sigma} + a_T^{\sigma}P_T^{1-\sigma}\right)^{1/(1-\sigma)} \tag{5}$$

From equations (3-5), it is straightforward to link demand for cross-border and local service sales as a function of changes in the price of cross-border and local affiliate inputs.

$$\begin{aligned} dT/dP_F &= (\varepsilon+\sigma)\left(P^{\varepsilon+2\sigma-1}a_F P_F^{-\sigma}\left(\frac{a_T}{P_T}\right)^{\sigma} A^{\sigma-2}P_F^{-1}\right) \\ dT/dP_T &= -\left(P^{\varepsilon+\sigma}\left(\frac{a_T}{P_T}\right)^{\sigma}\left(-\varepsilon a_T^{\sigma}P_T^{1-\sigma} + \sigma a_F^{\sigma}P_F^{1-\sigma}\right)A^{\sigma-2}P_T^{-1}\right) \end{aligned} \tag{6,7}$$

A similar set of equations hold for F. In equations (6) and (7), $\varepsilon<0$ is the elasticity of demand for S. From equation (6), the impact of a drop in the price of providing local affiliate inputs on cross-border trade depends on the elasticity of substitution between F and T, and the

underlying elasticity of demand for composite services S. If the elasticity of substitution is relatively low - in particular if $\sigma < |\varepsilon|$ - then they actually serve as gross complements. Alternatively, as long as $\sigma > |\varepsilon|$, they will serve as gross substitutes.

We have seen dramatic increases in FDI flows in the service industries in the lat 10 years, along with moves to privatize and deregulate service sectors. Liberalization of service sector FDI means a reduction in the cost of the cost of running local affiliates. From equations (3,4) this implies a rising share of local affiliate relative to cross-border sales. Controlling for overall growth in demand, the theoretical impact on cross-border sales is ambiguous. From equations (6,7), it will depend on the elasticity of substitution relative to the elasticity of demand. We can summarize the implications of local service sector liberalization and related FDI liberalization as follows:

- In the cross-section, net complementarity of F and T means a relatively low technical degree of substitution
- Over time, increases in total service sales S imply rising both cross-border trade and FDI
- Controlling for shifts in demand, the impact of FDI growth driven by local market liberalization over time on cross-border trade is ambiguous

Technical change has a similar set of implications. In our data, we will look at both trade-FDI interactions in the cross-section, and in a dynamic panel. In the cross-section, complementarity will tell us we have a relatively low degree of substitution between cross-border and local sales of services. In the dynamic panel, we are interested in the relative evolution of cross-border and affiliate sales.

## 3. The cross-section view: the composite demand approach *versus* the traditional one

In this section we analyze the effect of inward FDI on services cross-border trade and *vice versa* from a short-run point of view. We estimate first the traditional uncontrolled gravity model for an international data panel, where we capture the complementary or substitutive effect between FDI and services imports by including trade through the alternative mode as a

further control variable on the right hand side. Since there may be a certain time lag in the relationship, we use here the first lag of the alternative mode. The estimating equations are given below:

$$\log servM_{it} = \alpha_M + \beta_1 * \log fdi_{it-1} + \beta_2 * \log (GDP)_{it} + \beta_3 * \log (pop)_{it} + \beta_4 * \log(dist)_{it} + \varepsilon_{it}$$
$$\log fdi_{it} = \alpha_F + \beta_1 * \log servM_{i\,t-1} + \beta_2 * \log (GDP)_{it} + \beta_3 * \log (pop)_{it} + \beta_4 * \log(dist)_{it} + \rho_{it} \quad (8)$$

where $servM_{it}$ are the total cross-border services imports for country *i* and year *t*; $fdi_{it}$ are total FDI stocks in the services sector in country *i* and year *t*; *GDP* is the gross domestic product for country *i* and year *t* (measured in current international dollars); *pop* is the population of the host country; *dist* is a GDP-weighted average distance term for the host country to all potential trading partners (this can be seen as an index of general remoteness of the country); finally $\varepsilon (\rho)$ is the error term with an unobservable country-specific component and the remainder disturbance. We estimate the within or fixed effects model where the country-specific effect and all the regressors are assumed to be independent of the disturbance. The bias of omitting variables is controlled for in this estimation. We have a sample of 24 countries over 10 years (although there are some missing values in this sample). Data sources are described in section 1.

Tables 1A and 1B show the estimation results for the traditional, uncontrolled gravity approach in the first column. Services imports receive a significant complementary effect from commercial presence (Table 1A), but we do not find this complementary relationship to be significant in the opposite direction. I.e. no significant effects from cross-border imports are found for commercial presence (Table 1B). So the reciprocal relationship might be considered as being inconclusive. We will demonstrate below that the composite demand approach helps to overcome this weakness of the traditional analysis.

The composite demand approach can be implemented though a gravity equation where the barriers on alternative modes for services trade are controlled for, as the following equations summarize:

$$\log servM_{it} = \alpha_M + \beta_1 * \log (GDP)_{it} + \beta_2 * \log (pop)_{it} + \beta_3 * \log(dist)_{it} +$$

$$+ \beta_4*(PMR)_{it} + \beta_5*(PMR)_{it}*logfdi_{it-1} + \mu_{it}$$

$$\log fdi_{it} = \alpha_F + \beta_1 * \log (GDP)_{it} + \beta_2* \log (pop)_{it} + \beta_3 * \log(dist)_{it} +$$

$$+ \beta_4*(PMR)_{it} + \beta_5*(PMR)_{it}*logservM_{it-1} + \phi_{it} \quad (9)$$

where PMR is an index of product market regulation which controls at large for explicit and implicit barriers for services trade through domestic regulation. The advantage of this model is that we can estimate the complementarity or substitution effect arising from a restriction imposed on the alternative mode (i.e. in the form of a change in regulation) as emphasized by our theoretical composite demand model. In both equations, we can decompose the change in trade due to changes in regulations into a direct price effect and into cross-price effects working through the alternative mode to trade the respective service. Taking as an example the services imports equation,

$$\delta logservMit / \delta PMRit = \beta_4 + \beta_5 * logfdi_{it-1}$$

which means that $\beta_5$ indicates the complementary or substitutive effect received from FDI when the barrier restricting this mode changes. As the theoretical model demonstrates, this effect depends on the demand and substitution elasticities, and measures the cross-price effect. We have taken the possible regulations on services from the OECD Product Market Regulation indicators (see Conway et al. 2005), which cluster a variety of different regulatory measures into three big groups: barriers to entrepreneurship, state control and barriers to trade and investment. Barriers to entrepreneurship and state controls are essentially inward oriented regulations; trade and investment barriers are acting as outward oriented regulations, probably more affected by international negotiations. The latter are split into foreign ownership barriers, regulatory barriers and tariffs. We have tested the price and cross-price effect for each category of regulation. The indicators are normalized to a scale between 0 and 6, higher values indicating more burdensome regulation. The results of these price effects for total trade in services are presented in the remaining columns of Tables 1A and 1B.

At a first glance, product market regulation in general shows significant price and cross-price effects for trade through cross-border imports and FDI. We see in both panels of Table 1 a

negative direct price effect, meaning that more regulation impedes trade as expected. This results from the interpretation of higher values of the PMR indicators with more burdensome regulation and a consequent more stringent barrier to trade. The cross-price effect, working through the alternative mode of trade, is always of the opposite sign (positive). This points towards a complementary relationship, because the negative price effects from an increase in regulations is amplified for a simultaneous negative effect on the alternative mode. In other words, those countries with higher regulations experience a lower level of services imports and of foreign commercial presence, which is much lower because of the complementarity between both modes of trade. In more detail, the incidence of individual aspects of regulation differs between modes (cross-border and through FDI). For services imports we see significant negative effects from higher trade and investment barriers - due to foreign ownership regulations - and from state controls; cross-border imports also receive a positive cross-price effect from inward oriented regulations, but here we do not find a significant direct price effect. For trade through foreign establishment (proxied by FDI) we find direct negative price effect from all aspects of regulation with the exception of tariffs; cross-price effects (working through corss-border trade) are significant only when looking specifically at inward oriented regulations (here arising from barriers to entrepreneurship) and trade and investment barriers – here stemming from regulatory burdens and restrictions on foreign ownership. For all aspects of regulation we find evidence for complementarity between FDI and services imports. Foreign ownership barriers stand out as the only category with a reciprocal relationship where both, direct price and indirect cross-price effects significantly affect trade through both modes. So, in a nutshell, in the short-run there is evidence of a significant complementarity between cross-border trade and commercial presence in aggregate services, with imports being slightly more sensitive to changes in outward oriented regulations and FDI reacting more swiftly to inward oriented regulatory measures.

Since total services comprise a very heterogeneous collection of highly different activities, it is interesting to analyse the relationship between individual modes of delivery and their reaction on regulatory changes for each service sector separately. For this we replicated the same estimation for each service activity separately. The price and cross-prices elasticities are summarized in Tables 2A and 2B. The evidence is more disperse with less instances of evidence for complementarity than for total services. Looking at the estimations for cross-

border trade, we can highlight one service sectors with evident complementary effects which stands out because most of regulations show a significant direct and complementary effect : communication services show a strong evidence of complementarity in their response to all regulatory changes, except the regulatory obstacles to trade and investment. We also find some evidence for significant effects of regulatory barriers for other business and financial services. In the latter case – like for transportation services - we find an unexpected positive direct effect from higher tariffs on trade value. This may be explained by a statistical peculiarity in the case of transportation services, which are often constructed from merchandise trade flow statistics. Higher tariff might increase the costs of shipping goods, which may falsely be counted as being part of the transportation service. For financial services, we are however puzzled by this. also occurs for transport services. Table 2B shows a weaker evidence for FDI, with only some direct price effects for communication, construction and financial services; and transportation services show again the unexpected positive direct effect from tariffs.

To sum up, there is a robust complementary effect between commercial presence and cross-border trade in services, which is not always captured by the traditional, uncontrolled gravity analysis. The composite demand approach allows us to capture this effect through the cross-price effect when changes in product market regulations (being an indication of trade barriers) which affect both FDI and cross-border trade are taking into account. From this perspective the complementarity is clearly reciprocal between the two modes of supply, in particular when obstacles to foreign ownership are considered. Looking at individual service sectors, we find again a complementary relationship when the service activity shows a significant reaction on changes in the regulatory environment. The sensitivity towards such changes differs however between service sectors, with some of them, such as communications services, responding to all facets of regulation, some others being responsive to certain aspects of regulation - financial and other business services – while the rest – construction and communication – hardly show any reaction. At the detailed sector level the evidence for complementary effects arising from FDI towards cross-border trade is generally stronger than for the opposite direction.

## 4. Complementarity over time: trade through FDI

Having established complementarity between FDI and cross-border imports in the short-run, it is relevant to analyse how this relationship evolves over time. There is an evolving literature on long-run effects and the causal relationship between international investment and trade (see Barrell and te Velde 2002, Türkcan 2006, Pramadhani et al 2007, Pacheco-López 2005 or Pain and van Welsum 2004). In this section we formulate a simple partial adjustment model as used by Pesaran and Smith (1995) and Pesaran et al. (1999) and apply it to trade in services like in Pain and van Welsum (2004), who are suing the traditional gravity approach. For our sample of 10 years we estimate the long-run coefficients which will give evidence of complementarity or substitution in the long run between different modes. The model starts with the following dynamic relationship:

$$\log (Y_{it}) = \alpha_i + \beta_i \log(X_{it}) + \lambda_i \log(Y_{it-1}) + \tau_{it} \qquad \tau_{it} \sim IN(0,\sigma_i^2) \qquad (10)$$

where $Y_{it}$ is cross-border trade (or the commercial presence respectively), $i=1\ldots N$ is the country and $t=1\ldots10$ are years; $X_{it}$ denotes the alternative mode of trade. we want to test the existence of a long-run relationship between the two modes. In the case of a positive relationship we can consider this as an indication of complementarity, and the opposite would be a sign of substitution. The associated long-run coefficients can be derived as $\theta_i=\beta_i/(1-\lambda_i)$. The country-specific intercept picks up all omitted factors that vary across countries. A convenient re-parametrisation of (10) is:

$$\Delta\log (Y_{it}) = \alpha_i - (1-\lambda_i)[\log(Y_{it-1}) - \beta_i/(1-\lambda_i) * \log(X_{it}) ] + u_{it} \qquad (11)$$

$$= \alpha_i - (\gamma_i)[\log(Y_{it-1}) - \theta_i \log(X_{it}) ] + u_{it} \qquad (12)$$

This non-linear equation allows to estimate the long-run parameters of interest $\theta$ and $\gamma$. In a first simple experiment we assume that there are negligible differences between countries in the long-run price and cross-prices elasticities, easier to be compared to the short-run, within estimations[4]. The model to be estimated then becomes:

[4] It is well known that the within coefficients show a downward bias when there is heterogeneity between countries or endogeneity in the model. As a first point to note, the composite demand approach is likely to minimize the endogeneity problem compared to the traditional one. Secondly, in our sample, only Asian

$$\Delta \log (Y_{it}) = \alpha_i - (\gamma)[\log(Y_{it-1}) - \theta \log(X_{it}) ] + \omega_{it} \quad (13)$$

Equation (13) is estimated in Table 3, for services imports and FDI. The long-run composite demand estimations are accompanied by the traditional approach in the long-run and the results from a short-run estimation based on exactly the same sample in order to give an unbiased comparison of the results.[5].

The most striking result is that the direct effect and the complementarity from FDI towards services imports are reinforced in the long-run, while the evidence becomes weaker in the opposite direction. Also, the traditional estimation yield a significant complementarity from FDI towards imports, but again no evidence from imports to investment. A detailed analysis by components of regulation indicates that services imports are affected over time not only by changes in foreign ownership barriers but also by other trade and investment barriers – such as regulatory barriers and tariffs – and by inward oriented regulations – both barriers to entrepreneurship and state control. Commercial presence shows in exchange that, while inward oriented regulations have a significant impact in the short and long-run, the outward oriented trade and investment barriers have only a short-run effect, but this is lost in the long-run.

The stronger impact and complementarity from commercial presence towards cross border trade is evident also for individual services. Tables 4A and 4B summarize the price and cross-price effects by individual service sectors. Table 4A presents the short-run results, and Table 4B corresponds to the long-run elasticities. The estimates are always based on the long-run sample in order to control for any potential sample bias. Communication services are sensitive

countries show a different behaviour in the evolution of services trade. Moreover, Pesaran et al. (1999) also argue that short-time coefficients are more likely to vary across countries than the long-run parameters. Although we are aware of the simplification of assuming homogeneous coefficients, we can stress that also we would like to keep the same assumptions than in the short-run analysis, where we assumed common elasticities and country fixed effect, and for the initial experiment the main aim is to detect significant relationships. A previous analysis controlling for heterogeneity by including dummies for five different geographic regions revels the downward bias of the within estimation but our elasticities keep their significance regardless whether we control for heterogeneity or not.

