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Cultural Distance and International Trade in Services: A Disaggregate View[★]

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Abstract

In this paper, we estimate the effect of “cultural distance” on bilateral trade in services. Our measure of cultural distance is based on the scores developed by Geert Hofstede, which reflect country averages of individuals’ attitudes towards hierarchies, personal initiative, competition, uncertainty etc. Controlling for other standard ingredients of gravity equations, we show that an aggregate measure of cultural distance has a significantly negative effect on total bilateral services trade. Once we take a more disaggregate view, we find that the strength and sign of this effect differs across various aspects of cultural distance and across various types of services.

Keywords: Trade in services, cultural distance, Hofstede scores, gravity equation

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1. Introduction

Due to advances in transport and communication technologies and the dismantling of administrative barriers, international trade in services has increased substantially in recent decades.¹ However, as with goods trade, the volume of services exchanged between countries differs substantially across country pairs: while Germany exported an impressive 29,183 mln. USD of services to the United Kingdom in 2011, its services exports to Portugal in that year amounted to a mere 1,445 mln USD. In this paper, we contribute to explaining these differences by estimating a set of gravity equations which include explicit measures of “cultural distance”.

We argue that accounting for distance is particularly important when it comes to explaining international trade in services. This is due to a crucial feature of services trade: According to Hill (1999:428), “...services cannot be produced without the agreement, co-operation and possibly active participation of the consuming unit(s).” Moreover, “...the outputs produced are not separate entities that exist independently of the producers or consumers.” As argued by Francois and Hoekman (2010), the need for a close interaction between producers and consumers, which Hill (1999) identifies as the defining feature of services transactions, results in a “proximity burden” that may substantially reduce the volume of trade. Sure, the rise of the internet has rendered the geographical component of this burden – i.e. the requirement for trading parties to be physically close to each other – less important, and the general trend towards standardization – e.g. the widespread knowledge of the English language – is substantially facilitating communication across borders. Nevertheless, there are many other aspects of “cultural distance” that are not reflected by geographical parameters or by the sharing of a common language. We argue that differences in implicit norms, priorities, and perceptions may hamper the mutual understanding and trust which represent the basis for successful services trade.

In order to capture these aspects of cultural distance, we use the scores developed by Geert Hofstede (2015). These scores are country-specific measures for individuals’ attitudes towards hierarchies, personal initiative, competition, uncertainty etc. Based on

¹ Reinsdorf and Slaughter (2009), Francois and Hoekman (2010) and Jensen (2011) provide recent surveys on international services trade.

these scores, we first compute an *aggregate* measure of cultural distance and test whether this measure significantly influences the total volume of services trade between countries. In a second step, we estimate the effect of cultural distance on various services types, ranging from communication and construction to finance and travel. Finally, we replace our aggregate measure of cultural distance by the individual Hofstede scores and explore whether cross-country differences in categories such as “distance to power”, “individualism”, “masculinity” etc. affect total services trade and the bilateral export of individual services types.

Using a panel data set that covers 28 European countries and, on average, 54 trading partners for the time period from 2004 through 2011, we find that the aggregate measure of cultural distance has a significantly negative effect on bilateral *services* exports. This finding is based on a specification that includes a large number of standard gravity equation regressors, and it is robust across several sample variations. Once we explore whether aggregate cultural distance affects individual services categories, we find substantial differences, with financial and insurance-related services as well as computer/information and cultural services exhibiting a much stronger reaction than, e.g., transportation and travel services. Moreover, different aspects of cultural distance differ in their effect on services trade. Our results thus support the claim that international trade in services is affected by the distance between national traits that goes beyond language and geography.

The rest of the paper is structured as follows: In Section 2, we provide a brief survey of the literature to highlight our own contribution. Section 3 describes the Hofstede scores and our aggregate measure of cultural distance. Section 4 provides information on the trade data we use as well as on the control variables. Section 5 introduces our empirical strategy and Section 6 presents our results. In Section 7 we perform some important robustness checks, experimenting with alternative samples and estimators. Finally, Section 8 summarizes and concludes.

2. Relevant Literature

While the literature that uses gravity equations to identify the determinants of bilateral *goods* trade is voluminous (see Head and Mayer 2013 for a recent survey) the number of

analyses that deal with the determinants of bilateral services trade is much lower. Early contributions to this literature are Walsh (2006) and Kimura and Lee (2006). Walsh focuses on four services types (transport, travel, government and other commercial services) and shows that geographical distance has no significant influence on travel, government and commercial services. Kimura and Lee (2006) demonstrate that, controlling for geographical distance, the effect of adjacency is much stronger for goods trade than for services trade. Conversely having a common language enhances services trade, but does not affect goods trade. In a study on the determinants of bilateral trade in intermediate goods and services, Miroudot et al. (2009) show that sharing a common border and belonging to a regional trade agreement (EU, NAFTA) matters for goods trade, but does not have a significant effect on services trade. More recently, Hellmanzik and Schmitz (2015) show that “virtual proximity”, as reflected by bilateral hyperlinks and website visits, significantly enhances audiovisual services trade. By contrast, an aggregate measure of cultural distance that is similar to the one used in our paper does not seem to matter for that type of transactions.

While “cultural distance” as we define it has rarely been related to international services trade, there is a number of studies that explore its effect on goods trade and capital flows. Tadesse and White (2008) use the World Values Survey and the European Values Survey data to consider cultural distance as a proxy for the extent of trust between trading parties. They find a significantly negative effect on trade. In the subsequent paper published in 2010, they show that the United States trade less with “culturally distant” countries. Guiso et al. (2009) find a negative relationship between cultural distance – proxied by the history of conflicts, religion, genetic as well as somatic differences – and goods trade. Disdier et al. (2010) represent cultural proximity by the volume of bilateral cultural goods trade and find a significant positive effect of this measure on overall bilateral trade. Using bilateral voting scores at the Eurovision Song Contest, Felbermayr and Toubal (2010) show that cultural proximity positively affects goods exports and imports. Kogut and Singh (1988) construct an aggregate cultural distance measure based on Hofstede’s scores to study firms’ choice of entry mode (export vs. establishing a foreign affiliate). Davies et al. (2008) include the parent and host Hofstede scores to investigate the effect of culture on FDI and confirm the significance of cultural dimensions. Lucey and Zhang (2010) test whether the Kogut and Singh measure affects the co-movement of

stock market returns. They draw the conclusion that greater cultural proximity enhances stock market co-movement. Finally, Aggarwal et al. (2011) explore how aggregate and disaggregate indicators of cultural distance based on Hofstede's scores affect countries' foreign portfolio investment (FPI). They find that both measures are significant determinants of FPI patterns – both directly and interacted with geographical distance. Moreover, they show that some aspects of culture, like the distance in individualism, can have a positive effect on FPI.

The contribution of our study is twofold: first, we introduce a novel “aggregate” measure of cultural distance based on Hofstede's scores and demonstrate that, controlling for many other potential trade impediments, this measure has a significantly negative effect on total services trade. Second, we take a more disaggregate view than the previous literature and explore whether and how different aspects of cultural distance affect different types of services trade.

3. A Measure of Cultural Distance

Our key regressor of interest is a measure of “cultural distance” that is based on the quantitative cultural scores obtained by the social psychologist Geert Hofstede. According to Hofstede (1991:5) culture is “...the collective programming of the mind which distinguishes the members of one group or category of people from another”. In the early 1970s, Hofstede started quantifying various cultural attributes by conducting a survey at different national offices of the IBM corporation. Even though the questionnaire was distributed in two waves and there have been a few additional surveys on other populations since then, there is only one observation per country². The Hofstede scores are available in an open database for over 100 countries and the following dimensions of culture (Hofstede 2015):

² Hofstede (2009) argues that, despite the fact that the scores assigned to different nations are based on interviews with a specific sample of people – employees of IBM – and the fact that most of them were retrieved more than 30 years ago, they have maintained their relevance.

- **Power Distance (PDI)** – “Power distance is the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally. This represents inequality (more versus less), but defined from below, not from above. It suggests that a society's level of inequality is endorsed by the followers as much as by the leaders.”
- **Individualism (IDV)** – “Individualism on the one side versus its opposite, collectivism, is the degree to which individuals are integrated into groups. On the individualist side we find societies in which the ties between individuals are loose: everyone is expected to look after her/himself and her/his immediate family. On the collectivist side, we find societies in which people from birth onwards are integrated into strong, cohesive in-groups, often extended families (with uncles, aunts and grandparents) which continue protecting them in exchange for unquestioning loyalty.”
- **Masculinity (MAS)** – “Masculinity versus its opposite, femininity, refers to the distribution of emotional roles between the genders which is another fundamental issue for any society to which a range of solutions are found. The IBM studies revealed that (a) women's values differ less among societies than men's values; (b) men's values from one country to another contain a dimension from very assertive and competitive and maximally different from women's values on the one side, to modest and caring and similar to women's values on the other. The assertive pole has been called masculine and the modest, caring pole feminine.”
- **Uncertainty Avoidance (UAI)** – “Uncertainty avoidance deals with a society's tolerance for uncertainty and ambiguity. It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations. Unstructured situations are novel, unknown, surprising, different from usual. Uncertainty avoiding cultures try to minimize the possibility of such situations by strict laws and rules, safety and security measures, and on the philosophical and religious level by a belief in absolute Truth: ‘there can only be one Truth and we have it’. [...]”