[5] It can be noticed also that the short-run results are practically the same for this long-run sample and for the entire sample in the previous section. Only the index for state control is not significant for cross-border imports of services in the long-run sample. The differences in sample size arise from the calculation of growth rates for the long-run approach.

to all dimensions of regulation, except regulatory barriers to trade and investment. The same result was observed in the short-run. Other business services show a very significant direct price and complementary effect in all regulatory dimensions in the long run. Financial services, which show complementary effects in the short-run only when regulatory barriers to trade and investment change, are sensitive to all kind of regulatory changes but tariffs in the long-run. Construction services never show an effect from any aspect of product market regulation, and transportation services reveal a significant price effect from all inward oriented regulations together with foreign ownership barriers but they never receive a significant indirect effect derived from a complementary relationship with FDI. Furthermore, the counterintuitive positive effects from tariffs in financial and transport services observed in the short-run seem to be adjusted over time, showing the expected negative effect in the long run. It also appears that trade and investment barriers in general have the largest impact in all services. Looking into the subdomains of this index, this trade inhibiting effect arises primarily from regulatory barriers in business services and financial services, and from controls on foreign ownership and high tariffs in communication services (see Table 4).

To summarize, we have found a complementary relationship between cross-border imports and FDI triggered by their reaction to changes in outward oriented regulatory measures in the short-run. Over time, our analysis reveals a more stable complementary relationship in reaction to changes in almost all aspects of regulation, especially so for communication, financial and business services. Some additional considerations should be studied further in this context, such as the impact of country heterogeneity on the elasticities which we have obtained and the efficiency of the estimation methods used. Our analysis as it stands shows a significant and robust complementary relationship between the two main modes of services trade (cross-border and through foreign affiliates) in all producer related services but construction and transport.

## Conclusions

This paper focuses on the type of relationship between different modes of services trade, i.e. whether the most important modes of delivery (cross-border trade and commercial presence) act as complements or substitutes. While the empirical literature uses a traditional gravity

approach when testing for this relationship - with often inconclusive evidence - this paper offers a new theoretical model and more robust evidence for a complementary relationship. Our composite demand approach which combines FDI and services imports as different ways to serve domestic demand offers a testable hypothesis of complementarity versus substitution, which we can link directly measures of existing regulations and other barriers to trade in services. This composite demand approach predicts a complementary growth between FDI inflows and cross-border imports when the substitution elasticity is higher than the demand elasticity, and a substitutive effect in the opposite case.

Both the traditional and composite demand approaches are tested for the sample of OECD countries over the decade from 1994 to 2004. For the aggregate of total services, the traditional approach yields a complementary effect from FDI towards services imports, which is not significant when looking at the effects of cross-border imports on FDI. The composite demand approach reveals a reciprocal complementary relationship in reaction to changes in domestic regulation (serving as an indicator of implicit and explicit barriers to trade in services). Moreover, we can distinguish which types of regulations have a larger impact. While cross-border service imports are more sensitive to outward oriented barriers, trade through local presence (proxied for by FDI stocks) is sensitive both to inward oriented regulations and trade and investment barriers and here in particular to changes in barriers restricting foreign ownership. Not all producer service sectors react alike. We can identify stronger and more stable effects to changes in regulatory regimes in communication services, where imports receive a clear positive impact from changes in FDI regulations.

The short-run evidence is corroborated in the long-run, showing a reinforcement of the complementary effect that imports receive from FDI when regulations change. The effect from cross-border trade on FDI is weaker. Total service imports grow directly in response to lowered regulatory obstacles as measured through any aspect of regulation, and they grow also though the FDI channel, revealing their complementarity. On the other hand, FDI in services grows only when inward oriented domestic regulations are removed, with no impact from outward oriented barriers in the long-run. A detailed analysis by individual service sectors indicates again that cross-border trade in insurance and business services grow in response to any individual regulations being reduced, and communications and financial services are

sensitive to almost all barriers. Only transport and construction services imports show no complementarity at all.

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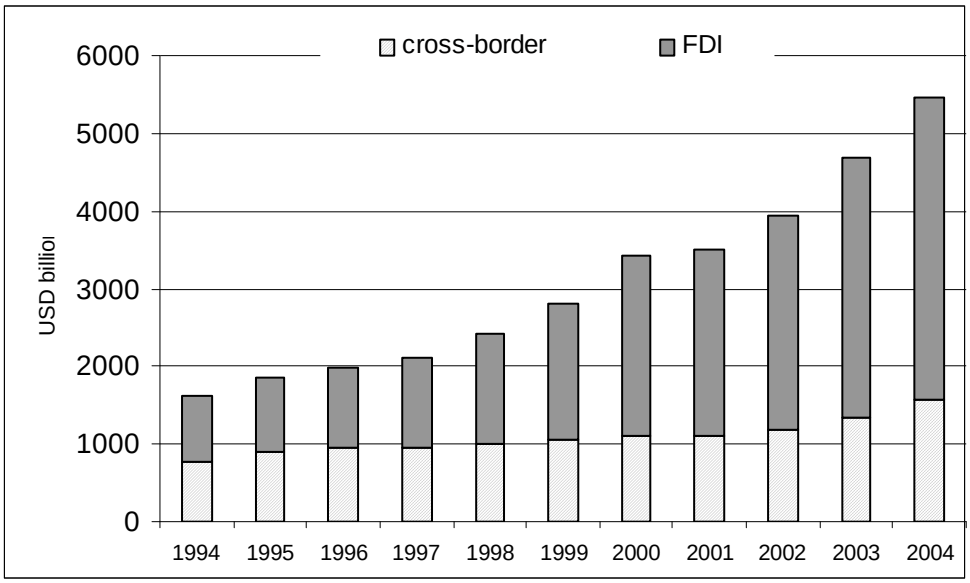
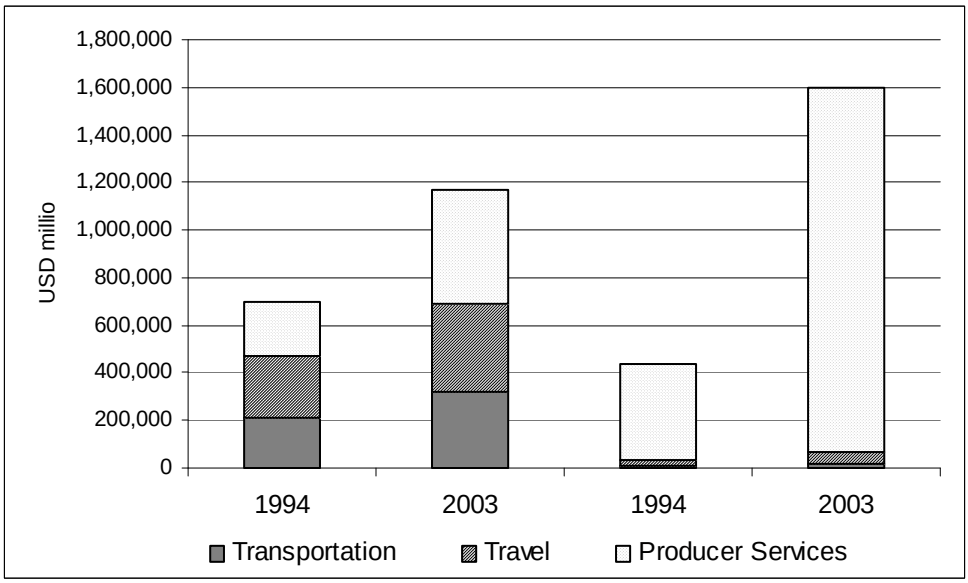
## Tables and Figures

**Figure 1:** Growth of Total Trade in Services, OECD members.



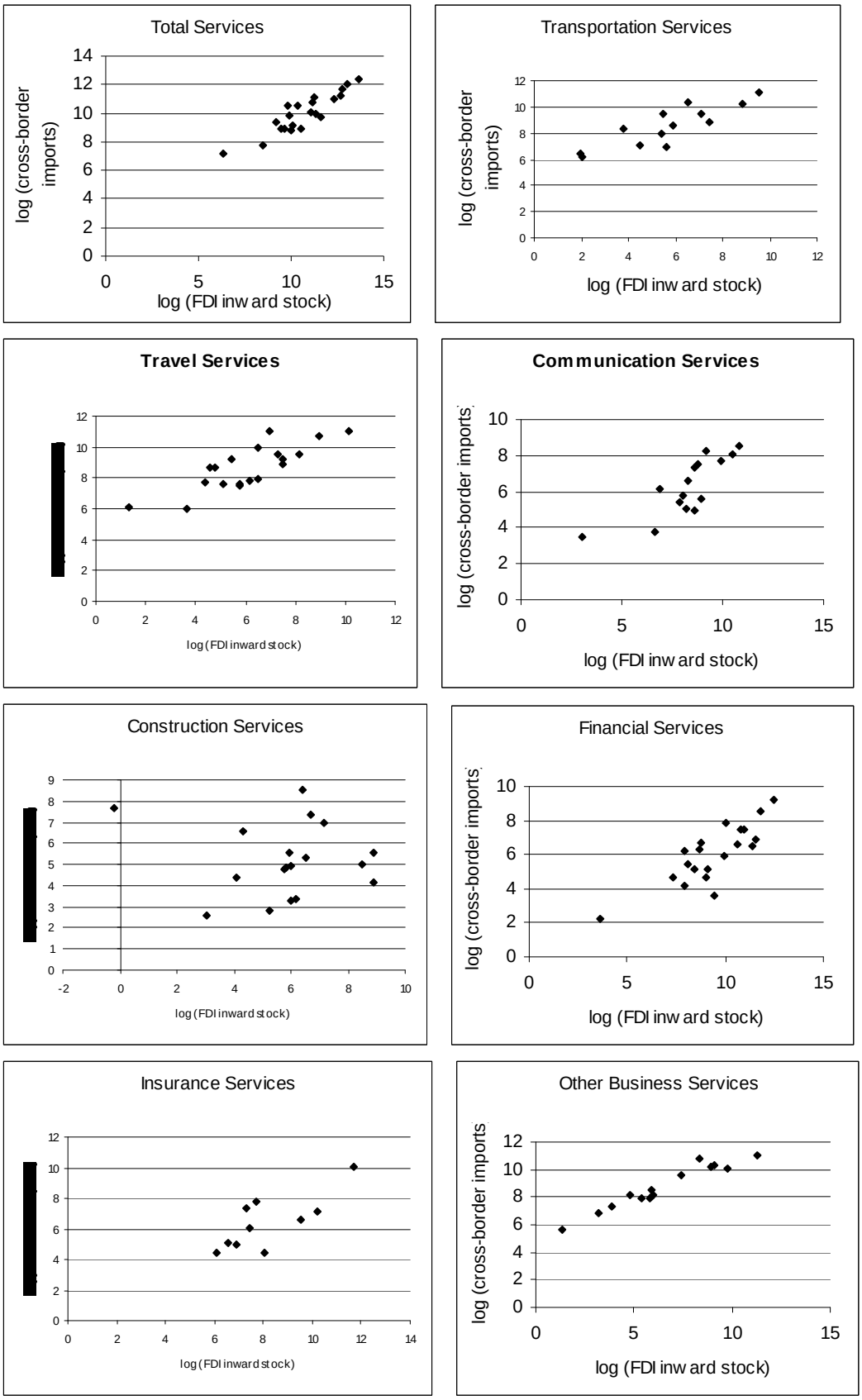

*Source:* IMF BOP Statistics.

**Figure 2:** Sectoral Pattern of Trade in Services.




*Source:* IMF BOP Statistics, IMF IFS Statistics.

**Figure 3:** Correlation between alternative modes by sector, average 2001-2004.




*Source:* Own calculations based on IMF and OECD data.

**TABLE 1A. GRAVITY EQUATION. FDI VERSUS SERVICES IMPORTS COMPLEMENTARITY. TOTAL SERVICES IMPORTS.**

| | | TRADITIONAL APPROACH | COMPOSITE DEMAND APPROACH PRICE AND CROSS-PRICE ELASTICITIES | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | **0.7125** | **1.0994** | **1.2540** | **1.0219** | **1.0385** | **1.1491** | **0.8871** | **1.1269** | **1.1666** |
| | | *4.03* | *8.88* | *8.55* | *8.24* | *8.57* | *9.17* | *7.66* | *9.23* | *8.60* |
| log (pop) | | -0.5907 | **-0.6562** | **-0.8323** | -0.5158 | **-0.7151** | **-0.6505** | -0.5996 | **-0.8166** | **-0.8685** |
| | | *-1.20* | *-1.66* | *-2.03* | *-1.28* | *-1.75* | *-1.68* | *-1.54* | *-1.87* | *-2.29* |
| log (dist) | | **-2.2697** | **-1.2950** | **-1.2980** | **-1.4686** | **-1.6083** | **-1.1868** | **-1.9312** | **-1.8195** | **-1.5947** |
| | | *-6.36* | *-3.25* | *-2.98* | *-3.62* | *-3.75* | *-3.00* | *-4.85* | *-4.00* | *-3.66* |
| log FDI(-1) | | **0.1075** | | | | | | | | |
| | | *3.11* | | | | | | | | |
| product market regulation | price effect | | **-0.2533** | | | | | | | |
| | | | *-2.18* | | | | | | | |
| | cross-price effect | | **0.0369** | | | | | | | |
| | | | *2.98* | | | | | | | |
| entrepreneur barriers | price effect | | | -0.0651 | | | | | | |
| | | | | *-0.40* | | | | | | |
| | cross-price effect | | | 0.0224 | | | | | | |
| | | | | *1.55* | | | | | | |
| state controls | price effect | | | | **-0.1637** | | | | | |
| | | | | | *-1.87* | | | | | |
| | cross-price effect | | | | **0.0209** | | | | | |
| | | | | | *2.08* | | | | | |
| trade & investment barriers | price effect | | | | | **-0.3803** | | | | |
| | | | | | | *-2.90* | | | | |
| | cross-price effect | | | | | **0.0451** | | | | |
| | | | | | | *3.13* | | | | |
| inward oriented regulations | price effect | | | | | | -0.1626 | | | |
| | | | | | | | *-1.47* | | | |
| | cross-price effect | | | | | | **0.0289** | | | |
| | | | | | | | *2.65* | | | |
| foreign ownership barriers | price effect | | | | | | | **-0.1999** | | |
| | | | | | | | | *-3.12* | | |
| | cross-price effect | | | | | | | **0.0158** | | |
| | | | | | | | | *2.18* | | |
| regulatory barriers | price effect | | | | | | | | -0.1223 | |
| | | | | | | | | | *-1.01* | |
| | cross-price effect | | | | | | | | 0.0150 | |
| | | | | | | | | | *1.22* | |
| tariffs | price effect | | | | | | | | | -0.0720 |
| | | | | | | | | | | *-0.36* |
| | cross-price effect | | | | | | | | | 0.0113 |
| | | | | | | | | | | *0.64* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes | yes |
| groups | | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| adj $R^2$ | | 0.76 | 0.69 | 0.71 | 0.68 | 0.68 | 0.69 | 0.69 | 0.67 | -0.67 |
| obs | | 190 | 198 | 198 | 198 | 198 | 198 | 198 | 198 | 198 |

Note: figures in bold mean significant. t-statistic in italics.

**TABLE 1B. GRAVITY EQUATION. FDI VERSUS SERVICES IMPORTS COMPLEMENTARITY. TOTAL SERVICES FDI.**

| | | TRADITIONAL APPROACH | COMPOSITE DEMAND APPROACH PRICE AND CROSS-PRICE ELASTICITIES | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **FDI** | | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | **3.9123** | **2.8492** | **2.9294** | **2.9169** | **3.1872** | **2.7827** | **3.4689** | **3.4206** | **3.4949** |
| | | *12.48* | *9.79* | *9.59* | *9.83* | *13.17* | *8.64* | *13.45* | *17.99* | *12.11* |
| log (pop) | | **-2.8099** | **-1.7855** | **-2.1818** | **-2.1557** | **-1.8965** | **-2.0190** | **-2.3035** | **-2.5517** | **-2.3503** |
| | | *-2.70* | *-2.08* | *-2.27* | *-2.36* | *-2.12* | *-2.31* | *-2.17* | *-2.60* | *-2.51* |
| log (dist) | | **-2.5450** | **-3.7913** | **-3.0690** | **-3.9796** | **-3.4523** | **-3.7149** | **-2.9180** | **-3.1673** | **-3.8191** |
| | | *-2.41* | *-3.51* | *-2.95* | *-3.64* | *-3.20* | *-3.54* | *-2.72* | *-3.08* | *-3.68* |
| log IMPORTS (-1) | | -0.0258 | | | | | | | | |
| | | *-0.11* | | | | | | | | |
| product market regulation | price effect | | **-1.5087** | | | | | | | |
| | | | *-2.23* | | | | | | | |
| | cross-price effect | | **0.1194** | | | | | | | |
| | | | *1.84* | | | | | | | |
| entrepreneur barriers | price effect | | | **-2.5955** | | | | | | |
| | | | | *-2.73* | | | | | | |
| | cross-price effect | | | **0.2298** | | | | | | |
| | | | | *2.64* | | | | | | |
| state controls | price effect | | | | **-0.9144** | | | | | |
| | | | | | *-1.76* | | | | | |
| | cross-price effect | | | | 0.0686 | | | | | |
| | | | | | *1.36* | | | | | |
| trade & investment barriers | price effect | | | | | **-1.1096** | | | | |
| | | | | | | *-1.76* | | | | |
| | cross-price effect | | | | | 0.0890 | | | | |
| | | | | | | *1.32* | | | | |
| inward oriented regulations | price effect | | | | | | **-1.6811** | | | |
| | | | | | | | *-2.21* | | | |
| | cross-price effect | | | | | | **0.1373** | | | |
| | | | | | | | *1.96* | | | |
| foreign ownership barriers | price effect | | | | | | | **-0.6778** | | |
| | | | | | | | | *-2.10* | | |
| | cross-price effect | | | | | | | **0.0684** | | |
| | | | | | | | | *2.08* | | |
| regulatory barriers | price effect | | | | | | | | **-3.1219** | |
| | | | | | | | | | *-3.75* | |
| | cross-price effect | | | | | | | | **0.3293** | |
| | | | | | | | | | *3.64* | |
| tariffs | price effect | | | | | | | | | 0.2464 |
| | | | | | | | | | | *0.50* |
| | cross-price effect | | | | | | | | | -0.0394 |
| | | | | | | | | | | *-0.88* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes | yes |
| groups | | 23 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| adj $R^2$ | | 0.77 | 0.81 | 0.81 | 0.82 | 0.81 | 0.82 | 0.80 | 0.83 | 0.80 |
| obs | | 190 | 198 | 198 | 198 | 198 | 198 | 198 | 198 | 198 |

Note: figures in bold mean significant. t-statistics in Italics.

**TABLE 2A: SUMMARY OF PRICE AND CROSS-PRICE EFFECTS OF REGULATIONS ON CROSS-BORDER SERVICES, BY SERVICE**

| **SERVICES IMPORTS** | | 1. Business services | 2. Communication services | 3. Construction services | 4. Financial services | 5 Transport services |
|---|---|---|---|---|---|---|
| gravity controls | | yes | yes | yes | yes | yes |
| product market regulation | price effect | -0.0622 | **-0.6487** | 0.1546 | 0.2563 | -0.0048 |
| | | *-0.41* | *-2.60* | *0.48* | *0.72* | *-0.05* |
| | cross-price effect | 0.0191 | **0.1053** | 0.0473 | 0.0060 | -0.0248 |
| | | *1.16* | *4.04* | *0.73* | *0.14* | *-1.49* |
| entrepreneur barriers | price effect | **0.2610** | **-0.8011** | -0.4090 | **1.2758** | 0.1889 |
| | | *1.80* | *-4.20* | *-0.87* | *2.44* | *0.94* |
| | cross-price effect | -0.0075 | **0.0885** | 0.0336 | -0.0469 | -0.0278 |
| | | *-0.44* | *3.61* | *0.53* | *-1.00* | *-1.55* |
| state controls | price effect | -0.0618 | **-0.4225** | 0.1545 | 0.1750 | -0.0556 |
| | | *-0.59* | *-2.23* | *0.64* | *0.77* | *-0.73* |
| | cross-price effect | 0.0130 | **0.0606** | 0.0346 | -0.0024 | -0.0132 |
| | | *1.12* | *3.20* | *0.75* | *-0.07* | *-1.26* |
| trade & investment barriers | price effect | **-0.1772** | **-0.9984** | 0.0169 | -0.3391 | 0.0922 |
| | | *-1.75* | *-3.88* | *0.04* | *-0.80* | *1.08* |
| | cross-price effect | **0.0340** | **0.1636** | 0.0640 | 0.0207 | -0.0346 |
| | | *1.92* | *5.13* | *0.72* | *0.39* | *-1.54* |
| inward oriented regulations | price effect | 0.0390 | **-0.5740** | 0.1112 | 0.5310 | -0.0175 |
| | | *0.28* | *-2.64* | *0.32* | *1.64* | *-0.14* |
| | cross-price effect | 0.0111 | **0.0757** | 0.0387 | -0.0011 | -0.0185 |
| | | *0.73* | *3.40* | *0.71* | *-0.03* | *-1.35* |
| foreign ownership barriers | price effect | -0.0838 | **-0.4679** | 0.0513 | -0.2168 | -0.0623 |
| | | *-1.46* | *-4.49* | *0.28* | *-0.96* | *-1.15* |
| | cross-price effect | 0.0104 | **0.0911** | 0.0183 | 0.0103 | -0.0162 |
| | | *1.33* | *5.94* | *0.46* | *0.37* | *-1.56* |
| regulatory barriers | price effect | **-0.2724** | -0.1407 | -0.3038 | **-0.8247** | -0.2008 |
| | | *-3.02* | *-0.36* | *-0.43* | *-1.99* | *-1.39* |
| | cross-price effect | **0.0653** | 0.0355 | 0.0818 | **0.0769** | **0.0584** |
| | | *3.37* | *0.66* | *0.58* | *1.68* | *1.71* |
| tariffs | price effect | 0.1308 | **-0.4452** | 0.0472 | **1.1370** | **0.2968** |
| | | *1.42* | *-2.12* | *0.10* | *2.69* | *2.46* |
| | cross-price effect | -0.0088 | **0.0481** | 0.0212 | **-0.0959** | **-0.0355** |
| | | *-0.69* | *1.97* | *0.30* | *-2.06* | *-2.14* |
| obs | | 107 | 115 | 143 | 178 | 101 |

Note: Each cell corresponds to a separate gravity regression. Detailed estimations in Appendix 1A. Figures in bold mean significant at the 10% level or more; t-statistics in italics.

**TABLE 2B: SUMMARY OF PRICE AND CROSS-PRICE EFFECTS OF REGULATIONS ON FDI, BY SERVICE**

| **FDI** | | 1. Business services | 2. Communication services | 3. Construction services | 4. Financial services | 5 Transport services |
|---|---|---|---|---|---|---|
| gravity controls | | yes | yes | yes | yes | yes |
| product market regulation | price effect | 0.4660 | 0.4028 | **-0.8930** | **-0.7023** | 0.0376 |
| | | *0.28* | *0.63* | *-2.05* | *-1.80* | *0.02* |
| | cross-price effect | -0.0922 | -0.0951 | 0.0476 | 0.0349 | -0.0990 |
| | | *-0.52* | *-0.89* | *0.85* | *0.79* | *-0.51* |
| entrepreneur barriers | price effect | 2.1196 | **-14.3930** | -0.1692 | -0.2798 | 2.3042 |
| | | *0.80* | *-2.52* | *-0.33* | *-0.64* | *0.98* |
| | cross-price effect | -0.2166 | 0.0627 | 0.0011 | 0.0272 | -0.3043 |
| | | *-0.80* | *0.68* | *0.02* | *0.59* | *-1.22* |
| state controls | price effect | 0.5465 | 0.2097 | -0.4790 | **-0.5553** | -0.2178 |
| | | *0.45* | *0.40* | *-1.62* | *-2.01* | *-0.18* |
| | cross-price effect | -0.0666 | -0.0624 | 0.0305 | 0.0176 | -0.0286 |
| | | *-0.52* | *-0.76* | *0.82* | *0.58* | *-0.21* |
| trade & investment barriers | price effect | 1.1757 | 11.6320 | **-0.8438** | -0.6011 | 0.0253 |
| | | *0.73* | *1.62* | *-2.01* | *-1.43* | *0.02* |
| | cross-price effect | -0.2178 | -0.1731 | 0.0588 | 0.0459 | -0.0644 |
| | | *-1.07* | *-1.27* | *0.83* | *0.70* | *-0.27* |
| inward oriented regulations | price effect | 0.7832 | -0.6636 | -0.6827 | **-0.6446** | 0.2045 |
| | | *0.44* | *-1.08* | *-1.63* | *-1.68* | *0.12* |
| | cross-price effect | -0.0895 | -0.0294 | 0.0339 | 0.0321 | -0.1151 |
| | | *-0.50* | *-0.34* | *0.70* | *0.84* | *-0.63* |
| foreign ownership barriers | price effect | 0.6240 | **0.7570** | -0.3057 | -0.2615 | -0.1422 |
| | | *0.79* | *1.72* | *-1.63* | *-1.04* | *-0.16* |
| | cross-price effect | -0.1061 | -0.0710 | 0.0290 | 0.0197 | -0.0095 |
| | | *-1.12* | *-1.02* | *0.81* | *0.58* | *-0.08* |
| regulatory barriers | price effect | 1.5535 | -0.8522 | -0.9596 | -0.9030 | 0.2521 |
| | | *0.61* | *-1.05* | *-1.48* | *-1.08* | *0.13* |
| | cross-price effect | -0.2411 | 0.2456 | 0.0890 | 0.1287 | -0.0944 |
| | | *-0.71* | *1.40* | *0.75* | *0.91* | *-0.35* |
| tariffs | price effect | -0.0236 | -0.1966 | 0.2329 | -0.3838 | **3.6316** |
| | | *-0.01* | *-0.32* | *0.55* | *-1.19* | *2.68* |
| | cross-price effect | -0.0167 | -0.0872 | -0.0136 | 0.0208 | **-0.4051** |
| | | *-0.09* | *-0.92* | *-0.26* | *0.54* | *-2.43* |
| obs | | 107 | 115 | 143 | 178 | 101 |

Note: Each cell corresponds to a separate gravity regression. Detailed estimations in Appendix 1B. Figures in bold mean significant at the 10% level or more; t-statistics in italics.

**TABLE 3: LONG RUN VERSUS SHORT RUN ESTIMATION . TOTAL SERVICES IMPORTS AND FDI.**

| | | SERVICES IMPORTS | | | FDI | | |
|---|---|---|---|---|---|---|---|
| | | LONG RUN TRADITIONAL APPROACH | COMPOSITE DEMAND APPROACH | SHORT RUN [1] COMPOSITE DEMAND APPROACH | LONG RUN TRADITIONAL APPROACH | COMPOSITE DEMAND APPROACH | SHORT RUN [1] COMPOSITE DEMAND APPROACH |
| country dummies | | yes | yes | yes | yes | yes | yes |
| gravity controls | | | | yes | | | yes |
| equilibrium correction (δ) | | **-0.0653** | yes | | -0.0033 | yes | |
| | | *-3.56* | | | *-0.09* | | |
| log FDI (-1) | | **1.2698** | | | | | |
| | | *7.33* | | | | | |
| log IMPORTS (-1) | | | | | 17.1519 | | |
| | | | | | *0.10* | | |
| product market regulation | price effect | | **-3.0970** | **-0.2155** | | **-19.6094** | **-1.7131** |
| | | | *-5.09* | *-1.80* | | *-1.77* | *-2.75* |
| | cross-price effect | | **0.3128** | **0.0309** | | 1.6663 | **0.1450** |
| | | | *4.29* | *2.38* | | *1.51* | *2.42* |
| entrepreneur barriers | price effect | | **-3.4875** | -0.0212 | | **-26.9023** | **-3.1044** |
| | | | *-5.60* | *-0.12* | | *-4.38* | *-3.75* |
| | cross-price effect | | **0.3248** | 0.0163 | | **2.3448** | **0.2777** |
| | | | *5.07* | *1.03* | | *4.04* | *3.66* |
| state controls | price effect | | **-2.1423** | -0.1377 | | **-12.8625** | **-1.1844** |
| | | | *-4.93* | *-1.51* | | *-2.09* | *-2.55* |
| | cross-price effect | | **0.2265** | 0.0172 | | **1.0661** | **0.0992** |
| | | | *4.13* | *1.60* | | *1.72* | *2.21* |
| trade & investment barriers | price effect | | **-4.0755** | **-0.3294** | | -2,500.0000 | **-1.1383** |
| | | | *-4.11* | *-2.53* | | *-0.01* | *-1.73* |
| | cross-price effect | | **0.4228** | **0.0387** | | 276.4362 | 0.0991 |
| | | | *3.65* | *2.68* | | *0.01* | *1.40* |
| inward oriented regulations | price effect | | **-2.6390** | -0.1302 | | **-17.4365** | **-2.0770** |
| | | | *-5.36* | *-1.11* | | *-3.16* | *-3.18* |
| | cross-price effect | | **0.2671** | **0.0237** | | **1.4716** | **0.1773** |
| | | | *4.57* | *2.04* | | *2.71* | *2.99* |
| foreign ownership barriers | price effect | | **-1.7170** | **-0.1867** | | -22.9961 | **-0.7150** |
| | | | *-4.31* | *-2.86* | | *-0.59* | *-2.10* |
| | cross-price effect | | **0.1667** | **0.0133** | | 2.2404 | **0.0739** |
| | | | *3.43* | *1.80* | | *0.56* | *2.11* |
| regulatory barriers | price effect | | **-2.4710** | -0.0921 | | -45.4919 | **-2.6277** |
| | | | *-1.67* | *-0.78* | | *-0.53* | *-2.81* |
| | cross-price effect | | 0.2247 | 0.0117 | | 4.9169 | **0.2767** |
| | | | *1.49* | *0.98* | | *0.52* | *2.74* |
| tariffs | price effect | | **-4.1267** | -0.0177 | | -47.8577 | 0.1621 |
| | | | *-4.19* | *-0.08* | | *-0.78* | *0.31* |
| | cross-price effect | | **0.4016** | 0.0062 | | 4.3394 | -0.0301 |
| | | | *4.04* | *0.33* | | *0.76* | *-0.64* |
| Observations | | 190 | 180 | 180 | 173 | 172 | 172 |

(1) Short run estimation for the composite demand approach with the long run sample, to control for potential sample bias.
Note: Figures in bold mean significant coefficients at 10%-level or more; t-statistics in italics.