In our data set, each of these scores can take values between 0 and 112, with a higher value indicating that power distance, individualism, masculinity etc. are more firmly entrenched in a nation's culture.³

A wide-spread way of using the individual Hofstede scores in order to arrive at an aggregate measure of cultural distance is to compute a weighted sum of squared differences, with the weights reflecting the cross-country variance of the individual scores (see, e.g., Kogut and Singh, 1988). However, as emphasized by Kandogan (2011), this approach neglects the potential correlation between scores. Depending on the strength and direction of these correlations, this results in an over- or underrating of cultural distance. Based on this observation, Kandogan (2011) suggests the following alternative measure:

$$CD_{ij}^{aggr} = \frac{1}{D} \left(\mathbf{I}_i - \mathbf{I}_j \right)' \mathbf{S}^{-1} \left(\mathbf{I}_i - \mathbf{I}_j \right), \quad (1)$$

where $\left(\mathbf{I}_i - \mathbf{I}_j \right)$ is a $D \times 1$ vector of differences between country i and country j . In our case, $D = 4$, since $\left(\mathbf{I}_i - \mathbf{I}_j \right)$ refers to the four aspects of “culture” enumerated above. The 4×4 matrix $\mathbf{S}^{-1}$ is the inverse of the covariance matrix for the four dimensions. The intuition behind this expression is straightforward: dimensions that are highly correlated show similar aspects of national culture and should therefore get a lower weight in the sum on which CD_{ij}^{aggr} is based. We found that the off-diagonal elements of the covariance matrix $\mathbf{S}$ are, indeed, different from zero. Hence, we consider the aggregate cultural distance measure based on (1) to be superior to the measure used by Kogut and Singh (1988).⁴

³ In later survey waves, Hofstede's team explored cultural distance along two further dimensions: “Long-Term Orientation” and “Indulgence vs. Restraint”. Since data on these two aspects are not based on the same sample of respondents as the data underlying the initial four categories, we decided not to include them in our measure of cultural distance.

⁴ Yeganeh (2014) argues that, on top of exhibiting different correlation structures, the various aspects of cultural distance are not of equal economic and social importance. He therefore suggests an approach that assigns weights to the four categories mentioned above. The categories' weights are based on their

In the regressions described below, we will use CD_{ij}^{aggr} as a composite measure of cultural distance. However, we are also interested in the effect of *individual* aspects of national culture on services trade. To achieve this goal, we will later use the *absolute differences* between country i 's and country j 's score for each category d (with $d = \text{PDI, IDV, MAS, UAI}$), i.e. $CD_{ij}^d = |I_i^d - I_j^d|$, as regressors.

We believe that Hofstede's scores capture aspects of "cultural distance" which are not reflected by geographical parameters or by the sharing of a common language or religion, and that – despite the lack of time variation – these scores are ideally suited to represent differences in fundamental national traits. Moreover, we believe that these aspects of cultural distance are especially relevant for services trade. As outlined in the introduction, the necessary interaction between producers and customers makes services transactions vulnerable to all kinds of behavioral mismatches: if the "collective programming of the mind" mentioned by Hofstede differs too much between nations, this may result in different codes of conduct, a different set of implicit norms and taboos, a different interpretation of rules etc. We conjecture that these differences seriously reduce the level of trust and communication that is crucial for many services transactions. However, we are aware that the strength of this effect may vary across services categories, and that not all dimensions of cultural distance necessarily impede services trade to the same extent. This is why, after exploring the influence of "aggregate" cultural distance on total services trade, we will later also consider the relationship between different Hofstede scores and services categories.

4. Regression Equation and Data Description

Our data set, which is based on information given by the Eurostat balance of payments (BoP) statistics, covers services exports from 28 EU member countries, the United States

relevance in explaining cross-country differences in the human development indicator. In Section 7, we will demonstrate that following Yeganeh's approach does not change our key results.

and Japan to, on average, 54 destination countries for the years 2004 to 2011.⁵ Eurostat provides data on total services exports and on eleven services types as defined in the Manual on Statistics of International Trade in Services (MSITS) (see United Nations, 2002).⁶ In what follows, we will estimate variants of the following regression equations:⁷

$$X_{ijt} = \exp \left[\gamma_0 + \beta CD_{ij}^{aggr} + \gamma_1 \ln Y_{it} + \gamma_2 \ln Y_{jt} + \sum_k \delta_k x_{k,ijt} + \xi_t \right] + \varepsilon_{ijt} \quad (2a)$$

$$X_{ijt} = \exp \left[\gamma_0 + \sum_d \beta_d CD_{ij}^d + \gamma_1 \ln Y_{it} + \gamma_2 \ln Y_{jt} + \sum_k \delta_k x_{k,ijt} + \xi_t \right] + \varepsilon_{ijt} \quad (2b)$$

In (2), X_{ijt} represents the value of services exports from country i to country j in year t , measured in US dollars. While we will start by considering the *total* value of services exports as dependent variable, we will later consider individual services types. CD_{ij}^{aggr} is our “aggregate” measure of cultural distance between country i and country j , while CD_{ij}^d refers to an individual Hofstede score indexed by d . Again, we will start by analyzing the aggregate measure of cultural distance described in the previous section and then consider the influence of distance with respect to individual Hofstede scores. The variables $\ln Y_{it}$ and $\ln Y_{jt}$ represent the natural logarithm of country i ’s and country j ’s GDP in the year t , measured in constant US dollars⁸. The variables $x_{k,ijt}$ control for other factors that may enhance or hamper services trade between the two countries. We will describe these variables in detail below. Some of them (like geographical distance) refer to country pairs, while others (like economic freedom) refer to one of the two countries. The time

⁵ The list of destination countries is given in the Appendix in the “Sample size description” section. For Cyprus, we use the Hofstede scores of Greece, based on conjecture that, in terms of shared culture, the two countries are sufficiently close.

⁶ A list and definition of the services types we consider is given in the Appendix. Note that balance of payments data cover services supplied through mode 1 (cross-border supply), mode 2 (consumption abroad) and mode 4 (presence of natural persons), but not through mode 3 (commercial presence).

⁷ This specification foreshadows our use of the Poisson pseudo-maximum-likelihood (PPML) estimator suggested by Santos-Silva and Tenreyro (2006) and motivated below (see Section 5).

⁸ GDP data are retrieved from the World Bank’s World Development Indicators.

dummy ξ_t captures factors that affect the evolution of services trade between *all* country pairs – such as the general trend towards standardization and deregulation mentioned above – and ε_{ijt} is the error term. When estimating the covariance matrix of disturbances, we will later allow them to be correlated over time, i.e. we will use robust standard errors that are clustered at the country pair level. Note that our key regressors, the cultural distance measures, do not exhibit any time variation. This prevents us from including country-pair fixed effects. Following Kimura and Lee (2006), we also abstained from using country fixed effects: Most of the regressors we use exhibit little time variation, and including country fixed effects would substantially deprive them of explanatory power.⁹

In addition to our measure(s) of “cultural distance”, we include various other proxies for the explicit or implicit barriers that may hamper services trade: the geographical distance between the respective countries’ capitals, a common language dummy (Dunlevy, 2006; Kimura and Lee, 2006), a dummy for common colonial ties (Santos Silva and Tenreyro, 2006), and an adjacency dummy (Kimura and Lee, 2006). All these data have been retrieved from the CEPII database (Mayer 2011). We also include a dummy for a common religion (Linders and Groot, 2006), which is built on information provided by the CIA World Factbook (2014). This variable equals 1 if the majorities of two countries share the same religion (Hinduism, Islam, Christianity, Buddhism or Judaism).

To capture the potential effect of trade policy on services trade, we include a dummy variable reflecting membership in regional trade agreements (RTA). This dummy is constructed using the WTO’s list of trade agreements available on the WTO webpage.¹⁰

Large differences in institutional quality such as corruption, the rule of law or political participation may also result in barriers that hamper services trade between two

⁹ The conjecture that including country-fixed effects generates a multicollinearity problem was confirmed by the analysis of variance inflation factors. As part of our robustness checks reported in Section 7 we will, however, demonstrate that the inclusion of fixed effects at the country level does not change our key results.

¹⁰ We accounted for the following regional trade agreements: European Union (EU), Association of Southeast Asian Nations (ASEAN), European Free Trade Association (EFTA), Asia–Pacific Trade Agreement (APTA), North American Free Trade Agreement (NAFTA), Asia-Pacific Economic Cooperation (APEC). Thus, we included both trade in goods and trade in services agreements as we agree with the proposition that goods trade agreements can possibly facilitate services trade as well (Kimura and Lee, 2006).

countries. We therefore include a measure of institutional distance (ID), which is based on the six dimensions of institutional quality developed by the World Bank's Worldwide Governance Indicators (WGI) project, and constructed in the same manner as the aggregate measure of cultural distance proposed by Kandogan (2011).

To account for the fact that cultural distance between two countries may shrink if a large share of the population in country *i* originates from country *j* (and vice versa), we include two additional regressors: the migrant population from country *i* (*j*) relative to the total population of country *j* (*i*). This data is taken from the global data base of the Development Research Centre on Migration, Globalisation and Poverty (Migration DRC) and mainly refers to the 2000s rounds of population censuses.

Finally, we follow the suggestion of Deardoff (1998) and Harrigan (2002) by including variables that reflect the *remoteness* of countries *i* and *j*. The regressor $Remoteness_{it}$ captures country *i*'s relative distance from the rest of the world, with the distance of other countries being weighted by their share in world GDP, i.e.

$$Remoteness_{it} = \sum_j \frac{Distance_{ij}}{Y_{jt} / Y_{World,t}}$$

Note that, due to the changing weights, these “multilateral resistance” terms exhibit some time variation (Baldwin and Taglioni, 2006).

We include two more variables that capture countries' potential to export or import: countries' general trade openness (OPEN) is computed by dividing the sum of exports and imports by its GDP.¹¹

Moreover, following Kimura and Lee (2006), we add for each country the index of Economic freedom of the world (EFW) constructed by the Fraser Institute.¹² We conjecture that economic freedom is particularly important for services trade, with

¹¹ The respective data are retrieved from the World Bank's WDI.

¹² The index of economic freedom shows the extent to which people are allowed to buy, use, exchange and sell their property. It also indicates the level of a property rights protection. It is based on five sub-indices which refer to the following areas: size of government; legal system and property rights; access to sound money access; freedom to trade internationally; regulation of credit, labor and business (Gwartney, Lawson et al., 2013).

countries that exhibit higher values of EFW being able to generate more services exports and willing to absorb more services imports.

5. Choice of estimator

There are various options on how to estimate equations (2a) and (2b), the most common being OLS applied to a logarithmic transformation of the LHS and the RHS of the original equation.¹³ However, as highlighted by Santos-Silva and Tenreyro (2006), this approach meets two important problems: first, the log-transformation eliminates those observations for which bilateral exports amount to zero.¹⁴ Second, in the presence of heteroscedasticity – a conjecture which is quite plausible in a heterogeneous sample like ours – the log-transformation results in a correlation between the error term and the regressors, thus violating the assumption underlying the consistency of the OLS estimator. Based on these considerations, we use the Poisson pseudo-maximum-likelihood (PPML) estimator suggested by Santos-Silva and Tenreyro (2006) for most of our regressions. However, as part of the robustness checks reported in Section 7, we will also apply alternative estimators like OLS, as well as a Heckman model that accounts for zero trade flows by combining the equation of interest with a selection equation.

6. Results

We start by estimating equation (2a), using the “aggregate” measure of cultural distance (CD_{ij}^{aggr}) as a key regressor. To set the stage, we check whether this variable has an effect

¹³ Strictly speaking, the specification underlying OLS estimation of a log-transformed equation is

$$\ln X_{ijt} = \gamma_0 + \beta CD_{ij}^{aggr} + \gamma_1 \ln Y_{it} + \gamma_2 \ln Y_{jt} + \sum_k \delta_k x_{k,ijt} + \xi_t + \eta_{ijt},$$

which differs from (2a) in its interpretation of the error term.

¹⁴ In our sample, roughly one percent of all (potential) total services trade relationships are characterized by zero trade. However, for individual services categories, the percentages are much higher, running from eight percent (Other Business Services) to 37 percent (Construction). This indicates that the loss of information implied by the log-transformation is not negligible.

on bilateral *goods* exports. We then proceed by estimating its influence on total bilateral *services* exports and individual services categories. The results are displayed in Table 1.

A look at columns (1) and (2) indicates that most of the control variables have the expected influence, with the differences between the two trade categories – e.g. the stronger impact of geographical distance and regional trade agreements for goods trade than for services trade – confirming the findings in Kimura and Lee (2006). Other interesting findings are that economic freedom in the exporting country has a negative impact on goods trade, while it has a positive effect on services trade. Finally, the presence of migrants originating from the trading partner significantly affects the volume services trade between two countries, while it barely influences goods trade.

Columns (1.1) and (1.2) also indicate that aggregate cultural distance has a *significantly negative* effect on both goods and services trade, with the coefficient of goods trade actually being larger in absolute value. However, as we move to the right of Table 1 (columns (1.3) to (1.12)), we see that individual services categories differ substantially regarding their reaction to cultural distance: while financial, insurance, computer/information and cultural services exports are negatively affected by aggregate cultural distance, this distance does not seem to matter for licenses, transportation and travel services. These results suggest that there are some types of services that are more sensitive to the frictions associated with cultural distance than others, and confirm our conjecture that services should be considered at the disaggregated level (Kimura and Lee, 2006). In the case of financial, insurance and cultural services, this is plausible since trust and the existence of joint values play an important role for successful transactions in these industries. By contrast, the successful delivery of transportation and travel services does not necessarily depend on cultural proximity. In fact, the trade-enhancing effect of (cultural) difference may be as important as the trade-inhibiting effect of (cultural) distance for travel – i.e. tourism – services.

Table 2 presents the results of estimating equation (2b), i.e. of using individual measures of cultural distance that are based on the four Hofstede scores. Interestingly, there are large differences across these scores in terms of the size, significance, and sign of the effect. What stands out is the significantly *negative* effect of PDI (power distance) and of MAS (masculinity) for a substantial number of services categories. This finding confirms our initial hypothesis: if two countries differ substantially with respect to the

obedience to established hierarchies that they expect and with respect to the emphasis they place on competition vs. cooperation, this is likely to undermine mutual understanding and trust among trading partners and thus make it more difficult to interact. As the results in Table 2 indicate, these aspects are especially important in the financial industry. By contrast, differences in individualism (IDV) and uncertainty avoidance (UAI) seem to *enhance* international trade for some services categories. We offer the following explanation: while “cultural distance” may act as a trade cost by impeding communication and trust, the particular aspect reflected by IDV (the differences in how societies value individual initiative over subordination) and UAI (the difference in how societies allow the challenging of established truths) may actually raise the potential for mutually beneficial transactions, with one country exhibiting the creativity and entrepreneurial spirit that its trading partner is lacking. Note, however, that the boon of diversity with respect to uncertainty avoidance (UAI) turns into a burden when it comes to the international trade of cultural services – a result that makes sense, given that the successful export of, e.g., music and movies requires trading partners to be on a similar wavelength.

7. Robustness Checks

To check whether our findings are due to using a panel data set in order to estimate the effect of a time-invariant variable like cultural distance, Table 3 shows the results of considering average values from 2004 to 2011 for all time-variant variables. Of course, this reduces the size of the sample by roughly 90 percent. Nevertheless, our main results are barely affected by this modification: while aggregate cultural distance has a negative effect on total services trade, the effect differs across services categories, with financial services exhibiting the highest sensitivity and licensing, transportation and travel services not being affected at all.

Our next robustness check departs from the observation that our data set covers the years before and after the start of the financial crisis of 2008-2009, which resulted in a massive decline of global trade (Bems et al., 2012). To test whether our results are valid both before and during/after the global financial crisis, we split the total sample into two intervals, 2004 – 2007 and 2008 – 2011. Tables 4 and 5 document that the negative impact of the aggregate cultural distance can be observed in both subsamples. However,

while the coefficient of aggregate cultural distance increases in absolute value when we move from the first to the second interval, the effect on most individual services categories declines. This suggests that other drivers of services trade may have become more important during the tumultuous period that started in 2008.

So far, we have controlled for the quality of cross-border communication by including a “common-language dummy”. But, of course, the lack of a common language may be easily compensated by the existence of a *lingua franca* – say, English – which is spoken by large parts of the population in both the exporting and the importing country. To check the possibility that our cultural distance measures essentially capture this type of “linguistic proximity”, we added another control variable which multiplies the percentages of the population in countries i and j who speak English. Hence, our additional regressor $COMMUNICATION_{ij}$ measures the likelihood that two randomly selected inhabitants of the two countries can communicate in that language.¹⁵ Table 6 displays the results of this variation. Not surprisingly, this additional variable has a significantly positive effect on total services trade and on most individual services categories. However, including it does not affect our key results.¹⁶

To derive the results underlying Table 7, we adopted the approach of Yeganeh (2014) who argues that using measures like the one defined by equation (1) misses the fact that some aspects of culture may be much more relevant than others, and who therefore assigns weights to the individual aspects. These weights, in turn, are based on a regression that relates the human development index (HDI) to the Hofstede measures. We proceed in a similar way, but instead of the HDI, we use the measure of institutional difference (ID) to test for relevance. More specifically, those aspects of cultural distance that contribute more to institutional distance enter equation (1) with a higher weight. As

¹⁵ Data on English language skills are provided by the Wikipedia entry “List of countries by English-speaking population” and the references mentioned therein (Wikipedia 2015). Note that such data are only available for a subset of countries in our sample. Since this implies a large drop in the number of observations, we did not include this communication measure in our benchmark specification.

¹⁶ Interestingly, $COMMUNICATION$ does not have a significant effect on goods exports, which offers further support to the general idea that “soft” measures of distance matter much more for services than for goods trade.

documented by the results displayed in Table 7, this modification does not affect our key findings.

In a next step, we included country fixed effects when estimating equation (2a). The results reported in Table 8 document that this variation does not alter our key findings. In fact, the coefficient of cultural distance is now greater (in absolute value) for services trade than for goods trade. Moreover, the hierarchy of importance among services categories changes somewhat. What induces us to take these results with a grain of salt, however, are the rather exotic coefficients of the exporting and the importing countries' GDP. As argued above, this is likely to be driven by the rather moderate time variation of GDP.

In a final set of robustness checks, we applied alternative econometric approaches to estimate our model: more specifically, we used the standard OLS estimator and Heckman's maximum likelihood model, with the latter explicitly accounting for the potential endogeneity of zero-trade observations.¹⁷ Due to the fact that the sample selection model is expected to predict better when the selection equation contains at least one variable excluded from the behavioral equation (Heckman, 1976), we follow Helpman et al. (2008) and choose the religion dummy as an excluded regressor, since we expect it to mainly influence the decision about trade (fixed costs), but not the decision about the actual volume of trade. For comparison purposes, Table 9 also shows the results of our benchmark regression, which is based on the PPML estimator. The table demonstrates the robustness of our findings: while the coefficient of aggregate cultural distance differs a bit across approaches, the significantly negative effect does not hinge on the choice of a particular estimator.

8. Summary and conclusions

In this paper, we have presented the results of estimating a set of gravity equations to determine the importance of "cultural distance" for services trade. This project was based on the conjecture that, due to the necessary interaction between customer and producer,

¹⁷ Following Martin and Pham (2008), we employ a maximum likelihood estimator rather than a two-stage sample selection specification (see also Cameron and Trivedi, 2005).

services trade is particularly sensitive to all types of communication failures. Observing that the subtle aspects of culture that support or hamper mutual understanding and respect are not captured by a common language or religion or by geographical parameters, we have used measures of cultural distance based on Geert Hofstede's scores.

The results of our empirical analysis confirm our conjecture: total services trade is negatively affected by an aggregate measure that encompasses all aspects of cultural distance considered by Hofstede. If inhabitants from two countries substantially differ with respect to their obedience to hierarchies, their valuation of personal initiative, their willingness to cooperate, as well as their adherence to established customs and values, it is unlikely that they find a basis for services transactions. However, a closer look reveals a more nuanced picture: even aggregate cultural distance does not hamper all categories of services trade to the same extent, with some types of services apparently being more sensitive than others. More specifically, it turned out that financial, insurance, computer/information and cultural services are particularly vulnerable to cultural distance, while transportation and travel services are not affected by this potential trade impediment. Moreover, there are considerable differences among the various aspects of cultural distance when it comes to their impact on total services trade and individual services categories. In fact, it appears that, for some aspects of culture, the trade-enhancing effect of “difference” dominates the trade-impeding effect of “distance”.

We see our contribution as a step ahead in gaining a better understanding of “culture” as a determinant of services trade. While our results demonstrate that the Hofstede scores capture important aspects that are relevant for services trade, it is beyond doubt that alternative measures which are comprehensive, easy to interpret and – ideally: time-variant – are desirable. We believe that this provides ample scope for future research.