**TABLE 4A: SUMMARY OF SHORT RUN EFFECTS OF REGULATION ON CROSS-BORDER SERVICES. BY SERVICE. LONG RUN SAMPLE (1).**

| **SERVICES IMPORTS** | | 1. Business services | 2. Communication services | 3. Construction services | 4. Financial services | 5. Transport services |
|---|---|---|---|---|---|---|
| gravity controls | | yes | yes | yes | yes | yes |
| country dummies | | yes | yes | yes | yes | yes |
| product market regulation | price effect | -0.0949 | **-0.7121** | 0.1747 | -0.0264 | -0.0047 |
| | | *-0.59* | *-2.63* | *0.55* | *-0.08* | *-0.06* |
| | cross-price effect | 0.0187 | **0.1169** | 0.0555 | 0.0372 | -0.0116 |
| | | *1.00* | *4.01* | *0.82* | *0.90* | *-0.68* |
| entrepreneur barriers | price effect | **0.2663** | **-0.8406** | -0.3694 | **0.8619** | 0.1098 |
| | | *1.69* | *-3.79* | *-0.80* | *1.66* | *0.59* |
| | cross-price effect | -0.0109 | **0.0915** | 0.0353 | -0.0142 | -0.0155 |
| | | *-0.55* | *3.25* | *0.54* | *-0.31* | *-0.86* |
| state controls | price effect | -0.0811 | **-0.4675** | 0.1568 | -0.0022 | -0.0325 |
| | | *-0.72* | *-2.29* | *0.65* | *-0.01* | *-0.52* |
| | cross-price effect | 0.0123 | **0.0712** | 0.0427 | 0.0234 | -0.0040 |
| | | *0.90* | *3.49* | *0.92* | *0.73* | *-0.37* |
| trade & investment barriers | price effect | **-0.1963** | **-1.1082** | -0.0071 | -0.6128 | 0.0507 |
| | | *-1.86* | *-4.14* | *-0.02* | *-1.50* | *0.62* |
| | cross-price effect | **0.0338** | **0.1786** | 0.0703 | 0.0579 | -0.0186 |
| | | *1.67* | *5.25* | *0.75* | *1.11* | *-0.81* |
| inward oriented regulations | price effect | 0.0202 | **-0.6085** | 0.1268 | 0.2567 | 0.0117 |
| | | *0.13* | *-2.55* | *0.38* | *0.87* | *0.11* |
| | cross-price effect | 0.0107 | **0.0843** | 0.0438 | 0.0255 | -0.0078 |
| | | *0.60* | *3.39* | *0.78* | *0.75* | *-0.56* |
| foreign ownership barriers | price effect | -0.0986 | **-0.5583** | 0.0619 | **-0.3613** | -0.0651 |
| | | *-1.53* | *-4.85* | *0.31* | *-1.71* | *-1.46* |
| | cross-price effect | 0.0094 | **0.1051** | 0.0225 | 0.0326 | -0.0105 |
| | | *1.03* | *5.87* | *0.55* | *1.33* | *-1.05* |
| regulatory barriers | price effect | **-0.2786** | -0.2039 | -0.1904 | **-1.1752** | -0.0856 |
| | | *-2.66* | *-0.44* | *-0.24* | *-2.73* | *-1.02* |
| | cross-price effect | **0.0643** | 0.0446 | 0.0572 | **0.1202** | 0.0280 |
| | | *2.74* | *0.71* | *0.37* | *2.33* | *1.41* |
| tariffs | price effect | 0.1189 | **-0.4756** | -0.0518 | **0.9513** | **0.2054** |
| | | *1.26* | *-2.10* | *-0.11* | *2.44* | *1.76* |
| | cross-price effect | -0.0060 | **0.0516** | 0.0299 | **-0.0763** | -0.0211 |
| | | *-0.46* | *2.00* | *0.41* | *-1.77* | *-1.24* |
| obs | | 99 | 104 | 131 | 160 | 89 |

Note: Each cell corresponds to a gravity regression. Detailed estimations in Appendix 3A. (1) Short run estimation for the composite demand approach with the long run sample, to control sample bias.
Figures in bold mean significant. t-statistics in italics.

**TABLE 4B: SUMMARY OF PRICE AND CROSS-PRICE EFFECTS OF REGULATIONS ON CROSS-BORDER SERVICES, BY SERVICE. LONG RUN.**

| **SERVICES IMPORTS** | | 1. Business services | 2. Communication services | 3. Construction services | 4. Financial services | 5. Transport services |
|---|---|---|---|---|---|---|
| country dummies | | yes | yes | yes | yes | yes |
| product market regulation | price effect | **-1.4364** | **-2.0730** | 2200.0000 | **-2.1615** | **-0.8271** |
| | | *-4.00* | *-4.91* | *0.09* | *-2.13* | *-2.51* |
| | cross-price effect | **0.2147** | **0.2721** | 3000.0000 | **0.2400** | 0.0570 |
| | | *2.77* | *3.70* | *.* | *1.81* | *1.11* |
| entrepreneur barriers | price effect | **-1.6331** | **-2.034** | 0.1267 | **-2.5525** | **-1.1346** |
| | | *-3.44* | *-4.15* | *0.15* | *-1.94* | *-2.13* |
| | cross-price effect | **0.2128** | **0.2598** | 0.0607 | **0.2607** | 0.0659 |
| | | *2.99* | *3.27* | *0.47* | *1.93* | *1.25* |
| state controls | price effect | **-0.9956** | **-1.3710** | 0.2734 | **-1.4280** | **-0.6884** |
| | | *-3.83* | *-4.23* | *0.57* | *-2.10* | *-2.77* |
| | cross-price effect | **0.1507** | **0.1821** | 0.0966 | **0.1676** | 0.0408 |
| | | *2.83* | *3.60* | *1.12* | *1.76* | *1.09* |
| trade & investment barriers | price effect | **-1.8715** | **-3.1522** | 0.2231 | **-3.1667** | **-0.6729** |
| | | *-3.72* | *-4.82* | *0.25* | *-2.38* | *-1.98* |
| | cross-price effect | **0.3657** | **0.4335** | 0.0826 | **0.3666** | 0.0912 |
| | | *2.69* | *4.25* | *0.47* | *1.99* | *1.28* |
| inward oriented regulations | price effect | **-1.2418** | **-1.6426** | 0.3473 | **-1.8564** | **-0.8824** |
| | | *-3.70* | *-3.99* | *0.57* | *-2.07* | *-2.42* |
| | cross-price effect | **0.1827** | **0.2186** | 0.1033 | **0.2024** | 0.0522 |
| | | *3.02* | *3.22* | *0.99* | *1.85* | *1.17* |
| foreign ownership barriers | price effect | **-0.9669** | **-1.4465** | 0.4238 | **-1.6724** | **-0.4964** |
| | | *-4.20* | *-3.95* | *0.95* | *-2.57* | *-3.24* |
| | cross-price effect | **0.1166** | **0.1984** | 0.0027 | **0.1904** | 0.0198 |
| | | *2.22* | *3.14* | *0.03* | *2.00* | *0.65* |
| regulatory barriers | price effect | **-2.1842** | -1.4691 | 1.8707 | **-4.5347** | -0.7106 |
| | | *-2.40* | *-0.76* | *1.12* | *-2.86* | *-1.09* |
| | cross-price effect | **0.5191** | 0.1651 | -0.3539 | **0.4973** | 0.1491 |
| | | *2.15* | *0.60* | *-1.05* | *2.58* | *0.89* |
| tariffs | price effect | **-1.8621** | **-1.9040** | -0.0360 | -0.7807 | -0.2766 |
| | | *-3.15* | *-3.82* | *-0.04* | *-0.56* | *-0.66* |
| | cross-price effect | **0.2734** | **0.2393** | 0.0795 | 0.1029 | 0.067 |
| | | *2.72* | *3.19* | *0.61* | *0.65* | *1.34* |
| obs | | 99 | 104 | 131 | 160 | 89 |

Note: Each cell corresponds to a gravity regression. Detailed estimations in Appendix 3B. Figures in bold mean significant coefficients at 10%-level or more; t-statistics in italics.

# APPENDIX

**APPENDIX 1A: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS.**

| | | BUSINESS SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 0.6818 | 1.2484 | 0.5985 | 0.5622 | 0.8714 | 0.6041 | 0.7150 | 1.1089 |
| | | *1.85* | *4.01* | *1.69* | *2.01* | *2.47* | *2.22* | *3.05* | *3.88* |
| log (pop) | | 5.7380 | 5.2785 | 5.8946 | 5.9834 | 5.5106 | 5.5054 | 5.0871 | 4.9187 |
| | | *4.08* | *3.83* | *4.21* | *4.36* | *4.02* | *4.01* | *3.43* | *3.39* |
| log (dist) | | -2.2684 | -1.9739 | -2.3642 | -2.3907 | -2.0758 | -2.5626 | -2.5852 | -2.1501 |
| | | *-3.32* | *-3.13* | *-3.33* | *-3.66* | *-3.06* | *-3.82* | *-4.05* | *-3.23* |
| product market regulation | price effect | -0.0622 | | | | | | | |
| | | *-0.41* | | | | | | | |
| | cross-price effect | 0.0191 | | | | | | | |
| | | *1.16* | | | | | | | |
| entrepreneur barriers | price effect | | 0.2610 | | | | | | |
| | | | *1.80* | | | | | | |
| | cross-price effect | | -0.0075 | | | | | | |
| | | | *-0.44* | | | | | | |
| state controls | price effect | | | -0.0618 | | | | | |
| | | | | *-0.59* | | | | | |
| | cross-price effect | | | 0.0130 | | | | | |
| | | | | *1.12* | | | | | |
| trade & investment barriers | price effect | | | | -0.1772 | | | | |
| | | | | | *-1.75* | | | | |
| | cross-price effect | | | | 0.0340 | | | | |
| | | | | | *1.92* | | | | |
| inward oriented regulations | price effect | | | | | 0.0390 | | | |
| | | | | | | *0.28* | | | |
| | cross-price effect | | | | | 0.0111 | | | |
| | | | | | | *0.73* | | | |
| foreign ownership barriers | price effect | | | | | | -0.0838 | | |
| | | | | | | | *-1.46* | | |
| | cross-price effect | | | | | | 0.0104 | | |
| | | | | | | | *1.33* | | |
| regulatory barriers | price effect | | | | | | | -0.2724 | |
| | | | | | | | | *-3.02* | |
| | cross-price effect | | | | | | | 0.0653 | |
| | | | | | | | | *3.37* | |
| tariffs | price effect | | | | | | | | 0.1308 |
| | | | | | | | | | *1.42* |
| | cross-price effect | | | | | | | | -0.0088 |
| | | | | | | | | | *-0.69* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.76 | 0.78 | 0.76 | 0.77 | 0.76 | 0.77 | 0.78 | 0.76 |
| obs | | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 |

Note: t-statistics in italics

## APPENDIX 1A: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS.

| | | COMMUNICATION SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 2.2240 | 2.1615 | 2.1863 | 2.5245 | 2.1234 | 3.0106 | 3.5887 | 2.5740 |
| | | *4.87* | *5.02* | *4.62* | *6.73* | *4.83* | *8.83* | *11.50* | *4.65* |
| log (pop) | | -14.7150 | -15.2790 | -14.1418 | -15.9232 | -14.4560 | -18.8694 | -16.5355 | -13.5479 |
| | | *-6.41* | *-6.22* | *-6.03* | *-7.34* | *-6.17* | *-9.22* | *-6.98* | *-4.84* |
| log (dist) | | -2.9730 | -3.5086 | -3.0919 | -2.5465 | -3.2923 | -2.3854 | -1.8397 | -2.7246 |
| | | *-1.83* | *-2.00* | *-1.85* | *-1.68* | *-1.92* | *-1.71* | *-1.14* | *-1.45* |
| product market regulation | price effect | -0.6487 | | | | | | | |
| | | *-2.60* | | | | | | | |
| | cross-price effect | 0.1053 | | | | | | | |
| | | *4.04* | | | | | | | |
| entrepreneur barriers | price effect | | -0.8011 | | | | | | |
| | | | *-4.20* | | | | | | |
| | cross-price effect | | 0.0885 | | | | | | |
| | | | *3.61* | | | | | | |
| state controls | price effect | | | -0.4225 | | | | | |
| | | | | *-2.23* | | | | | |
| | cross-price effect | | | 0.0606 | | | | | |
| | | | | *3.20* | | | | | |
| trade & investment barriers | price effect | | | | -0.9984 | | | | |
| | | | | | *-3.88* | | | | |
| | cross-price effect | | | | 0.1636 | | | | |
| | | | | | *5.13* | | | | |
| inward oriented regulations | price effect | | | | | -0.5740 | | | |
| | | | | | | *-2.64* | | | |
| | cross-price effect | | | | | 0.0757 | | | |
| | | | | | | *3.40* | | | |
| foreign ownership barriers | price effect | | | | | | -0.4679 | | |
| | | | | | | | *-4.49* | | |
| | cross-price effect | | | | | | 0.0911 | | |
| | | | | | | | *5.94* | | |
| regulatory barriers | price effect | | | | | | | -0.1407 | |
| | | | | | | | | *-0.36* | |
| | cross-price effect | | | | | | | 0.0355 | |
| | | | | | | | | *0.66* | |
| tariffs | price effect | | | | | | | | -0.4452 |
| | | | | | | | | | *-2.12* |
| | cross-price effect | | | | | | | | 0.0481 |
| | | | | | | | | | *1.97* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.61 | 0.62 | 0.59 | 0.63 | 0.60 | 0.66 | 0.55 | 0.56 |
| obs | | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 |