9. References

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Tables

Table 1: The effect of “aggregate” cultural distance on goods trade, services trade, and individual services categories

	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(1.7)	(1.8)	(1.9)	(1.10)	(1.11)	(1.12)
	Goods (Total)	Services (Total)	Communicational	Computer	Construction	Financial	Insurance	OBS	Cultural	License	Transportation	Travel
CD4	-0.121*** (0.041)	-0.113*** (0.041)	-0.148** (0.065)	-0.214** (0.105)	-0.136** (0.059)	-0.682*** (0.159)	-0.256* (0.133)	-0.080* (0.047)	-0.194* (0.105)	0.033 (0.092)	0.025 (0.046)	-0.050 (0.057)
logGDPi	0.989*** (0.039)	0.702*** (0.029)	0.833*** (0.050)	0.958*** (0.057)	0.927*** (0.067)	1.037*** (0.109)	0.820*** (0.056)	0.907*** (0.034)	0.600*** (0.060)	1.195*** (0.096)	0.578*** (0.040)	0.514*** (0.049)
logGDPj	0.821*** (0.029)	0.875*** (0.027)	0.792*** (0.046)	0.843*** (0.056)	0.590*** (0.069)	0.907*** (0.090)	0.879*** (0.068)	0.896*** (0.033)	0.855*** (0.068)	0.925*** (0.085)	0.817*** (0.036)	0.829*** (0.044)
logDistance	-0.609*** (0.064)	-0.524*** (0.072)	-0.803*** (0.083)	-0.377*** (0.144)	-0.806*** (0.137)	-0.624*** (0.172)	-0.250 (0.204)	-0.611*** (0.079)	-0.825*** (0.130)	-0.635*** (0.135)	-0.595*** (0.083)	-0.473*** (0.094)
1.Adjacency	0.546*** (0.105)	0.033 (0.118)	-0.008 (0.171)	-0.128 (0.200)	0.256 (0.197)	-0.726* (0.392)	-0.225 (0.345)	-0.153 (0.129)	-0.018 (0.219)	-1.078** (0.500)	0.158 (0.132)	0.472*** (0.155)
1.Language	-0.108 (0.123)	0.326** (0.139)	0.182 (0.217)	-0.480* (0.282)	0.201 (0.251)	0.538** (0.268)	0.952*** (0.340)	0.363** (0.164)	0.538* (0.291)	0.459 (0.489)	0.028 (0.130)	0.640*** (0.195)
1.Colony	0.061 (0.106)	0.231 (0.145)	-0.094 (0.242)	0.333 (0.218)	0.313 (0.228)	-0.109 (0.331)	-0.056 (0.277)	0.049 (0.176)	0.108 (0.316)	-0.215 (0.400)	0.121 (0.137)	0.064 (0.148)
1.Religion	-0.013 (0.090)	-0.007 (0.162)	0.518** (0.210)	0.162 (0.224)	0.268 (0.236)	-0.160 (0.455)	0.331 (0.322)	0.200 (0.203)	0.264 (0.726)	0.119 (0.188)	-0.029 (0.133)	0.563** (0.236)
ID	-0.001 (0.026)	-0.035 (0.033)	-0.036 (0.056)	-0.032 (0.062)	0.049 (0.070)	-0.167* (0.098)	-0.056 (0.069)	0.030 (0.046)	-0.145 (0.136)	-0.054 (0.140)	-0.145*** (0.035)	-0.022 (0.041)
1.RTA	0.517*** (0.085)	0.267** (0.131)	-0.141 (0.156)	0.432* (0.246)	-0.293 (0.192)	0.070 (0.338)	0.774** (0.363)	0.004 (0.150)	-0.037 (0.349)	-0.174 (0.258)	0.064 (0.122)	0.517*** (0.182)
EFWi	-0.387*** (0.076)	0.394*** (0.084)	-0.309* (0.171)	1.905*** (0.204)	0.838*** (0.233)	1.036** (0.406)	1.365*** (0.281)	0.633*** (0.115)	-0.088 (0.218)	1.034*** (0.225)	0.459*** (0.130)	-0.313** (0.134)
EFWj	-0.083 (0.055)	0.279*** (0.086)	0.461*** (0.091)	0.405*** (0.139)	-0.180 (0.130)	0.384 (0.301)	0.360* (0.209)	0.399*** (0.101)	0.433* (0.258)	0.538* (0.306)	0.181** (0.081)	0.068 (0.124)
OPENi	0.813*** (0.099)	0.363*** (0.097)	0.321** (0.163)	1.788*** (0.157)	0.465** (0.231)	2.268*** (0.117)	1.347*** (0.369)	0.532*** (0.112)	-0.012 (0.311)	0.892* (0.513)	-0.012 (0.118)	-1.016*** (0.223)
OPENj	0.446*** (0.051)	0.407*** (0.069)	0.214** (0.091)	0.326*** (0.124)	0.137 (0.142)	0.953*** (0.213)	0.223 (0.159)	0.536*** (0.080)	0.163 (0.207)	0.236 (0.181)	0.406*** (0.066)	0.073 (0.099)
MIGRANTij	0.026* (0.014)	0.047*** (0.010)	-0.009 (0.016)	0.096*** (0.026)	-0.004 (0.027)	0.045 (0.038)	0.056** (0.025)	0.050*** (0.014)	0.033 (0.029)	0.046 (0.033)	0.028** (0.013)	0.030 (0.019)
MIGRANTji	0.022 (0.047)	0.119*** (0.043)	0.128** (0.051)	0.109** (0.049)	0.092 (0.083)	0.165** (0.079)	0.218*** (0.061)	0.053 (0.040)	-0.179 (0.118)	0.103 (0.142)	0.118*** (0.029)	0.141*** (0.047)
logREMOTENESSi	0.188* (0.113)	0.027 (0.123)	-0.016 (0.703)	6.599*** (0.910)	-3.866*** (1.394)	0.287 (1.601)	0.026 (0.244)	0.372* (0.199)	-0.174 (1.436)	0.740*** (0.262)	-0.008 (0.131)	0.076 (0.196)
logREMOTENESSj	0.190*** (0.051)	0.028 (0.076)	-0.003 (0.122)	-0.252 (0.195)	0.211 (0.196)	-0.236 (0.316)	-0.156 (0.157)	-0.079 (0.097)	0.214 (0.232)	0.213* (0.109)	0.275*** (0.077)	-0.133 (0.097)
Constant	-41.048*** (1.937)	-38.788*** (2.975)	-36.411*** (12.666)	-180.159*** (18.184)	30.431 (25.186)	-58.653** (26.853)	-54.161*** (5.456)	-53.267*** (4.838)	-34.082 (26.584)	-79.899*** (6.170)	-37.901*** (2.808)	-24.554*** (3.434)
Observations	12,528	12,482	10,174	10,172	10,158	10,595	10,752	10,852	9,741	11,020	11,840	12,288

PPML estimations. Time fixed effects.

Dependent variable: Bilateral Services Exports.

t-statistics are based on robust standard errors clustered at a country pair level.

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 2: The effect of different aspects of cultural distance on goods trade, services trade, and individual services categories

	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)	(2.7)	(2.8)	(2.9)	(2.10)	(2.11)	(2.12)
	Goods (Total)	Services (Total)	Communicational	Computer	Construction	Financial	Insurance	OBS	Cultural	License	Transportation	Travel
PDI	-0.003 (0.002)	-0.008*** (0.002)	-0.012*** (0.003)	-0.004 (0.004)	-0.006 (0.004)	-0.031*** (0.008)	-0.008 (0.005)	-0.008*** (0.003)	-0.004 (0.005)	-0.011* (0.006)	-0.003 (0.003)	0.002 (0.004)
IDV	-0.001 (0.002)	0.004 (0.003)	0.005 (0.004)	-0.023*** (0.005)	0.015*** (0.005)	-0.005 (0.007)	-0.016* (0.009)	0.001 (0.003)	0.009 (0.007)	0.001 (0.005)	0.004 (0.003)	0.016*** (0.004)
MAS	-0.001 (0.002)	-0.004* (0.002)	-0.002 (0.003)	-0.010*** (0.004)	-0.005* (0.003)	-0.021*** (0.005)	-0.027*** (0.008)	-0.002 (0.002)	-0.002 (0.006)	0.006 (0.005)	0.001 (0.002)	-0.004 (0.003)
UAI	-0.002 (0.002)	0.004* (0.002)	0.001 (0.004)	-0.000 (0.004)	0.002 (0.004)	0.001 (0.007)	0.009 (0.005)	0.003 (0.003)	-0.012** (0.005)	0.004 (0.005)	0.005** (0.002)	-0.004 (0.003)
logGDPi	0.998*** (0.040)	0.701*** (0.029)	0.840*** (0.051)	0.930*** (0.051)	0.940*** (0.067)	0.997*** (0.088)	0.769*** (0.059)	0.903*** (0.034)	0.628*** (0.064)	1.209*** (0.091)	0.581*** (0.039)	0.539*** (0.051)
logGDPj	0.823*** (0.029)	0.862*** (0.028)	0.797*** (0.045)	0.803*** (0.049)	0.595*** (0.066)	0.869*** (0.084)	0.845*** (0.071)	0.883*** (0.033)	0.874*** (0.067)	0.926*** (0.089)	0.811*** (0.038)	0.845*** (0.047)
logDistance	-0.617*** (0.065)	-0.543*** (0.075)	-0.852*** (0.092)	-0.371*** (0.118)	-0.867*** (0.132)	-0.607*** (0.151)	-0.274 (0.197)	-0.611*** (0.078)	-0.908*** (0.127)	-0.561*** (0.147)	-0.594*** (0.088)	-0.576*** (0.097)
1.Adjacency	0.522*** (0.109)	0.100 (0.126)	0.014 (0.168)	-0.130 (0.189)	0.331* (0.193)	-0.714* (0.399)	-0.032 (0.344)	-0.101 (0.139)	-0.118 (0.228)	-1.046* (0.536)	0.231* (0.130)	0.450*** (0.151)
1.Language	-0.090 (0.121)	0.397*** (0.141)	0.226 (0.229)	-0.603** (0.271)	0.220 (0.235)	0.546* (0.316)	0.628* (0.361)	0.383** (0.166)	0.589** (0.284)	0.637 (0.600)	0.121 (0.137)	0.715*** (0.193)
1.Colony	0.073 (0.107)	0.277* (0.156)	0.032 (0.239)	0.271 (0.238)	0.331 (0.230)	-0.158 (0.370)	-0.053 (0.275)	0.086 (0.174)	0.280 (0.343)	-0.180 (0.429)	0.142 (0.148)	0.118 (0.153)
1.Religion	0.013 (0.091)	0.014 (0.148)	0.606*** (0.202)	0.041 (0.220)	0.321 (0.236)	-0.213 (0.567)	0.040 (0.299)	0.216 (0.190)	0.262 (0.742)	0.166 (0.177)	-0.006 (0.126)	0.568*** (0.218)
ID	0.006 (0.025)	-0.043 (0.033)	-0.021 (0.057)	0.031 (0.061)	0.019 (0.063)	-0.222* (0.114)	-0.034 (0.069)	0.035 (0.049)	-0.164 (0.146)	-0.014 (0.137)	-0.146*** (0.036)	-0.085** (0.041)
1.RTA	0.505*** (0.085)	0.225* (0.127)	-0.207 (0.163)	0.431* (0.221)	-0.317 (0.196)	-0.076 (0.330)	0.734** (0.353)	-0.041 (0.152)	0.016 (0.360)	-0.105 (0.270)	0.043 (0.117)	0.427*** (0.162)
EFWi	-0.403*** (0.076)	0.368*** (0.088)	-0.310* (0.169)	1.801*** (0.192)	0.888*** (0.234)	1.076** (0.419)	1.433*** (0.255)	0.660*** (0.120)	-0.167 (0.216)	1.066*** (0.226)	0.451*** (0.130)	-0.367*** (0.127)
EFWj	-0.089 (0.056)	0.250*** (0.080)	0.406*** (0.095)	0.394*** (0.126)	-0.144 (0.119)	0.191 (0.273)	0.323 (0.202)	0.357*** (0.100)	0.487* (0.270)	0.427 (0.333)	0.166** (0.076)	0.123 (0.104)
OPENi	0.812*** (0.100)	0.382*** (0.092)	0.307* (0.174)	1.680*** (0.138)	0.479** (0.227)	2.223*** (0.113)	1.301*** (0.287)	0.530*** (0.112)	0.002 (0.312)	0.846* (0.494)	0.008 (0.115)	-0.944*** (0.216)
OPENj	0.429*** (0.052)	0.363*** (0.071)	0.196** (0.087)	0.324*** (0.111)	0.085 (0.131)	0.940*** (0.223)	0.262* (0.143)	0.505*** (0.078)	0.142 (0.209)	0.274 (0.182)	0.385*** (0.065)	0.028 (0.106)
MIGRANTij	0.024* (0.014)	0.041*** (0.010)	-0.014 (0.017)	0.087*** (0.025)	-0.005 (0.026)	0.028 (0.041)	0.044** (0.023)	0.045*** (0.014)	0.034 (0.028)	0.055** (0.025)	0.027** (0.014)	0.021 (0.015)
MIGRANTji	0.030 (0.053)	0.096** (0.047)	0.100* (0.059)	0.149*** (0.052)	0.065 (0.100)	0.157* (0.086)	0.211*** (0.049)	0.041 (0.044)	-0.261** (0.129)	0.138 (0.148)	0.108*** (0.030)	0.093* (0.050)
logREMOTENESi	0.176 (0.110)	0.001 (0.122)	-0.239 (0.706)	6.422*** (0.902)	-3.847*** (1.346)	-0.032 (1.346)	0.173 (0.229)	0.326* (0.184)	0.331 (1.306)	0.517* (0.297)	-0.052 (0.130)	0.072 (0.197)
logREMOTENESj	0.188*** (0.054)	-0.004 (0.077)	-0.037 (0.137)	-0.062 (0.168)	0.141 (0.191)	-0.350 (0.294)	-0.053 (0.134)	-0.109 (0.097)	0.241 (0.236)	0.176 (0.109)	0.244*** (0.079)	-0.208** (0.102)
Constant	-40.849*** (1.916)	-36.838*** (2.804)	-31.210** (12.970)	-176.933*** (17.784)	30.420 (24.473)	-46.849** (23.899)	-55.717*** (4.832)	-51.243*** (4.468)	-44.383* (24.256)	-75.606*** (6.293)	-36.455*** (2.699)	-23.647*** (3.182)
Observations	12,528	12,482	10,174	10,172	10,158	10,595	10,752	10,852	9,741	11,020	11,840	12,288

PPML estimations. Time fixed effects.

Dependent variable: Bilateral Services Exports.

t-statistics are based on robust standard errors clustered at a country pair level.

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 3: The effect of “aggregate” cultural distance: average values for 2004 - 2011

	(3.1)	(3.2)	(3.3)	(3.4)	(3.5)	(3.6)	(3.7)	(3.8)	(3.9)	(3.10)	(3.11)	(3.12)
	Goods (Total)	Services (Total)	Communicational	Computer	Construction	Financial	Insurance	OBS	Cultural	License	Transportation	Travel
CD4	-0.101** (0.044)	-0.105** (0.043)	-0.143** (0.066)	-0.212** (0.101)	-0.134** (0.061)	-0.673*** (0.157)	-0.221* (0.123)	-0.104** (0.046)	-0.178* (0.107)	0.014 (0.094)	0.029 (0.046)	-0.036 (0.060)
logGDPi	1.013*** (0.042)	0.693*** (0.030)	0.844*** (0.055)	0.950*** (0.057)	0.904*** (0.068)	1.068*** (0.110)	0.789*** (0.066)	0.904*** (0.036)	0.616*** (0.060)	1.175*** (0.096)	0.564*** (0.042)	0.522*** (0.052)
logGDPj	0.849*** (0.032)	0.887*** (0.030)	0.786*** (0.047)	0.855*** (0.056)	0.593*** (0.070)	0.916*** (0.094)	0.888*** (0.063)	0.878*** (0.036)	0.848*** (0.071)	0.910*** (0.084)	0.824*** (0.036)	0.856*** (0.051)
logDistance	-0.772*** (0.058)	-0.614*** (0.059)	-0.776*** (0.080)	-0.440*** (0.142)	-0.794*** (0.137)	-0.617*** (0.174)	-0.586*** (0.120)	-0.595*** (0.084)	-0.796*** (0.122)	-0.579*** (0.092)	-0.604*** (0.069)	-0.641*** (0.073)
1.Adjacency	0.533*** (0.115)	0.027 (0.120)	0.004 (0.171)	-0.136 (0.207)	0.201 (0.203)	-0.682* (0.395)	-0.250 (0.330)	-0.084 (0.139)	-0.011 (0.222)	-1.006** (0.435)	0.155 (0.131)	0.473*** (0.158)
1.Language	-0.195 (0.132)	0.294** (0.139)	0.180 (0.220)	-0.464 (0.289)	0.219 (0.252)	0.488* (0.253)	0.871*** (0.295)	0.345** (0.161)	0.526* (0.311)	0.374 (0.471)	0.011 (0.130)	0.589*** (0.201)
1.Colony	-0.047 (0.129)	0.169 (0.147)	-0.075 (0.242)	0.349* (0.210)	0.348 (0.222)	-0.106 (0.338)	-0.152 (0.217)	0.136 (0.167)	0.094 (0.302)	-0.118 (0.345)	0.080 (0.135)	-0.040 (0.155)
1.Religion	-0.015 (0.108)	-0.025 (0.183)	0.478** (0.210)	0.235 (0.212)	0.225 (0.217)	-0.157 (0.449)	0.292 (0.370)	0.172 (0.233)	0.237 (0.721)	0.149 (0.188)	-0.039 (0.137)	0.586** (0.278)
ID	-0.040 (0.041)	-0.035 (0.049)	-0.030 (0.076)	-0.060 (0.096)	0.030 (0.099)	-0.173 (0.132)	0.096 (0.108)	0.073 (0.065)	-0.210 (0.203)	0.035 (0.172)	-0.219*** (0.049)	-0.008 (0.065)
EFWi	-0.527*** (0.103)	0.467*** (0.101)	-0.361 (0.220)	2.204*** (0.286)	0.851*** (0.278)	1.317** (0.589)	1.915*** (0.437)	0.699*** (0.146)	-0.382 (0.305)	1.146*** (0.315)	0.478*** (0.157)	-0.358** (0.166)
EFWj	-0.142** (0.069)	0.272*** (0.096)	0.469*** (0.105)	0.379** (0.151)	-0.270* (0.149)	0.421 (0.336)	0.412* (0.239)	0.523*** (0.148)	0.403 (0.309)	0.663** (0.330)	0.117 (0.089)	0.050 (0.130)
OPENi	0.825*** (0.106)	0.337*** (0.103)	0.397** (0.187)	1.732*** (0.167)	0.414* (0.245)	2.344*** (0.126)	1.331*** (0.377)	0.576*** (0.113)	0.087 (0.337)	0.897* (0.493)	-0.054 (0.126)	-1.050*** (0.240)
OPENj	0.532*** (0.059)	0.437*** (0.076)	0.219** (0.097)	0.372*** (0.135)	0.143 (0.149)	0.975*** (0.235)	0.269 (0.175)	0.519*** (0.092)	0.155 (0.219)	0.167 (0.199)	0.459*** (0.070)	0.141 (0.111)
MIGRANTij	0.020** (0.010)	0.042*** (0.009)	-0.002 (0.016)	0.071*** (0.022)	0.017 (0.025)	0.039 (0.041)	0.036* (0.021)	0.039** (0.016)	0.037 (0.028)	0.050 (0.031)	0.032** (0.013)	0.011 (0.020)
MIGRANTji	0.065 (0.044)	0.126*** (0.041)	0.125** (0.054)	0.105** (0.050)	0.093 (0.085)	0.165** (0.077)	0.198*** (0.053)	0.021 (0.043)	-0.161 (0.114)	0.062 (0.120)	0.128*** (0.029)	0.146*** (0.047)
logREMOTENESSi	0.366*** (0.123)	0.080 (0.135)	0.035 (0.764)	6.180*** (0.916)	-4.063*** (1.412)	-0.093 (1.779)	0.169 (0.307)	0.366 (0.277)	0.061 (1.470)	0.674** (0.268)	0.009 (0.136)	0.194 (0.178)
logREMOTENESSj	0.230*** (0.052)	0.045 (0.077)	0.031 (0.131)	-0.382** (0.183)	0.319* (0.182)	-0.286 (0.300)	-0.104 (0.122)	-0.125 (0.117)	0.219 (0.212)	0.151 (0.124)	0.300*** (0.074)	-0.106 (0.100)
Constant	-36.641*** (2.199)	-39.630*** (3.463)	-37.908*** (13.601)	-170.674*** (18.307)	33.006 (25.295)	-54.246* (29.581)	-58.623*** (6.533)	-53.015*** (6.550)	-36.690 (27.991)	-78.387*** (6.451)	-37.775*** (2.886)	-26.179*** (3.650)
Observations	1,566	1,563	1,271	1,270	1,269	1,323	1,345	1,352	1,216	1,377	1,481	1,535

PPML estimations.