Note: t-statistics in italics

**APPENDIX 1A: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS.**

| | | CONSTRUCTION SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 1.5768 | 0.4659 | 1.6075 | 1.4870 | 1.3574 | 1.2435 | 0.9335 | 1.1663 |
| | | *1.71* | *0.67* | *1.76* | *1.79* | *1.63* | *1.42* | *1.35* | *1.68* |
| log (pop) | | -14.8750 | -13.7599 | -14.5515 | -15.3455 | -14.0123 | -14.7573 | -14.7946 | -13.5078 |
| | | *-3.08* | *-2.89* | *-3.07* | *-3.09* | *-3.02* | *-2.79* | *-2.99* | *-3.02* |
| log (dist) | | -1.8574 | -3.8634 | -1.3990 | -2.4145 | -1.9585 | -2.8688 | -3.6644 | -2.2834 |
| | | *-0.81* | *-1.74* | *-0.57* | *-1.17* | *-0.80* | *-1.38* | *-1.73* | *-0.98* |
| product market regulation | price effect | 0.1546 | | | | | | | |
| | | *0.48* | | | | | | | |
| | cross-price effect | 0.0473 | | | | | | | |
| | | *0.73* | | | | | | | |
| entrepreneur barriers | price effect | | -0.4090 | | | | | | |
| | | | *-0.87* | | | | | | |
| | cross-price effect | | 0.0336 | | | | | | |
| | | | *0.53* | | | | | | |
| state controls | price effect | | | 0.1545 | | | | | |
| | | | | *0.64* | | | | | |
| | cross-price effect | | | 0.0346 | | | | | |
| | | | | *0.75* | | | | | |
| trade & investment barriers | price effect | | | | 0.0169 | | | | |
| | | | | | *0.04* | | | | |
| | cross-price effect | | | | 0.0640 | | | | |
| | | | | | *0.72* | | | | |
| inward oriented regulations | price effect | | | | | 0.1112 | | | |
| | | | | | | *0.32* | | | |
| | cross-price effect | | | | | 0.0387 | | | |
| | | | | | | *0.71* | | | |
| foreign ownership barriers | price effect | | | | | | 0.0513 | | |
| | | | | | | | *0.28* | | |
| | cross-price effect | | | | | | 0.0183 | | |
| | | | | | | | *0.46* | | |
| regulatory barriers | price effect | | | | | | | -0.3038 | |
| | | | | | | | | *-0.43* | |
| | cross-price effect | | | | | | | 0.0818 | |
| | | | | | | | | *0.58* | |
| tariffs | price effect | | | | | | | | 0.0472 |
| | | | | | | | | | *0.10* |
| | cross-price effect | | | | | | | | 0.0212 |
| | | | | | | | | | *0.30* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.11 | 0.10 | 0.12 | 0.12 | 0.10 | 0.10 | 0.10 | 0.10 |
| obs | | 143 | 143 | 143 | 143 | 143 | 143 | 143 | 143 |

Note: t-statistics in italics

## APPENDIX 1A: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS.

| | | FINANCE SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 0.5917 | 1.7208 | 0.4649 | -0.3626 | 1.1011 | -0.4116 | -0.3190 | 1.2394 |
| | | *0.91* | *2.67* | *0.74* | *-0.53* | *1.79* | *-0.58* | *-0.55* | *2.18* |
| log (pop) | | 4.3765 | 3.3834 | 4.5932 | 5.4970 | 4.1860 | 5.3602 | 5.3834 | 2.2728 |
| | | *1.45* | *1.33* | *1.48* | *1.54* | *1.48* | *1.54* | *1.59* | *1.07* |
| log (dist) | | -2.5149 | -1.6652 | -2.7471 | -3.9409 | -1.6542 | -4.0692 | -3.7429 | -2.4248 |
| | | *-1.28* | *-0.88* | *-1.34* | *-2.11* | *-0.84* | *-2.09* | *-2.01* | *-1.24* |
| product market regulation | price effect | 0.2563 | | | | | | | |
| | | *0.72* | | | | | | | |
| | cross-price effect | 0.0060 | | | | | | | |
| | | *0.14* | | | | | | | |
| entrepreneur barriers | price effect | | 1.2758 | | | | | | |
| | | | *2.44* | | | | | | |
| | cross-price effect | | -0.0469 | | | | | | |
| | | | *-1.00* | | | | | | |
| state controls | price effect | | | 0.1750 | | | | | |
| | | | | *0.77* | | | | | |
| | cross-price effect | | | -0.0024 | | | | | |
| | | | | *-0.07* | | | | | |
| trade & investment barriers | price effect | | | | -0.3391 | | | | |
| | | | | | *-0.80* | | | | |
| | cross-price effect | | | | 0.0207 | | | | |
| | | | | | *0.39* | | | | |
| inward oriented regulations | price effect | | | | | 0.5310 | | | |
| | | | | | | *1.64* | | | |
| | cross-price effect | | | | | -0.0011 | | | |
| | | | | | | *-0.03* | | | |
| foreign ownership barriers | price effect | | | | | | -0.2168 | | |
| | | | | | | | *-0.96* | | |
| | cross-price effect | | | | | | 0.0103 | | |
| | | | | | | | *0.37* | | |
| regulatory barriers | price effect | | | | | | | -0.8247 | |
| | | | | | | | | *-1.99* | |
| | cross-price effect | | | | | | | 0.0769 | |
| | | | | | | | | *1.68* | |
| tariffs | price effect | | | | | | | | 1.1370 |
| | | | | | | | | | *2.69* |
| | cross-price effect | | | | | | | | -0.0959 |
| | | | | | | | | | *-2.06* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.10 | 0.19 | 0.10 | 0.10 | 0.13 | 0.10 | 0.12 | 0.15 |
| obs | | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 |

Note: t-statistics in italics

**APPENDIX 1A: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS.**

| | | TRANSPORT SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 1.6549 | 1.8845 | 1.6298 | 1.7120 | 1.7176 | 1.3995 | 1.8495 | 1.9408 |
| | | *5.15* | *6.25* | *5.24* | *5.34* | *5.40* | *5.48* | *6.71* | *6.76* |
| log (pop) | | -6.8138 | -6.7605 | -7.4020 | -6.5134 | -7.3510 | -6.1546 | -9.0090 | -5.9986 |
| | | *-2.36* | *-2.28* | *-2.47* | *-2.23* | *-2.52* | *-2.25* | *-2.88* | *-2.24* |
| log (dist) | | -2.6988 | -2.2707 | -2.8314 | -2.4806 | -2.7131 | -2.6487 | -2.3546 | -1.7124 |
| | | *-2.66* | *-2.00* | *-2.65* | *-2.61* | *-2.37* | *-2.66* | *-2.39* | *-1.79* |
| product market regulation | price effect | -0.0048 | | | | | | | |
| | | *-0.05* | | | | | | | |
| | cross-price effect | -0.0248 | | | | | | | |
| | | *-1.49* | | | | | | | |
| entrepreneur barriers | price effect | | 0.1889 | | | | | | |
| | | | *0.94* | | | | | | |
| | cross-price effect | | -0.0278 | | | | | | |
| | | | *-1.55* | | | | | | |
| state controls | price effect | | | -0.0556 | | | | | |
| | | | | *-0.73* | | | | | |
| | cross-price effect | | | -0.0132 | | | | | |
| | | | | *-1.26* | | | | | |
| trade & investment barriers | price effect | | | | 0.0922 | | | | |
| | | | | | *1.08* | | | | |
| | cross-price effect | | | | -0.0346 | | | | |
| | | | | | *-1.54* | | | | |
| inward oriented regulations | price effect | | | | | -0.0175 | | | |
| | | | | | | *-0.14* | | | |
| | cross-price effect | | | | | -0.0185 | | | |
| | | | | | | *-1.35* | | | |
| foreign ownership barriers | price effect | | | | | | -0.0623 | | |
| | | | | | | | *-1.15* | | |
| | cross-price effect | | | | | | -0.0162 | | |
| | | | | | | | *-1.56* | | |
| regulatory barriers | price effect | | | | | | | -0.2008 | |
| | | | | | | | | *-1.39* | |
| | cross-price effect | | | | | | | 0.0584 | |
| | | | | | | | | *1.71* | |
| tariffs | price effect | | | | | | | | 0.2968 |
| | | | | | | | | | *2.46* |
| | cross-price effect | | | | | | | | -0.0355 |
| | | | | | | | | | *-2.14* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.53 | 0.53 | 0.52 | 0.53 | 0.52 | 0.56 | 0.51 | 0.60 |
| obs | | 101 | 101 | 101 | 101 | 101 | 101 | 101 | 101 |

Note: t-statistics in italics

**APPENDIX 1B: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES FDI.**

| | | BUSINESS SERVICES FDI | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **FDI** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 5.9154 | 7.0547 | 6.5719 | 5.4190 | 6.6302 | 5.9979 | 5.9801 | 6.0276 |
| | | *4.26* | *5.02* | *4.63* | *5.20* | *4.31* | *6.10* | *6.52* | *4.18* |
| log (pop) | | 2.9374 | 2.6199 | 2.1976 | 4.0902 | 2.3177 | 2.6320 | 5.6985 | 2.1303 |
| | | *0.45* | *0.38* | *0.32* | *0.66* | *0.34* | *0.40* | *0.88* | *0.31* |
| log (dist) | | -6.1889 | -5.2507 | -5.3036 | -6.7416 | -5.2760 | -5.7512 | -4.8028 | -5.9480 |
| | | *-1.59* | *-1.37* | *-1.32* | *-1.88* | *-1.31* | *-1.73* | *-1.34* | *-1.50* |
| product market regulation | price effect | 0.4660 | | | | | | | |
| | | *0.28* | | | | | | | |
| | cross-price effect | -0.0922 | | | | | | | |
| | | *-0.52* | | | | | | | |
| entrepreneur barriers | price effect | | 2.1196 | | | | | | |
| | | | *0.80* | | | | | | |
| | cross-price effect | | -0.2166 | | | | | | |
| | | | *-0.80* | | | | | | |
| state controls | price effect | | | 0.5465 | | | | | |
| | | | | *0.45* | | | | | |
| | cross-price effect | | | -0.0666 | | | | | |
| | | | | *-0.52* | | | | | |
| trade & investment barriers | price effect | | | | 1.1757 | | | | |
| | | | | | *0.73* | | | | |
| | cross-price effect | | | | -0.2178 | | | | |
| | | | | | *-1.07* | | | | |
| inward oriented regulations | price effect | | | | | 0.7832 | | | |
| | | | | | | *0.44* | | | |
| | cross-price effect | | | | | -0.0895 | | | |
| | | | | | | *-0.50* | | | |
| foreign ownership barriers | price effect | | | | | | 0.6240 | | |
| | | | | | | | *0.79* | | |
| | cross-price effect | | | | | | -0.1061 | | |
| | | | | | | | *-1.12* | | |
| regulatory barriers | price effect | | | | | | | 1.5535 | |
| | | | | | | | | *0.61* | |
| | cross-price effect | | | | | | | -0.2411 | |
| | | | | | | | | *-0.71* | |
| tariffs | price effect | | | | | | | | -0.0236 |
| | | | | | | | | | *-0.01* |
| | cross-price effect | | | | | | | | -0.0167 |
| | | | | | | | | | *-0.09* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.71 | 0.71 | 0.71 | 0.72 | 0.71 | 0.72 | 0.71 | 0.71 |
| obs | | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 |

Note: t-statistics in italics

**APPENDIX 1B: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES FDI.**

| | | COMMUNICATION SERVICES FDI | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **FDI** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 8.2458 | 6.3444 | 8.1682 | 9.2513 | 6.6747 | 10.0605 | 8.2166 | 6.8162 |
| | | *5.67* | *5.62* | *5.46* | *7.04* | *4.90* | *6.65* | *7.55* | *6.70* |
| log (pop) | | -4.4922 | -0.6721 | -4.0266 | -8.0677 | -1.7192 | -8.8532 | -3.1124 | -2.2349 |
| | | *-0.51* | *-0.09* | *-0.45* | *-0.87* | *-0.22* | *-0.90* | *-0.40* | *-0.33* |
| log (dist) | | 7.0260 | 5.5826 | 6.8803 | 7.8973 | 4.9903 | 9.2094 | 8.5397 | 3.1635 |
| | | *1.47* | *1.29* | *1.38* | *1.84* | *1.03* | *2.28* | *2.17* | *0.78* |
| product market regulation | price effect | 0.4028 | | | | | | | |
| | | *0.63* | | | | | | | |
| | cross-price effect | -0.0951 | | | | | | | |
| | | *-0.89* | | | | | | | |
| entrepreneur barriers | price effect | | -1.4393 | | | | | | |
| | | | *-2.52* | | | | | | |
| | cross-price effect | | 0.0627 | | | | | | |
| | | | *0.68* | | | | | | |
| state controls | price effect | | | 0.2097 | | | | | |
| | | | | *0.40* | | | | | |
| | cross-price effect | | | -0.0624 | | | | | |
| | | | | *-0.76* | | | | | |
| trade & investment barriers | price effect | | | | 1.1632 | | | | |
| | | | | | *1.62* | | | | |
| | cross-price effect | | | | -0.1731 | | | | |
| | | | | | *-1.27* | | | | |
| inward oriented regulations | price effect | | | | | -0.6636 | | | |
| | | | | | | *-1.08* | | | |
| | cross-price effect | | | | | -0.0294 | | | |
| | | | | | | *-0.34* | | | |
| foreign ownership barriers | price effect | | | | | | 0.7570 | | |
| | | | | | | | *1.72* | | |
| | cross-price effect | | | | | | -0.0710 | | |
| | | | | | | | *-1.02* | | |
| regulatory barriers | price effect | | | | | | | -0.8522 | |
| | | | | | | | | *-1.05* | |
| | cross-price effect | | | | | | | 0.2456 | |
| | | | | | | | | *1.40* | |
| tariffs | price effect | | | | | | | | -0.1966 |
| | | | | | | | | | *-0.32* |
| | cross-price effect | | | | | | | | -0.0872 |
| | | | | | | | | | *-0.92* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.66 | 0.68 | 0.66 | 0.67 | 0.67 | 0.68 | 0.67 | 0.71 |
| obs | | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 |