Dependent variable: Bilateral Services Exports.

t-statistics are based on robust standard errors clustered at a country pair level.

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4: The effect of “aggregate” cultural distance: 2004 -2007

	(a1.1)	(a1.2)	(a1.3)	(a1.4)	(a1.5)	(a1.6)	(a1.7)	(a1.8)	(a1.9)	(a1.10)	(a1.11)	(a1.12)
	Goods (Total)	Services (Total)	Communicational	Computer	Constructor	Financial	Insurance	OBS	Cultural	License	Transportation	Travel
CD4	-0.124*** (0.041)	-0.103** (0.042)	-0.142** (0.069)	-0.218** (0.101)	-0.095 (0.059)	-0.750*** (0.168)	-0.286** (0.116)	-0.102** (0.047)	-0.214* (0.112)	0.050 (0.103)	0.049 (0.049)	-0.022 (0.060)
logGDPi	1.013*** (0.041)	0.697*** (0.033)	0.828*** (0.053)	0.991*** (0.062)	0.986*** (0.078)	1.036*** (0.106)	0.780*** (0.057)	0.914*** (0.037)	0.649*** (0.068)	1.215*** (0.099)	0.577*** (0.046)	0.525*** (0.056)
logGDPj	0.836*** (0.029)	0.899*** (0.029)	0.824*** (0.052)	0.926*** (0.056)	0.625*** (0.087)	0.936*** (0.111)	0.946*** (0.066)	0.921*** (0.035)	0.850*** (0.072)	0.934*** (0.086)	0.850*** (0.037)	0.851*** (0.045)
logDistance	-0.587*** (0.065)	-0.524*** (0.072)	-0.736*** (0.089)	-0.434*** (0.134)	-0.713*** (0.160)	-0.654*** (0.184)	-0.313* (0.188)	-0.588*** (0.082)	-0.600*** (0.133)	-0.542*** (0.122)	-0.589*** (0.081)	-0.477*** (0.097)
1.Adjacency	0.468*** (0.104)	0.042 (0.128)	0.177 (0.187)	-0.214 (0.210)	0.242 (0.206)	-0.786* (0.448)	-0.242 (0.331)	-0.124 (0.167)	-0.051 (0.230)	-0.713** (0.346)	0.127 (0.130)	0.426*** (0.160)
1.Language	-0.060 (0.127)	0.279* (0.149)	0.192 (0.208)	-0.487 (0.297)	0.275 (0.247)	0.593** (0.269)	0.752*** (0.264)	0.278* (0.167)	0.612** (0.311)	0.203 (0.343)	0.009 (0.141)	0.638*** (0.194)
1.Colony	0.056 (0.109)	0.260* (0.148)	-0.060 (0.226)	0.569*** (0.219)	0.446* (0.248)	-0.109 (0.315)	0.108 (0.224)	0.080 (0.199)	0.151 (0.366)	0.107 (0.244)	0.115 (0.157)	0.101 (0.165)
1.Religion	-0.016 (0.088)	-0.063 (0.162)	0.470** (0.221)	0.284 (0.219)	0.161 (0.234)	-0.221 (0.507)	0.055 (0.252)	0.210 (0.179)	-0.035 (0.796)	0.042 (0.189)	-0.049 (0.135)	0.481* (0.248)
ID	-0.043 (0.029)	-0.032 (0.035)	0.002 (0.072)	-0.072 (0.061)	0.044 (0.078)	-0.107 (0.106)	-0.005 (0.061)	0.068 (0.048)	-0.079 (0.146)	0.052 (0.104)	-0.146*** (0.042)	-0.018 (0.055)
1.RTA	0.571*** (0.087)	0.305** (0.131)	-0.119 (0.171)	0.365* (0.215)	-0.314 (0.224)	-0.056 (0.302)	0.863*** (0.315)	0.036 (0.150)	0.348 (0.398)	-0.087 (0.193)	0.096 (0.119)	0.549*** (0.186)
EFWi	-0.450*** (0.091)	0.443*** (0.088)	-0.031 (0.167)	2.246*** (0.251)	0.399 (0.267)	1.063** (0.419)	2.665*** (0.374)	0.629*** (0.139)	-0.511** (0.237)	1.007*** (0.268)	0.367*** (0.120)	-0.251 (0.158)
EFWj	-0.078 (0.054)	0.325*** (0.082)	0.630*** (0.146)	0.421*** (0.131)	-0.048 (0.154)	0.468 (0.295)	0.507*** (0.164)	0.408*** (0.095)	0.610** (0.241)	0.763*** (0.274)	0.207*** (0.077)	0.164 (0.118)
OPENi	0.843*** (0.107)	0.335*** (0.114)	0.510*** (0.181)	1.865*** (0.175)	0.609** (0.291)	2.356*** (0.109)	1.304*** (0.389)	0.532*** (0.119)	0.420 (0.340)	1.277*** (0.422)	-0.020 (0.143)	-1.084*** (0.254)
OPENj	0.472*** (0.053)	0.423*** (0.074)	0.284** (0.117)	0.434*** (0.124)	0.249 (0.162)	1.011*** (0.244)	0.234* (0.129)	0.607*** (0.087)	-0.015 (0.179)	0.192 (0.163)	0.442*** (0.069)	0.046 (0.113)
MIGRANTij	0.025* (0.013)	0.047*** (0.011)	-0.028 (0.021)	0.100*** (0.025)	-0.018 (0.027)	0.031 (0.041)	0.052* (0.027)	0.047*** (0.017)	0.045 (0.029)	0.057* (0.034)	0.027** (0.013)	0.030* (0.016)
MIGRANTji	0.049 (0.044)	0.121** (0.051)	0.082 (0.059)	0.064 (0.053)	0.055 (0.104)	0.175** (0.088)	0.117* (0.067)	0.030 (0.044)	-0.131 (0.106)	0.069 (0.114)	0.119*** (0.031)	0.160*** (0.052)
logREMOTENESS	0.216* (0.119)	-0.031 (0.121)	0.139 (0.814)	5.815*** (0.968)	-3.847*** (1.386)	0.233 (1.902)	-0.752*** (0.221)	0.224 (0.180)	-1.006 (1.504)	0.939*** (0.231)	0.039 (0.130)	-0.014 (0.224)
logREMOTENESS	0.190*** (0.050)	0.005 (0.079)	-0.241 (0.149)	-0.278 (0.187)	0.053 (0.192)	-0.303 (0.357)	-0.217 (0.153)	-0.140 (0.098)	0.047 (0.222)	0.150 (0.107)	0.287*** (0.076)	-0.154 (0.104)
Constant	-42.405*** (1.975)	-38.541*** (2.899)	-39.955*** (14.956)	-170.840*** (18.927)	31.850 (24.525)	-57.941* (32.438)	-49.880*** (5.178)	-50.581*** (4.050)	-17.007 (27.790)	-86.021*** (5.325)	-39.486*** (2.762)	-24.497*** (3.771)
Observations	6,264	6,246	5,087	5,086	5,073	5,297	5,372	5,455	4,871	5,511	5,918	6,144

PPML estimations. Time fixed effects.

Dependent variable: Bilateral Services Exports.

t-statistics are based on robust standard errors clustered at a country pair level.

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 5: The effect of “aggregate” cultural distance: 2008 - 2011

	(a2.1)	(a2.2)	(a2.3)	(a2.4)	(a2.5)	(a2.6)	(a2.7)	(a2.8)	(a2.9)	(a2.10)	(a2.11)	(a2.12)
	Goods (Total)	Services (Total)	Communicational	Computer	Construction	Financial	Insurance	OBS	Cultural	License	Transportation	Travel
CD4	-0.117*** (0.041)	-0.122*** (0.041)	-0.158** (0.071)	-0.209** (0.106)	-0.167** (0.066)	-0.633*** (0.156)	-0.234* (0.139)	-0.071 (0.050)	-0.168 (0.105)	0.012 (0.089)	0.006 (0.045)	-0.074 (0.057)
logGDPi	0.975*** (0.039)	0.701*** (0.028)	0.847*** (0.053)	0.936*** (0.056)	0.889*** (0.070)	1.050*** (0.115)	0.891*** (0.063)	0.899*** (0.035)	0.593*** (0.063)	1.179*** (0.102)	0.576*** (0.038)	0.503*** (0.045)
logGDPj	0.812*** (0.030)	0.857*** (0.028)	0.768*** (0.049)	0.802*** (0.057)	0.561*** (0.071)	0.889*** (0.082)	0.824*** (0.068)	0.879*** (0.035)	0.845*** (0.070)	0.901*** (0.090)	0.793*** (0.036)	0.808*** (0.045)
logDistance	-0.621*** (0.064)	-0.525*** (0.074)	-0.865*** (0.093)	-0.353** (0.155)	-0.876*** (0.142)	-0.589*** (0.172)	-0.217 (0.220)	-0.640*** (0.088)	-0.965*** (0.140)	-0.690*** (0.155)	-0.597*** (0.086)	-0.471*** (0.094)
1.Adjacency	0.602*** (0.106)	0.034 (0.114)	-0.129 (0.187)	-0.084 (0.201)	0.258 (0.219)	-0.670* (0.366)	-0.138 (0.364)	-0.175 (0.133)	-0.008 (0.248)	-1.273** (0.607)	0.178 (0.137)	0.521*** (0.153)
1.Language	-0.133 (0.120)	0.357*** (0.136)	0.145 (0.242)	-0.480* (0.279)	0.152 (0.269)	0.471* (0.276)	1.021*** (0.363)	0.405** (0.174)	0.467 (0.318)	0.613 (0.585)	0.049 (0.128)	0.639*** (0.202)
1.Colony	0.055 (0.107)	0.208 (0.145)	-0.071 (0.259)	0.217 (0.238)	0.215 (0.248)	-0.127 (0.358)	-0.085 (0.306)	0.068 (0.162)	0.067 (0.286)	-0.372 (0.475)	0.116 (0.129)	0.032 (0.143)
1.Religion	-0.006 (0.093)	0.035 (0.166)	0.538** (0.224)	0.119 (0.235)	0.317 (0.255)	-0.157 (0.428)	0.447 (0.378)	0.223 (0.231)	0.511 (0.621)	0.165 (0.210)	-0.001 (0.137)	0.632*** (0.234)
ID	0.017 (0.031)	-0.043 (0.045)	-0.063 (0.064)	-0.035 (0.080)	0.028 (0.084)	-0.245** (0.118)	-0.129 (0.100)	0.012 (0.060)	-0.235 (0.161)	-0.188 (0.209)	-0.157*** (0.040)	-0.050 (0.050)
1.RTA	0.475*** (0.086)	0.234* (0.133)	-0.189 (0.166)	0.455* (0.275)	-0.277 (0.226)	0.175 (0.387)	0.721* (0.388)	-0.022 (0.154)	-0.329 (0.324)	-0.238 (0.305)	0.036 (0.127)	0.482*** (0.184)
EFWi	-0.369*** (0.081)	0.367*** (0.097)	-0.531** (0.207)	1.659*** (0.306)	1.258*** (0.268)	0.900* (0.509)	0.339 (0.302)	0.699*** (0.125)	0.258 (0.245)	1.016*** (0.284)	0.565*** (0.158)	-0.417*** (0.136)
EFWj	-0.112* (0.059)	0.224** (0.098)	0.349*** (0.099)	0.353** (0.171)	-0.330*** (0.126)	0.305 (0.342)	0.192 (0.284)	0.378*** (0.126)	0.191 (0.321)	0.296 (0.381)	0.127 (0.089)	-0.068 (0.134)
OPENi	0.801*** (0.097)	0.378*** (0.092)	0.247 (0.170)	1.734*** (0.163)	0.384* (0.232)	2.234*** (0.136)	1.383*** (0.373)	0.526*** (0.117)	-0.255 (0.295)	0.688 (0.595)	-0.017 (0.113)	-0.953*** (0.204)
OPENj	0.441*** (0.052)	0.407*** (0.069)	0.185* (0.096)	0.296** (0.132)	0.041 (0.157)	0.933*** (0.206)	0.243 (0.197)	0.496*** (0.085)	0.285 (0.229)	0.315 (0.216)	0.398*** (0.067)	0.114 (0.094)
MIGRANTij	0.028** (0.013)	0.048*** (0.009)	0.001 (0.017)	0.095*** (0.029)	0.010 (0.029)	0.057 (0.037)	0.054** (0.026)	0.053*** (0.014)	0.032 (0.033)	0.043 (0.031)	0.030** (0.013)	0.030 (0.022)
MIGRANTji	0.002 (0.049)	0.115*** (0.037)	0.138*** (0.051)	0.136*** (0.051)	0.121* (0.070)	0.160** (0.074)	0.249*** (0.063)	0.062 (0.041)	-0.180 (0.136)	0.149 (0.180)	0.121*** (0.029)	0.124*** (0.045)
logREMOTENESS	0.187* (0.110)	0.066 (0.131)	-0.090 (0.699)	6.728*** (0.917)	-3.847** (1.515)	0.454 (1.503)	0.253 (0.298)	0.519** (0.238)	0.563 (1.488)	0.632** (0.298)	-0.040 (0.136)	0.164 (0.188)
logREMOTENESS	0.190*** (0.051)	0.046 (0.078)	0.141 (0.131)	-0.225 (0.207)	0.308 (0.224)	-0.198 (0.295)	-0.099 (0.167)	-0.025 (0.111)	0.306 (0.265)	0.271** (0.123)	0.270*** (0.079)	-0.111 (0.096)
Constant	-40.189*** (1.879)	-38.345*** (3.074)	-33.874*** (12.505)	-177.780*** (18.289)	28.899 (27.483)	-60.827** (24.843)	-50.695*** (5.791)	-55.808*** (5.967)	-48.595* (27.609)	-74.419*** (6.989)	-36.406*** (2.841)	-23.785*** (3.274)
Observations	6,264	6,236	5,087	5,086	5,085	5,298	5,380	5,397	4,870	5,509	5,922	6,144

PPML estimations. Time fixed effects.

Dependent variable: Bilateral Services Exports.

t-statistics are based on robust standard errors clustered at a country pair level.

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6: The effect of “aggregate” cultural distance, accounting for joint English skills (COMMUNICATION)

	(a3.1)	(a3.2)	(a3.3)	(a3.4)	(a3.5)	(a3.6)	(a3.7)	(a3.8)	(a3.9)	(a3.10)	(a3.11)	(a3.12)
	Goods (Total)	Services (Total)	Communicational	Computer	Construction	Financial	Insurance	OBS	Cultural	License	Transportation	Travel
CD4	-0.173*** (0.045)	-0.162*** (0.041)	-0.150** (0.058)	-0.209* (0.117)	-0.138** (0.064)	-0.696*** (0.153)	-0.273* (0.146)	-0.124*** (0.046)	-0.155* (0.087)	-0.074 (0.155)	-0.013 (0.048)	-0.081 (0.056)
logGDPi	1.008*** (0.040)	0.671*** (0.028)	0.815*** (0.048)	0.933*** (0.061)	0.899*** (0.066)	1.066*** (0.114)	0.780*** (0.055)	0.897*** (0.035)	0.634*** (0.059)	1.155*** (0.112)	0.563*** (0.039)	0.455*** (0.042)
logGDPj	0.780*** (0.029)	0.859*** (0.026)	0.776*** (0.043)	0.839*** (0.057)	0.567*** (0.066)	0.927*** (0.089)	0.903*** (0.075)	0.850*** (0.031)	0.878*** (0.068)	0.875*** (0.099)	0.769*** (0.036)	0.840*** (0.042)
logDistance	-0.558*** (0.071)	-0.536*** (0.071)	-0.735*** (0.081)	-0.313** (0.156)	-0.824*** (0.147)	-0.551*** (0.169)	-0.242 (0.236)	-0.556*** (0.079)	-0.884*** (0.120)	-0.774*** (0.165)	-0.538*** (0.086)	-0.539*** (0.095)
1.Adjacency	0.626*** (0.115)	0.090 (0.115)	0.140 (0.152)	-0.000 (0.218)	0.257 (0.205)	-0.764* (0.407)	-0.097 (0.375)	-0.063 (0.121)	-0.145 (0.214)	-0.984** (0.483)	0.303** (0.133)	0.404** (0.181)
1.Language	-0.047 (0.134)	0.253* (0.132)	0.194 (0.193)	-0.550* (0.313)	0.215 (0.256)	0.648** (0.267)	0.891*** (0.327)	0.324** (0.164)	0.577** (0.292)	-0.035 (0.569)	0.007 (0.129)	0.671*** (0.223)
1.Colony	0.002 (0.108)	0.222* (0.133)	-0.119 (0.224)	0.322 (0.218)	0.288 (0.233)	-0.313 (0.343)	0.001 (0.257)	0.122 (0.178)	0.062 (0.289)	0.105 (0.460)	0.069 (0.130)	0.094 (0.149)
1.Religion	-0.165 (0.130)	-0.086 (0.194)	0.052 (0.219)	0.093 (0.304)	0.045 (0.296)	0.731* (0.377)	1.271*** (0.489)	-0.034 (0.159)	1.191*** (0.333)	0.308 (0.427)	-0.400** (0.168)	0.052 (0.285)
ID	0.008 (0.031)	-0.044 (0.043)	-0.012 (0.056)	0.019 (0.068)	0.019 (0.081)	0.011 (0.085)	0.064 (0.068)	0.005 (0.042)	-0.089 (0.121)	0.007 (0.143)	-0.179*** (0.042)	-0.093* (0.051)
1.RTA	0.453*** (0.088)	0.132 (0.111)	-0.087 (0.145)	0.433* (0.258)	-0.241 (0.205)	-0.198 (0.316)	0.743* (0.403)	-0.200 (0.149)	-0.173 (0.313)	-0.454 (0.293)	-0.038 (0.115)	0.378** (0.168)
EFWi	-0.242*** (0.076)	0.234** (0.101)	-0.568*** (0.159)	1.668*** (0.255)	0.902*** (0.244)	0.789** (0.368)	1.042*** (0.281)	0.356*** (0.127)	0.157 (0.199)	0.652** (0.299)	0.428*** (0.135)	-0.327** (0.148)
EFWj	-0.056 (0.067)	0.164 (0.116)	0.247*** (0.090)	0.222 (0.170)	-0.072 (0.165)	0.077 (0.336)	-0.117 (0.299)	0.137 (0.113)	0.459* (0.247)	-0.080 (0.645)	0.202* (0.114)	0.297 (0.196)
OPENi	0.808*** (0.102)	0.313*** (0.099)	0.147 (0.176)	1.676*** (0.178)	0.460** (0.223)	2.298*** (0.123)	1.224*** (0.403)	0.486*** (0.109)	-0.138 (0.314)	0.503 (0.492)	-0.048 (0.118)	-1.012*** (0.205)
OPENj	0.337*** (0.058)	0.442*** (0.063)	0.209** (0.092)	0.354*** (0.133)	0.055 (0.138)	1.139*** (0.230)	0.448** (0.187)	0.507*** (0.074)	0.198 (0.197)	0.649** (0.314)	0.309*** (0.071)	0.086 (0.109)
COMMUNICATIONij	0.032 (0.189)	0.433* (0.262)	1.299*** (0.284)	0.833* (0.438)	-0.460 (0.402)	1.305** (0.570)	1.179** (0.471)	0.874*** (0.208)	-0.656 (0.624)	1.949*** (0.719)	0.360 (0.259)	-0.723 (0.452)
MIGRANTij	0.016* (0.009)	0.049*** (0.010)	-0.004 (0.017)	0.106*** (0.028)	-0.006 (0.027)	0.036 (0.037)	0.085*** (0.030)	0.048*** (0.014)	0.026 (0.028)	0.099*** (0.025)	0.019 (0.016)	0.020 (0.019)
MIGRANTji	0.039 (0.054)	0.111** (0.048)	0.073 (0.070)	0.072 (0.057)	0.090 (0.077)	0.195** (0.078)	0.155** (0.066)	0.019 (0.047)	-0.108 (0.101)	0.144 (0.149)	0.117*** (0.034)	0.139*** (0.047)
logREMOTENESSi	-0.226* (0.123)	-0.042 (0.163)	-0.507 (0.757)	6.380*** (1.039)	-3.684** (1.461)	-1.742 (1.893)	-0.127 (0.339)	0.421 (0.339)	0.627 (1.199)	0.376 (0.402)	-0.346* (0.201)	0.571*** (0.219)
logREMOTENESSj	0.154** (0.062)	0.000 (0.102)	-0.042 (0.122)	-0.324 (0.225)	0.315 (0.225)	-0.533* (0.296)	-0.156 (0.181)	-0.232* (0.135)	0.191 (0.236)	0.355 (0.218)	0.189* (0.102)	-0.183 (0.113)
Constant	-33.474*** (2.503)	-33.408*** (4.145)	-22.456 (13.857)	-171.434*** (21.755)	25.877 (26.890)	-14.745 (33.331)	-46.283*** (7.581)	-45.922*** (6.330)	-52.369** (21.379)	-65.167*** (8.863)	-28.255*** (4.111)	-31.816*** (4.768)
Observations	10,528	10,505	8,832	8,831	8,818	9,199	8,972	9,091	8,460	9,200	9,927	10,302