Note: t-statistics in italics

**APPENDIX 1B: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES FDI.**

| | | CONSTRUCTION SERVICES FDI | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **FDI** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | -0.4660 | 0.6401 | -0.0034 | -0.2177 | -0.1305 | 0.3288 | 0.2300 | 1.2295 |
| | | *-0.71* | *1.07* | *-0.01* | *-0.40* | *-0.21* | *0.55* | *0.48* | *1.89* |
| log (pop) | | 7.6611 | 5.2092 | 6.6907 | 7.5884 | 6.3109 | 6.6097 | 7.0502 | 4.9011 |
| | | *2.02* | *1.30* | *1.70* | *2.10* | *1.61* | *1.67* | *1.82* | *1.21* |
| log (dist) | | -7.3691 | -6.0456 | -6.9054 | -6.9128 | -7.1913 | -6.2128 | -6.1368 | -4.7398 |
| | | *-3.41* | *-2.74* | *-3.01* | *-3.49* | *-3.17* | *-3.04* | *-3.21* | *-2.01* |
| product market regulation | price effect | -0.8930 | | | | | | | |
| | | *-2.05* | | | | | | | |
| | cross-price effect | 0.0476 | | | | | | | |
| | | *0.85* | | | | | | | |
| entrepreneur barriers | price effect | | -0.1692 | | | | | | |
| | | | *-0.33* | | | | | | |
| | cross-price effect | | 0.0011 | | | | | | |
| | | | *0.02* | | | | | | |
| state controls | price effect | | | -0.4790 | | | | | |
| | | | | *-1.62* | | | | | |
| | cross-price effect | | | 0.0305 | | | | | |
| | | | | *0.82* | | | | | |
| trade & investment barriers | price effect | | | | -0.8438 | | | | |
| | | | | | *-2.01* | | | | |
| | cross-price effect | | | | 0.0588 | | | | |
| | | | | | *0.83* | | | | |
| inward oriented regulations | price effect | | | | | -0.6827 | | | |
| | | | | | | *-1.63* | | | |
| | cross-price effect | | | | | 0.0339 | | | |
| | | | | | | *0.70* | | | |
| foreign ownership barriers | price effect | | | | | | -0.3057 | | |
| | | | | | | | *-1.63* | | |
| | cross-price effect | | | | | | 0.0290 | | |
| | | | | | | | *0.81* | | |
| regulatory barriers | price effect | | | | | | | -0.9596 | |
| | | | | | | | | *-1.48* | |
| | cross-price effect | | | | | | | 0.0890 | |
| | | | | | | | | *0.75* | |
| tariffs | price effect | | | | | | | | 0.2329 |
| | | | | | | | | | *0.55* |
| | cross-price effect | | | | | | | | -0.0136 |
| | | | | | | | | | *-0.26* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.36 | 0.32 | 0.34 | 0.38 | 0.34 | 0.33 | 0.42 | 0.32 |
| obs | | 143 | 143 | 143 | 143 | 143 | 143 | 143 | 143 |

Note: t-statistics in italics

**APPENDIX 1B: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES FDI.**

| | | FINANCE SERVICES FDI | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **FDI** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 3.3879 | 4.1752 | 3.1927 | 3.7638 | 3.4472 | 3.9674 | 4.0439 | 3.7928 |
| | | *5.23* | *7.09* | *5.07* | *6.29* | *5.40* | *5.98* | *7.74* | *6.69* |
| log (pop) | | -5.6404 | -6.3536 | -5.8851 | -5.6332 | -6.0361 | -6.1105 | -6.0948 | -5.4257 |
| | | *-2.06* | *-2.08* | *-2.20* | *-1.95* | *-2.13* | *-1.99* | *-2.05* | *-1.97* |
| log (dist) | | -3.7673 | -2.4527 | -4.5703 | -2.9754 | -3.7582 | -2.7643 | -2.4830 | -3.4343 |
| | | *-2.41* | *-1.56* | *-2.78* | *-2.05* | *-2.29* | *-1.92* | *-1.70* | *-2.28* |
| product market regulation | price effect | -0.7023 | | | | | | | |
| | | *-1.80* | | | | | | | |
| | cross-price effect | 0.0349 | | | | | | | |
| | | *0.79* | | | | | | | |
| entrepreneur barriers | price effect | | -0.2798 | | | | | | |
| | | | *-0.64* | | | | | | |
| | cross-price effect | | 0.0272 | | | | | | |
| | | | *0.59* | | | | | | |
| state controls | price effect | | | -0.5553 | | | | | |
| | | | | *-2.01* | | | | | |
| | cross-price effect | | | 0.0176 | | | | | |
| | | | | *0.58* | | | | | |
| trade & investment barriers | price effect | | | | -0.6011 | | | | |
| | | | | | *-1.43* | | | | |
| | cross-price effect | | | | 0.0459 | | | | |
| | | | | | *0.70* | | | | |
| inward oriented regulations | price effect | | | | | -0.6446 | | | |
| | | | | | | *-1.68* | | | |
| | cross-price effect | | | | | 0.0321 | | | |
| | | | | | | *0.84* | | | |
| foreign ownership barriers | price effect | | | | | | -0.2615 | | |
| | | | | | | | *-1.04* | | |
| | cross-price effect | | | | | | 0.0197 | | |
| | | | | | | | *0.58* | | |
| regulatory barriers | price effect | | | | | | | -0.9030 | |
| | | | | | | | | *-1.08* | |
| | cross-price effect | | | | | | | 0.1287 | |
| | | | | | | | | *0.91* | |
| tariffs | price effect | | | | | | | | -0.3838 |
| | | | | | | | | | *-1.19* |
| | cross-price effect | | | | | | | | 0.0208 |
| | | | | | | | | | *0.54* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.55 | 0.53 | 0.56 | 0.54 | 0.55 | 0.54 | 0.55 | 0.54 |
| obs | | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 |

Note: t-statistics in italics

**APPENDIX 1B: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES FDI.**

| | | TRANSPORT SERVICES FDI | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **FDI** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 0.4959 | 2.0971 | 0.5468 | 0.5893 | 0.8560 | 0.6117 | 0.7363 | 3.3658 |
| | | *0.31* | *1.19* | *0.32* | *0.44* | *0.51* | *0.39* | *0.67* | *2.03* |
| log (pop) | | 21.0482 | 16.2392 | 21.8266 | 22.8403 | 18.7148 | 23.7785 | 24.2131 | 4.4700 |
| | | *1.74* | *1.32* | *1.75* | *1.86* | *1.53* | *1.93* | *2.37* | *0.30* |
| log (dist) | | -2.1690 | -1.1124 | -1.4415 | -1.0175 | -2.5384 | 0.1600 | 0.0640 | -2.5217 |
| | | *-0.35* | *-0.22* | *-0.23* | *-0.17* | *-0.41* | *0.03* | *0.01* | *-0.45* |
| product market regulation | price effect | 0.0376 | | | | | | | |
| | | *0.02* | | | | | | | |
| | cross-price effect | -0.0990 | | | | | | | |
| | | *-0.51* | | | | | | | |
| entrepreneur barriers | price effect | | 2.3042 | | | | | | |
| | | | *0.98* | | | | | | |
| | cross-price effect | | -0.3043 | | | | | | |
| | | | *-1.22* | | | | | | |
| state controls | price effect | | | -0.2178 | | | | | |
| | | | | *-0.18* | | | | | |
| | cross-price effect | | | -0.0286 | | | | | |
| | | | | *-0.21* | | | | | |
| trade & investment barriers | price effect | | | | 0.0253 | | | | |
| | | | | | *0.02* | | | | |
| | cross-price effect | | | | -0.0644 | | | | |
| | | | | | *-0.27* | | | | |
| inward oriented regulations | price effect | | | | | 0.2045 | | | |
| | | | | | | *0.12* | | | |
| | cross-price effect | | | | | -0.1151 | | | |
| | | | | | | *-0.63* | | | |
| foreign ownership barriers | price effect | | | | | | -0.1422 | | |
| | | | | | | | *-0.16* | | |
| | cross-price effect | | | | | | -0.0095 | | |
| | | | | | | | *-0.08* | | |
| regulatory barriers | price effect | | | | | | | 0.2521 | |
| | | | | | | | | *0.13* | |
| | cross-price effect | | | | | | | -0.0944 | |
| | | | | | | | | *-0.35* | |
| tariffs | price effect | | | | | | | | 3.6316 |
| | | | | | | | | | *2.68* |
| | cross-price effect | | | | | | | | -0.4051 |
| | | | | | | | | | *-2.43* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.32 | 0.32 | 0.31 | 0.32 | 0.31 | 0.31 | 0.33 | 0.36 |
| obs | | 101 | 101 | 101 | 101 | 101 | 101 | 101 | 101 |

Note: t-statistics in italics

## APPENDIX 2A: LONG RUN TRADITIONAL AND COMPOSITE APPROACH ESTIMATION. TOTAL SERVICES IMPORTS.

| SERVICES IMPORTS | | TRADITIONAL APPROACH | COMPOSITE DEMAND APPROACH | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| equilibrium correction (δ) | | -0.0653 | -0.1460 | -0.1506 | -0.1422 | -0.1252 | -0.1487 | -0.1372 | -0.0822 | -0.1197 |
| | | *-3.56* | *-5.18* | *-5.45* | *-4.94* | *-4.65* | *-5.25* | *-4.66* | *-3.25* | *-4.43* |
| log FDI (-1) | | 1.2698 | | | | | | | | |
| | | *7.33* | | | | | | | | |
| product market regulation | price effect | | -3.0970 | | | | | | | |
| | | | *-5.09* | | | | | | | |
| | cross-price effect | | 0.3128 | | | | | | | |
| | | | *4.29* | | | | | | | |
| entrepreneur barriers | price effect | | | -3.4875 | | | | | | |
| | | | | *-5.60* | | | | | | |
| | cross-price effect | | | 0.3248 | | | | | | |
| | | | | *5.07* | | | | | | |
| state controls | price effect | | | | -2.1423 | | | | | |
| | | | | | *-4.93* | | | | | |
| | cross-price effect | | | | 0.2265 | | | | | |
| | | | | | *4.13* | | | | | |
| trade & investment barriers | price effect | | | | | -4.0755 | | | | |
| | | | | | | *-4.11* | | | | |
| | cross-price effect | | | | | 0.4228 | | | | |
| | | | | | | *3.65* | | | | |
| inward oriented regulations | price effect | | | | | | -2.6390 | | | |
| | | | | | | | *-5.36* | | | |
| | cross-price effect | | | | | | 0.2671 | | | |
| | | | | | | | *4.57* | | | |
| foreign ownership barriers | price effect | | | | | | | -1.7170 | | |
| | | | | | | | | *-4.31* | | |
| | cross-price effect | | | | | | | 0.1667 | | |
| | | | | | | | | *3.43* | | |
| regulatory barriers | price effect | | | | | | | | -2.4710 | |
| | | | | | | | | | *-1.67* | |
| | cross-price effect | | | | | | | | 0.2247 | |
| | | | | | | | | | *1.49* | |
| tariffs | price effect | | | | | | | | | -4.1267 |
| | | | | | | | | | | *-4.19* |
| | cross-price effect | | | | | | | | | 0.4016 |
| | | | | | | | | | | *4.04* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.36 | 0.14 | 0.15 | 0.13 | 0.12 | 0.14 | 0.11 | 0.03 | 0.11 |
| obs | | 190 | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 |

Note: t-statistics in italics

**APPENDIX 2A: SHORT RUN COMPOSITE APPROACH ESTIMATION . TOTAL SERVICES IMPORTS. LONG RUN SAMPLE.**

| SERVICES IMPORTS | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
|---|---|---|---|---|---|---|---|---|---|
| log (GDP) | | 1.0483 | 1.2163 | 0.9713 | 0.9861 | 1.1057 | 0.7880 | 1.0662 | 1.1371 |
| | | *7.26* | *7.19* | *6.89* | *6.88* | *7.74* | *6.03* | *7.50* | *7.93* |
| log (pop) | | -0.5140 | -0.6741 | -0.3964 | -0.5457 | -0.5196 | -0.3699 | -0.6349 | -0.7344 |
| | | *-1.30* | *-1.70* | *-0.96* | *-1.31* | *-1.35* | *-0.90* | *-1.46* | *-2.09* |
| log (dist) | | -1.3387 | -1.3104 | -1.5092 | -1.5908 | -1.2378 | -1.9465 | -1.7648 | -1.5391 |
| | | *-3.29* | *-2.95* | *-3.68* | *-3.66* | *-3.09* | *-4.93* | *-3.88* | *-3.52* |
| product market regulation | price effect | -0.2155 | | | | | | | |
| | | *-1.80* | | | | | | | |
| | cross-price effect | 0.0309 | | | | | | | |
| | | *2.38* | | | | | | | |
| entrepreneur barriers | price effect | | -0.0212 | | | | | | |
| | | | *-0.12* | | | | | | |
| | cross-price effect | | 0.0163 | | | | | | |
| | | | *1.03* | | | | | | |
| state controls | price effect | | | -0.1377 | | | | | |
| | | | | *-1.51* | | | | | |
| | cross-price effect | | | 0.0172 | | | | | |
| | | | | *1.60* | | | | | |
| trade & investment barriers | price effect | | | | -0.3294 | | | | |
| | | | | | *-2.53* | | | | |
| | cross-price effect | | | | 0.0387 | | | | |
| | | | | | *2.68* | | | | |
| inward oriented regulations | price effect | | | | | -0.1302 | | | |
| | | | | | | *-1.11* | | | |
| | cross-price effect | | | | | 0.0237 | | | |
| | | | | | | *2.04* | | | |
| foreign ownership barriers | price effect | | | | | | -0.1867 | | |
| | | | | | | | *-2.86* | | |
| | cross-price effect | | | | | | 0.0133 | | |
| | | | | | | | *1.80* | | |
| regulatory barriers | price effect | | | | | | | -0.0921 | |
| | | | | | | | | *-0.78* | |
| | cross-price effect | | | | | | | 0.0117 | |
| | | | | | | | | *0.98* | |
| tariffs | price effect | | | | | | | | -0.0177 |
| | | | | | | | | | *-0.08* |
| | cross-price effect | | | | | | | | 0.0062 |
| | | | | | | | | | *0.33* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.63 | 0.65 | 0.62 | 0.63 | 0.64 | 0.65 | 0.62 | 0.62 |
| obs | | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 |

Note: t-statistics in italics

**APPENDIX 2B: LONG RUN TRADITIONAL AND COMPOSITE APPROACH ESTIMATION. TOTAL SERVICES FDI.**

| FDI | | TRADITIONAL APPROACH | COMPOSITE DEMAND APPROACH | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| equilibrium correction (δ) | | -0.0033 | -0.0325 | -0.0669 | -0.0386 | -0.0001 | -0.0542 | -0.0095 | 0.0083 | -0.0123 |
| | | *-0.09* | *-1.51* | *-3.20* | *-1.86* | *-0.01* | *-2.45* | *-0.55* | *0.51* | *-0.73* |
| log IMPORTS (-1) | | 17.1519 | | | | | | | | |
| | | *0.10* | | | | | | | | |
| product market regulation | price effect | | -19.6094 | | | | | | | |
| | | | *-1.77* | | | | | | | |
| | cross-price effect | | 1.6663 | | | | | | | |
| | | | *1.51* | | | | | | | |
| entrepreneur barriers | price effect | | | -26.9023 | | | | | | |
| | | | | *-4.38* | | | | | | |
| | cross-price effect | | | 2.3448 | | | | | | |
| | | | | *4.04* | | | | | | |
| state controls | price effect | | | | -12.8625 | | | | | |
| | | | | | *-2.09* | | | | | |
| | cross-price effect | | | | 1.0661 | | | | | |
| | | | | | *1.72* | | | | | |
| trade & investment barriers | price effect | | | | | -2500.0000 | | | | |
| | | | | | | *-0.01* | | | | |
| | cross-price effect | | | | | 276.4362 | | | | |
| | | | | | | *0.01* | | | | |
| inward oriented regulations | price effect | | | | | | -17.4365 | | | |
| | | | | | | | *-3.16* | | | |
| | cross-price effect | | | | | | 1.4716 | | | |
| | | | | | | | *2.71* | | | |
| foreign ownership barriers | price effect | | | | | | | -22.9961 | | |
| | | | | | | | | *-0.59* | | |
| | cross-price effect | | | | | | | 2.2404 | | |
| | | | | | | | | *0.56* | | |
| regulatory barriers | price effect | | | | | | | | -45.4919 | |
| | | | | | | | | | *-0.53* | |
| | cross-price effect | | | | | | | | 4.9169 | |
| | | | | | | | | | *0.52* | |
| tariffs | price effect | | | | | | | | | -47.8577 |
| | | | | | | | | | | *-0.78* |
| | cross-price effect | | | | | | | | | 4.3394 |
| | | | | | | | | | | *0.76* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.52 | 0.10 | 0.17 | 0.11 | 0.07 | 0.13 | 0.08 | 0.07 | 0.09 |
| obs | | 173 | 172 | 172 | 172 | 172 | 172 | 172 | 172 | 172 |

Note: t-statistics in italics

**APPENDIX 2B: SHORT RUN COMPOSITE APPROACH ESTIMATION . TOTAL SERVICES FDI. LONG RUN SAMPLE.**

| FDI | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
|---|---|---|---|---|---|---|---|---|---|
| log (GDP) | | 2.9909 | 2.9479 | 3.0064 | 3.3825 | 2.8077 | 3.6234 | 3.5673 | 3.5515 |
| | | *8.51* | *9.02* | *8.48* | *11.36* | *7.80* | *12.44* | *16.37* | *11.08* |
| log (pop) | | -1.7655 | -2.1010 | -2.0320 | -1.9323 | -1.9301 | -2.2323 | -2.4100 | -2.0669 |
| | | *-2.12* | *-2.48* | *-2.40* | *-2.30* | *-2.39* | *-2.37* | *-2.87* | *-3.00* |
| log (dist) | | -2.9994 | -2.3243 | -3.0786 | -2.8541 | -2.914 | -2.3191 | -2.7596 | -3.4497 |
| | | *-2.75* | *-2.31* | *-2.77* | *-2.59* | *-2.78* | *-2.18* | *-2.61* | *-3.19* |
| product market regulation | price effect | -1.7131 | | | | | | | |
| | | *-2.75* | | | | | | | |
| | cross-price effect | 0.1450 | | | | | | | |
| | | *2.42* | | | | | | | |
| entrepreneur barriers | price effect | | -3.1044 | | | | | | |
| | | | *-3.75* | | | | | | |
| | cross-price effect | | 0.2777 | | | | | | |
| | | | *3.66* | | | | | | |
| state controls | price effect | | | -1.1844 | | | | | |
| | | | | *-2.55* | | | | | |
| | cross-price effect | | | 0.0992 | | | | | |
| | | | | *2.21* | | | | | |
| trade & investment barriers | price effect | | | | -1.1383 | | | | |
| | | | | | *-1.73* | | | | |
| | cross-price effect | | | | 0.0991 | | | | |
| | | | | | *1.40* | | | | |
| inward oriented regulations | price effect | | | | | -2.0770 | | | |
| | | | | | | *-3.18* | | | |
| | cross-price effect | | | | | 0.1773 | | | |
| | | | | | | *2.99* | | | |
| foreign ownership barriers | price effect | | | | | | -0.7150 | | |
| | | | | | | | *-2.10* | | |
| | cross-price effect | | | | | | 0.0739 | | |
| | | | | | | | *2.11* | | |
| regulatory barriers | price effect | | | | | | | -2.6277 | |
| | | | | | | | | *-2.81* | |
| | cross-price effect | | | | | | | 0.2767 | |
| | | | | | | | | *2.74* | |
| tariffs | price effect | | | | | | | | 0.1621 |
| | | | | | | | | | *0.31* |
| | cross-price effect | | | | | | | | -0.0301 |
| | | | | | | | | | *-0.64* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.80 | 0.81 | 0.81 | 0.80 | 0.81 | 0.79 | 0.81 | 0.79 |
| obs | | 172 | 172 | 172 | 172 | 172 | 172 | 172 | 172 |

Note: t-statistics in italics

**APPENDIX 3A: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS. LONG RUN SAMPLE.**

| | | BUSINESS SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 0.5377 | 1.2014 | 0.4781 | 0.4352 | 0.7677 | 0.4617 | 0.6338 | 1.0284 |
| | | *1.31* | *3.69* | *1.22* | *1.37* | *2.01* | *1.48* | *2.35* | *3.44* |
| log (pop) | | 5.9388 | 5.3714 | 5.9803 | 6.2451 | 5.6543 | 5.6822 | 5.3197 | 5.1265 |
| | | *3.76* | *3.55* | *3.83* | *3.99* | *3.75* | *3.77* | *3.16* | *3.32* |
| log (dist) | | -2.3295 | -2.0015 | -2.4243 | -2.3885 | -2.1180 | -2.5847 | -2.5157 | -2.0602 |
| | | *-3.40* | *-3.25* | *-3.34* | *-3.71* | *-3.16* | *-3.91* | *-4.09* | *-3.17* |
| product market regulation | price effect | -0.0949 | | | | | | | |
| | | *-0.59* | | | | | | | |
| | cross-price effect | 0.0187 | | | | | | | |
| | | *1.00* | | | | | | | |
| entrepreneur barriers | price effect | | 0.2663 | | | | | | |
| | | | *1.69* | | | | | | |
| | cross-price effect | | -0.0109 | | | | | | |
| | | | *-0.55* | | | | | | |
| state controls | price effect | | | -0.0811 | | | | | |
| | | | | *-0.72* | | | | | |
| | cross-price effect | | | 0.0123 | | | | | |
| | | | | *0.90* | | | | | |
| trade & investment barriers | price effect | | | | -0.1963 | | | | |
| | | | | | *-1.86* | | | | |
| | cross-price effect | | | | 0.0338 | | | | |
| | | | | | *1.67* | | | | |
| inward oriented regulations | price effect | | | | | 0.0202 | | | |
| | | | | | | *0.13* | | | |
| | cross-price effect | | | | | 0.0107 | | | |
| | | | | | | *0.60* | | | |
| foreign ownership barriers | price effect | | | | | | -0.0986 | | |
| | | | | | | | *-1.53* | | |
| | cross-price effect | | | | | | 0.0094 | | |
| | | | | | | | *1.03* | | |
| regulatory barriers | price effect | | | | | | | -0.2786 | |
| | | | | | | | | *-2.66* | |
| | cross-price effect | | | | | | | 0.0643 | |
| | | | | | | | | *2.74* | |
| tariffs | price effect | | | | | | | | 0.1189 |
| | | | | | | | | | *1.26* |
| | cross-price effect | | | | | | | | -0.006 |
| | | | | | | | | | *-0.46* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.71 | 0.73 | 0.71 | 0.72 | 0.71 | 0.72 | 0.73 | 0.71 |
| obs | | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 |

Note: t-statistics in italics

**APPENDIX 3A: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS. LONG RUN SAMPLE.**

| | | COMMUNICATION SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 2.0614 | 2.0018 | 1.9774 | 2.3741 | 1.9476 | 2.8938 | 3.5430 | 2.3972 |
| | | *3.67* | *3.78* | *3.41* | *5.21* | *3.60* | *7.53* | *9.74* | *3.53* |
| log (pop) | | -14.5127 | -15.1925 | -13.9874 | -15.7270 | -14.2248 | -18.9249 | -17.1062 | -13.6748 |
| | | *-5.07* | *-5.00* | *-4.78* | *-5.77* | *-4.87* | *-7.51* | *-6.02* | *-3.90* |
| log (dist) | | -3.0535 | -3.6320 | -3.1806 | -2.6582 | -3.3495 | -2.4924 | -1.9692 | -2.9065 |
| | | *-1.85* | *-2.04* | *-1.88* | *-1.75* | *-1.94* | *-1.78* | *-1.23* | *-1.55* |
| product market regulation | price effect | -0.7121 | | | | | | | |
| | | *-2.63* | | | | | | | |
| | cross-price effect | 0.1169 | | | | | | | |
| | | *4.01* | | | | | | | |
| entrepreneur barriers | price effect | | -0.8406 | | | | | | |
| | | | *-3.79* | | | | | | |
| | cross-price effect | | 0.0915 | | | | | | |
| | | | *3.25* | | | | | | |
| state controls | price effect | | | -0.4675 | | | | | |
| | | | | *-2.29* | | | | | |
| | cross-price effect | | | 0.0712 | | | | | |
| | | | | *3.49* | | | | | |
| trade & investment barriers | price effect | | | | -1.1082 | | | | |
| | | | | | *-4.14* | | | | |
| | cross-price effect | | | | 0.1786 | | | | |
| | | | | | *5.25* | | | | |
| inward oriented regulations | price effect | | | | | -0.6085 | | | |
| | | | | | | *-2.55* | | | |
| | cross-price effect | | | | | 0.0843 | | | |
| | | | | | | *3.39* | | | |
| foreign ownership barriers | price effect | | | | | | -0.5583 | | |
| | | | | | | | *-4.85* | | |
| | cross-price effect | | | | | | 0.1051 | | |
| | | | | | | | *5.87* | | |
| regulatory barriers | price effect | | | | | | | -0.2039 | |
| | | | | | | | | *-0.44* | |
| | cross-price effect | | | | | | | 0.0446 | |
| | | | | | | | | *0.71* | |
| tariffs | price effect | | | | | | | | -0.4756 |
| | | | | | | | | | *-2.10* |
| | cross-price effect | | | | | | | | 0.0516 |
| | | | | | | | | | *2.00* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.55 | 0.55 | 0.53 | 0.57 | 0.54 | 0.61 | 0.47 | 0.48 |
| obs | | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 |

Note: t-statistics in italics

**APPENDIX 3A: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS. LONG RUN SAMPLE.**

| | | CONSTRUCTION SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 1.5434 | 0.2226 | 1.5634 | 1.3364 | 1.2358 | 1.1315 | 0.6749 | 0.7876 |
| | | *1.91* | *0.36* | *1.99* | *1.73* | *1.71* | *1.37* | *1.02* | *1.16* |
| log (pop) | | -14.1110 | -12.4618 | -13.7114 | -14.5605 | -12.8874 | -13.9813 | -13.4627 | -12.1626 |
| | | *-3.04* | *-2.61* | *-3.00* | *-3.01* | *-2.83* | *-2.72* | *-2.74* | *-2.65* |
| log (dist) | | -1.7376 | -3.9086 | -1.2426 | -2.5497 | -1.8887 | -2.8974 | -3.8201 | -2.6717 |
| | | *-0.78* | *-1.80* | *-0.54* | *-1.29* | *-0.79* | *-1.46* | *-1.91* | *-1.16* |
| product market regulation | price effect | 0.1747 | | | | | | | |
| | | *0.55* | | | | | | | |
| | cross-price effect | 0.0555 | | | | | | | |
| | | *0.82* | | | | | | | |
| entrepreneur barriers | price effect | | -0.3694 | | | | | | |
| | | | *-0.80* | | | | | | |
| | cross-price effect | | 0.0353 | | | | | | |
| | | | *0.54* | | | | | | |
| state controls | price effect | | | 0.1568 | | | | | |
| | | | | *0.65* | | | | | |
| | cross-price effect | | | 0.0427 | | | | | |
| | | | | *0.92* | | | | | |
| trade & investment barriers | price effect | | | | -0.0071 | | | | |
| | | | | | *-0.02* | | | | |
| | cross-price effect | | | | 0.0703 | | | | |
| | | | | | *0.75* | | | | |
| inward oriented regulations | price effect | | | | | 0.1268 | | | |
| | | | | | | *0.38* | | | |
| | cross-price effect | | | | | 0.0438 | | | |
| | | | | | | *0.78* | | | |
| foreign ownership barriers | price effect | | | | | | 0.0619 | | |
| | | | | | | | *0.31* | | |
| | cross-price effect | | | | | | 0.0225 | | |
| | | | | | | | *0.55* | | |
| regulatory barriers | price effect | | | | | | | -0.1904 | |
| | | | | | | | | *-0.24* | |
| | cross-price effect | | | | | | | 0.0572 | |
| | | | | | | | | *0.37* | |
| tariffs | price effect | | | | | | | | -0.0518 |
| | | | | | | | | | *-0.11* |
| | cross-price effect | | | | | | | | 0.0299 |
| | | | | | | | | | *0.41* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.08 | 0.05 | 0.09 | 0.08 | 0.07 | 0.07 | 0.05 | 0.06 |
| obs | | 131 | 131 | 131 | 131 | 131 | 131 | 131 | 131 |

Note: t-statistics in italics

**APPENDIX 3A: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS. LONG RUN SAMPLE.**

| | | FINANCE SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 0.7999 | 1.8192 | 0.7381 | -0.1104 | 1.2886 | -0.1667 | -0.0330 | 1.5432 |
| | | *1.20* | *2.63* | *1.20* | *-0.17* | *2.03* | *-0.24* | *-0.06* | *2.53* |
| log (pop) | | 3.2044 | 2.3736 | 3.4936 | 4.1814 | 3.0354 | 4.0188 | 3.9577 | 1.2810 |
| | | *1.22* | *1.03* | *1.29* | *1.35* | *1.22* | *1.35* | *1.39* | *0.67* |
| log (dist) | | -2.4023 | -1.5859 | -2.3358 | -3.8567 | -1.5549 | -3.9321 | -3.7982 | -2.1778 |
| | | *-1.26* | *-0.88* | *-1.17* | *-2.09* | *-0.81* | *-2.03* | *-2.10* | *-1.14* |
| product market regulation | price effect | -0.0264 | | | | | | | |
| | | *-0.08* | | | | | | | |
| | cross-price effect | 0.0372 | | | | | | | |
| | | *0.90* | | | | | | | |
| entrepreneur barriers | price effect | | 0.8619 | | | | | | |
| | | | *1.66* | | | | | | |
| | cross-price effect | | -0.0142 | | | | | | |
| | | | *-0.31* | | | | | | |
| state controls | price effect | | | -0.0022 | | | | | |
| | | | | *-0.01* | | | | | |
| | cross-price effect | | | 0.0234 | | | | | |
| | | | | *0.73* | | | | | |
| trade & investment barriers | price effect | | | | -0.6128 | | | | |
| | | | | | *-1.50* | | | | |
| | cross-price effect | | | | 0.0579 | | | | |
| | | | | | *1.11* | | | | |
| inward oriented regulations | price effect | | | | | 0.2567 | | | |
| | | | | | | *0.87* | | | |
| | cross-price effect | | | | | 0.0255 | | | |
| | | | | | | *0.75* | | | |
| foreign ownership barriers | price effect | | | | | | -0.3613 | | |
| | | | | | | | *-1.71* | | |
| | cross-price effect | | | | | | 0.0326 | | |
| | | | | | | | *1.33* | | |
| regulatory barriers | price effect | | | | | | | -1.1752 | |
| | | | | | | | | *-2.73* | |
| | cross-price effect | | | | | | | 0.1202 | |
| | | | | | | | | *2.33* | |
| tariffs | price effect | | | | | | | | 0.9513 |
| | | | | | | | | | *2.44* |
| | cross-price effect | | | | | | | | -0.0763 |
| | | | | | | | | | *-1.77* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.10 | 0.17 | 0.10 | 0.10 | 0.12 | 0.11 | 0.15 | 0.14 |
| obs | | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |

Note: t-statistics in italics

**APPENDIX 3A: COMPOSITE DEMAND APPROACH. SHORT RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS. LONG RUN SAMPLE.**

| | | TRANSPORT SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| log (GDP) | | 1.5259 | 1.6659 | 1.5059 | 1.5644 | 1.5928 | 1.2139 | 1.6433 | 1.7722 |
| | | *4.29* | *5.09* | *4.46* | *4.54* | *4.55* | *4.59* | *5.74* | *5.62* |
| log (pop) | | -6.0149 | -5.9110 | -6.2765 | -5.8477 | -6.2482 | -5.0352 | -6.9098 | -5.5451 |
| | | *-1.99* | *-1.84* | *-2.02* | *-1.93* | *-2.04* | *-1.83* | *-2.19* | *-2.00* |
| log (dist) | | -1.8736 | -1.6664 | -1.8750 | -1.7987 | -1.7653 | -1.9715 | -1.5934 | -1.1889 |
| | | *-2.51* | *-1.86* | *-2.52* | *-2.57* | *-2.11* | *-2.73* | *-2.32* | *-1.56* |
| product market regulation | price effect | -0.0047 | | | | | | | |
| | | *-0.06* | | | | | | | |
| | cross-price effect | -0.0116 | | | | | | | |
| | | *-0.68* | | | | | | | |
| entrepreneur barriers | price effect | | 0.1098 | | | | | | |
| | | | *0.59* | | | | | | |
| | cross-price effect | | -0.0155 | | | | | | |
| | | | *-0.86* | | | | | | |
| state controls | price effect | | | -0.0325 | | | | | |
| | | | | *-0.52* | | | | | |
| | cross-price effect | | | -0.0040 | | | | | |
| | | | | *-0.37* | | | | | |
| trade & investment barriers | price effect | | | | 0.0507 | | | | |
| | | | | | *0.62* | | | | |
| | cross-price effect | | | | -0.0186 | | | | |
| | | | | | *-0.81* | | | | |
| inward oriented regulations | price effect | | | | | 0.0117 | | | |
| | | | | | | *0.11* | | | |
| | cross-price effect | | | | | -0.0078 | | | |
| | | | | | | *-0.56* | | | |
| foreign ownership barriers | price effect | | | | | | -0.0651 | | |
| | | | | | | | *-1.46* | | |
| | cross-price effect | | | | | | -0.0105 | | |
| | | | | | | | *-1.05* | | |
| regulatory barriers | price effect | | | | | | | -0.0856 | |
| | | | | | | | | *-1.02* | |
| | cross-price effect | | | | | | | 0.0280 | |
| | | | | | | | | *1.41* | |
| tariffs | price effect | | | | | | | | 0.2054 |
| | | | | | | | | | *1.76* |
| | cross-price effect | | | | | | | | -0.0211 |
| | | | | | | | | | *-1.24* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.47 | 0.48 | 0.46 | 0.48 | 0.47 | 0.52 | 0.47 | 0.52 |
| obs | | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |

Note: t-statistics in italics

## APPENDIX 3B: COMPOSITE DEMAND APPROACH. LONG RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS.

| | | BUSINESS SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| equilibrium correction (δ) | | -0.1475 | -0.1388 | -0.1523 | -0.1340 | -0.1497 | -0.1479 | -0.1109 | -0.1190 |
| | | *-4.33* | *-3.99* | *-4.47* | *-4.06* | *-4.33* | *-4.44* | *-3.27* | *-3.68* |
| product market regulation | price effect | -1.4364 | | | | | | | |
| | | *-4.00* | | | | | | | |
| | cross-price effect | 0.2147 | | | | | | | |
| | | *2.77* | | | | | | | |
| entrepreneur barriers | price effect | | -1.6331 | | | | | | |
| | | | *-3.44* | | | | | | |
| | cross-price effect | | 0.2128 | | | | | | |
| | | | *2.99* | | | | | | |
| state controls | price effect | | | -0.9956 | | | | | |
| | | | | *-3.83* | | | | | |
| | cross-price effect | | | 0.1507 | | | | | |
| | | | | *2.83* | | | | | |
| trade & investment barriers | price effect | | | | -1.8715 | | | | |
| | | | | | *-3.72* | | | | |
| | cross-price effect | | | | 0.3657 | | | | |
| | | | | | *2.69* | | | | |
| inward oriented regulations | price effect | | | | | -1.2418 | | | |
| | | | | | | *-3.70* | | | |
| | cross-price effect | | | | | 0.1827 | | | |
| | | | | | | *3.02* | | | |
| foreign ownership barriers | price effect | | | | | | -0.9669 | | |
| | | | | | | | *-4.20* | | |
| | cross-price effect | | | | | | 0.1166 | | |
| | | | | | | | *2.22* | | |
| regulatory barriers | price effect | | | | | | | -2.1842 | |
| | | | | | | | | *-2.40* | |
| | cross-price effect | | | | | | | 0.5191 | |
| | | | | | | | | *2.15* | |
| tariffs | price effect | | | | | | | | -1.8621 |
| | | | | | | | | | *-3.15* |
| | cross-price effect | | | | | | | | 0.2734 |
| | | | | | | | | | *2.72* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.18 | 0.14 | 0.19 | 0.18 | 0.18 | 0.20 | 0.08 | 0.15 |
| obs | | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 |

Note: t-statistics in italics

## APPENDIX 3B: COMPOSITE DEMAND APPROACH. LONG RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS.

| | | COMMUNICATION SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| equilibrium correction (δ) | | -0.3134 | -0.2972 | -0.3072 | -0.3131 | -0.3037 | -0.2878 | -0.2004 | -0.2863 |
| | | *-6.59* | *-6.44* | *-6.51* | *-6.38* | *-6.50* | *-6.03* | *-5.08* | *-5.89* |
| product market regulation | price effect | -2.0730 | | | | | | | |
| | | *-4.91* | | | | | | | |
| | cross-price effect | 0.2721 | | | | | | | |
| | | *3.70* | | | | | | | |
| entrepreneur barriers | price effect | | -2.0340 | | | | | | |
| | | | *-4.15* | | | | | | |
| | cross-price effect | | 0.2598 | | | | | | |
| | | | *3.27* | | | | | | |
| state controls | price effect | | | -1.3710 | | | | | |
| | | | | *-4.23* | | | | | |
| | cross-price effect | | | 0.1821 | | | | | |
| | | | | *3.60* | | | | | |
| trade & investment barriers | price effect | | | | -3.1522 | | | | |
| | | | | | *-4.82* | | | | |
| | cross-price effect | | | | 0.4335 | | | | |
| | | | | | *4.25* | | | | |
| inward oriented regulations | price effect | | | | | -1.6426 | | | |
| | | | | | | *-3.99* | | | |
| | cross-price effect | | | | | 0.2186 | | | |
| | | | | | | *3.22* | | | |
| foreign ownership barriers | price effect | | | | | | -1.4465 | | |
| | | | | | | | *-3.95* | | |
| | cross-price effect | | | | | | 0.1984 | | |
| | | | | | | | *3.14* | | |
| regulatory barriers | price effect | | | | | | | -1.4691 | |
| | | | | | | | | *-0.76* | |
| | cross-price effect | | | | | | | 0.1651 | |
| | | | | | | | | *0.60* | |
| tariffs | price effect | | | | | | | | -1.9040 |
| | | | | | | | | | *-3.82* |
| | cross-price effect | | | | | | | | 0.2393 |
| | | | | | | | | | *3.19* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.27 | 0.25 | 0.26 | 0.25 | 0.26 | 0.23 | 0.15 | 0.22 |
| obs | | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 |

Note: t-statistics in italics

## APPENDIX 3B: COMPOSITE DEMAND APPROACH. LONG RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS.

| | | CONSTRUCTION SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| equilibrium correction (δ) | | 0.0000 | -0.3430 | -0.3456 | -0.3508 | -0.3454 | -0.3453 | -0.3412 | -0.3492 |
| | | *-0.80* | *-8.51* | *-8.78* | *-8.75* | *-8.71* | *-8.67* | *-8.43* | *-8.68* |
| product market regulation | price effect | 2200.0000 | | | | | | | |
| | | *0.09* | | | | | | | |
| | cross-price effect | 3000.0000 | | | | | | | |
| | | . | | | | | | | |
| entrepreneur barriers | price effect | | 0.1267 | | | | | | |
| | | | *0.15* | | | | | | |
| | cross-price effect | | 0.0607 | | | | | | |
| | | | *0.47* | | | | | | |
| state controls | price effect | | | 0.2734 | | | | | |
| | | | | *0.57* | | | | | |
| | cross-price effect | | | 0.0966 | | | | | |
| | | | | *1.12* | | | | | |
| trade & investment barriers | price effect | | | | 0.2231 | | | | |
| | | | | | *0.25* | | | | |
| | cross-price effect | | | | 0.0826 | | | | |
| | | | | | *0.47* | | | | |
| inward oriented regulations | price effect | | | | | 0.3473 | | | |
| | | | | | | *0.57* | | | |
| | cross-price effect | | | | | 0.1033 | | | |
| | | | | | | *0.99* | | | |
| foreign ownership barriers | price effect | | | | | | 0.4238 | | |
| | | | | | | | *0.95* | | |
| | cross-price effect | | | | | | 0.0027 | | |
| | | | | | | | *0.03* | | |
| regulatory barriers | price effect | | | | | | | 1.8707 | |
| | | | | | | | | *1.12* | |
| | cross-price effect | | | | | | | -0.3539 | |
| | | | | | | | | *-1.05* | |
| tariffs | price effect | | | | | | | | -0.0360 |
| | | | | | | | | | *-0.04* |
| | cross-price effect | | | | | | | | 0.0795 |
| | | | | | | | | | *0.61* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | -0.03 | 0.37 | 0.40 | 0.38 | 0.39 | 0.38 | 0.37 | 0.38 |
| obs | | 131 | 131 | 131 | 131 | 131 | 131 | 131 | 131 |

Note: t-statistics in italics

## APPENDIX 3B: COMPOSITE DEMAND APPROACH. LONG RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS.

| | | FINANCE SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| equilibrium correction (δ) | | -0.2020<br>*-6.38* | -0.1995<br>*-6.15* | -0.2008<br>*-6.35* | -0.2051<br>*-6.46* | -0.2012<br>*-6.33* | -0.2079<br>*-6.56* | -0.2137<br>*-6.75* | -0.1958<br>*-6.06* |
| product market regulation | price effect | -2.1615<br>*-2.13* | | | | | | | |
| | cross-price effect | 0.2400<br>*1.81* | | | | | | | |
| entrepreneur barriers | price effect | | -2.5525<br>*-1.94* | | | | | | |
| | cross-price effect | | 0.2607<br>*1.93* | | | | | | |
| state controls | price effect | | | -1.4280<br>*-2.10* | | | | | |
| | cross-price effect | | | 0.1676<br>*1.76* | | | | | |
| trade & investment barriers | price effect | | | | -3.1667<br>*-2.38* | | | | |
| | cross-price effect | | | | 0.3666<br>*1.99* | | | | |
| inward oriented regulations | price effect | | | | | -1.8564<br>*-2.07* | | | |
| | cross-price effect | | | | | 0.2024<br>*1.85* | | | |
| foreign ownership barriers | price effect | | | | | | -1.6724<br>*-2.57* | | |
| | cross-price effect | | | | | | 0.1904<br>*2.00* | | |
| regulatory barriers | price effect | | | | | | | -4.5347<br>*-2.86* | |
| | cross-price effect | | | | | | | 0.4973<br>*2.58* | |
| tariffs | price effect | | | | | | | | -0.7807<br>*-0.56* |
| | cross-price effect | | | | | | | | 0.1029<br>*0.65* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.21 | 0.21 | 0.21 | 0.22 | 0.21 | 0.22 | 0.23 | 0.18 |
| obs | | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |

Note: t-statistics in italics

## APPENDIX 3B: COMPOSITE DEMAND APPROACH. LONG RUN GRAVITY ESTIMATIONS FOR SERVICES IMPORTS.

| | | TRANSPORT SERVICES IMPORTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SERVICES IMPORTS** | | product market regulation | entrepreneur barriers | state controls | trade & investment barriers | inward oriented regulations | foreign ownership barriers | regulatory barriers | tariffs |
| equilibrium correction (δ) | | -0.1645 | -0.1544 | -0.1699 | -0.1506 | -0.1629 | -0.1903 | -0.1495 | -0.1320 |
| | | *-4.83* | *-4.72* | *-5.13* | *-4.45* | *-4.90* | *-5.40* | *-4.62* | *-4.06* |
| product market regulation | price effect | -0.8271 | | | | | | | |
| | | *-2.51* | | | | | | | |
| | cross-price effect | 0.0570 | | | | | | | |
| | | *1.11* | | | | | | | |
| entrepreneur barriers | price effect | | -1.1346 | | | | | | |
| | | | *-2.13* | | | | | | |
| | cross-price effect | | 0.0659 | | | | | | |
| | | | *1.25* | | | | | | |
| state controls | price effect | | | -0.6884 | | | | | |
| | | | | *-2.77* | | | | | |
| | cross-price effect | | | 0.0408 | | | | | |
| | | | | *1.09* | | | | | |
| trade & investment barriers | price effect | | | | -0.6729 | | | | |
| | | | | | *-1.98* | | | | |
| | cross-price effect | | | | 0.0912 | | | | |
| | | | | | *1.28* | | | | |
| inward oriented regulations | price effect | | | | | -0.8824 | | | |
| | | | | | | *-2.42* | | | |
| | cross-price effect | | | | | 0.0522 | | | |
| | | | | | | *1.17* | | | |
| foreign ownership barriers | price effect | | | | | | -0.4964 | | |
| | | | | | | | *-3.24* | | |
| | cross-price effect | | | | | | 0.0198 | | |
| | | | | | | | *0.65* | | |
| regulatory barriers | price effect | | | | | | | -0.7106 | |
| | | | | | | | | *-1.09* | |
| | cross-price effect | | | | | | | 0.1491 | |
| | | | | | | | | *0.89* | |
| tariffs | price effect | | | | | | | | -0.2766 |
| | | | | | | | | | *-0.66* |
| | cross-price effect | | | | | | | | 0.0670 |
| | | | | | | | | | *1.34* |
| country dummies | | yes | yes | yes | yes | yes | yes | yes | yes |
| adj $R^2$ | | 0.32 | 0.31 | 0.33 | 0.31 | 0.32 | 0.36 | 0.28 | 0.29 |
| obs | | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |

Note: t-statistics in italics