PPML estimations. Time fixed effects.

Dependent variable: Bilateral Services Exports.

t-statistics are based on robust standard errors clustered at a country pair level.

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 7: The effect of weighted “aggregate” cultural distance

	(a4.1)	(a4.2)	(a4.3)	(a4.4)	(a4.5)	(a4.6)	(a4.7)	(a4.8)	(a4.9)	(a4.10)	(a4.11)	(a4.12)
	Goods (Total)	Services (Total)	Communicational	Computer	Construction	Financial	Insurance	OBS	Cultural	License	Transportation	Travel
CDid4	-0.104** (0.041)	-0.115*** (0.039)	-0.142** (0.064)	-0.220** (0.095)	-0.103* (0.058)	-0.513*** (0.118)	-0.186 (0.113)	-0.096** (0.044)	-0.135 (0.105)	0.087 (0.100)	0.028 (0.050)	-0.035 (0.056)
logGDPi	0.993*** (0.039)	0.705*** (0.029)	0.840*** (0.049)	0.962*** (0.056)	0.933*** (0.067)	1.076*** (0.112)	0.833*** (0.056)	0.899*** (0.032)	0.625*** (0.058)	1.218*** (0.102)	0.590*** (0.040)	0.517*** (0.050)
logGDPj	0.824*** (0.029)	0.879*** (0.027)	0.795*** (0.046)	0.844*** (0.054)	0.590*** (0.069)	0.897*** (0.092)	0.887*** (0.069)	0.896*** (0.033)	0.860*** (0.071)	0.932*** (0.082)	0.820*** (0.036)	0.832*** (0.044)
logDistance	-0.607*** (0.064)	-0.528*** (0.070)	-0.805*** (0.084)	-0.387*** (0.140)	-0.783*** (0.135)	-0.676*** (0.179)	-0.255 (0.201)	-0.611*** (0.077)	-0.839*** (0.131)	-0.646*** (0.140)	-0.618*** (0.084)	-0.476*** (0.093)
1.Adjacency	0.547*** (0.104)	0.041 (0.114)	0.002 (0.168)	-0.101 (0.189)	0.259 (0.197)	-0.756* (0.413)	-0.202 (0.346)	-0.153 (0.128)	-0.002 (0.225)	-1.058** (0.463)	0.171 (0.134)	0.474*** (0.156)
1.Language	-0.136 (0.134)	0.285** (0.133)	0.173 (0.226)	-0.512* (0.290)	0.192 (0.259)	0.533** (0.261)	0.935** (0.368)	0.336** (0.154)	0.584** (0.288)	0.532 (0.517)	0.050 (0.143)	0.642*** (0.205)
1.Colony	0.067 (0.104)	0.236* (0.142)	-0.082 (0.243)	0.341 (0.219)	0.324 (0.231)	-0.069 (0.318)	-0.051 (0.286)	0.046 (0.173)	0.149 (0.331)	-0.201 (0.375)	0.155 (0.140)	0.071 (0.147)
1.Religion	-0.015 (0.091)	-0.010 (0.161)	0.530** (0.210)	0.171 (0.227)	0.251 (0.245)	0.075 (0.457)	0.358 (0.330)	0.175 (0.194)	0.340 (0.713)	0.168 (0.191)	0.008 (0.136)	0.569** (0.235)
1.RTA	0.518*** (0.085)	0.268** (0.132)	-0.147 (0.154)	0.446* (0.236)	-0.299 (0.195)	0.085 (0.330)	0.752** (0.360)	0.006 (0.151)	-0.029 (0.343)	-0.196 (0.259)	0.060 (0.123)	0.513*** (0.181)
EFWi	-0.389*** (0.077)	0.403*** (0.083)	-0.290 (0.181)	1.909*** (0.204)	0.788*** (0.224)	1.094*** (0.418)	1.361*** (0.284)	0.623*** (0.119)	-0.040 (0.220)	1.021*** (0.231)	0.492*** (0.134)	-0.311** (0.136)
EFWj	-0.086* (0.052)	0.299*** (0.083)	0.487*** (0.087)	0.421*** (0.130)	-0.212 (0.131)	0.397 (0.303)	0.395** (0.196)	0.380*** (0.097)	0.499** (0.247)	0.597*** (0.207)	0.293*** (0.076)	0.083 (0.127)
OPENi	0.820*** (0.099)	0.374*** (0.097)	0.327** (0.164)	1.787*** (0.153)	0.475** (0.232)	2.316*** (0.124)	1.371*** (0.378)	0.520*** (0.110)	0.007 (0.313)	0.915* (0.511)	0.015 (0.119)	-1.014*** (0.225)
OPENj	0.450*** (0.050)	0.405*** (0.068)	0.210** (0.090)	0.321*** (0.114)	0.141 (0.146)	0.908*** (0.219)	0.207 (0.154)	0.550*** (0.086)	0.133 (0.203)	0.183 (0.140)	0.340*** (0.065)	0.070 (0.100)
MIGRANTij	0.026* (0.013)	0.045*** (0.009)	-0.014 (0.016)	0.086*** (0.028)	-0.004 (0.027)	0.031 (0.040)	0.050** (0.024)	0.049*** (0.013)	0.026 (0.028)	0.044 (0.034)	0.022 (0.014)	0.029 (0.019)
MIGRANTji	0.026 (0.046)	0.116*** (0.044)	0.120** (0.053)	0.097** (0.048)	0.096 (0.081)	0.161* (0.083)	0.216*** (0.065)	0.054 (0.040)	-0.196 (0.120)	0.086 (0.130)	0.098*** (0.033)	0.140*** (0.047)
logREMOTENESS	0.180 (0.113)	0.026 (0.124)	0.100 (0.702)	6.694*** (0.902)	-3.784*** (1.392)	0.370 (1.609)	0.003 (0.241)	0.376* (0.198)	0.063 (1.334)	0.734*** (0.257)	0.000 (0.132)	0.072 (0.196)
logREMOTENESS	0.186*** (0.052)	0.019 (0.078)	-0.016 (0.123)	-0.231 (0.188)	0.197 (0.197)	-0.165 (0.334)	-0.177 (0.160)	-0.066 (0.097)	0.198 (0.230)	0.194** (0.097)	0.239*** (0.079)	-0.141 (0.096)
Constant	-40.875*** (1.939)	-38.858*** (2.978)	-38.788*** (12.655)	-182.265*** (18.082)	29.599 (25.090)	-62.326** (26.811)	-54.061*** (5.522)	-52.944*** (4.670)	-39.910 (24.318)	-80.804*** (5.569)	-39.004*** (2.803)	-24.602*** (3.444)
Observations	12,528	12,482	10,174	10,172	10,158	10,595	10,752	10,852	9,741	11,020	11,840	12,288

PPML estimations. Time fixed effects.

Dependent variable: Bilateral Services Exports.

t-statistics are based on robust standard errors clustered at a country pair level.

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 8: The effect of “aggregate” cultural distance: a model with exporter and importer fixed effects

	(a5.1)	(a5.2)	(a5.3)	(a5.4)	(a5.5)	(a5.6)	(a5.7)	(a5.8)	(a5.9)	(a5.10)	(a5.11)	(a5.12)
	Goods (Total)	Services (Total)	Communicational	Computer	Construction	Financial	Insurance	OBS	Cultural	License	Transportation	Travel
CD4	-0.133*** (0.049)	-0.147** (0.058)	-0.301*** (0.077)	-0.230*** (0.073)	-0.184*** (0.063)	-0.227** (0.107)	0.002 (0.078)	-0.200*** (0.060)	-0.344*** (0.107)	0.011 (0.106)	-0.100* (0.053)	-0.067 (0.078)
logGDPi	1.909*** (0.181)	1.723*** (0.256)	-0.433 (0.648)	1.691** (0.733)	0.853 (0.956)	0.233 (0.644)	1.229 (1.317)	1.643*** (0.625)	1.977** (0.784)	-0.328 (1.504)	1.129** (0.544)	1.742*** (0.404)
logGDPj	1.324*** (0.104)	1.176*** (0.125)	1.630*** (0.528)	1.582*** (0.414)	0.955 (0.625)	0.711 (0.638)	0.712 (0.481)	1.236*** (0.318)	2.854*** (0.757)	1.954*** (0.432)	0.880*** (0.165)	1.332*** (0.187)
logDistance	-0.680*** (0.053)	-0.485*** (0.081)	-0.684*** (0.085)	-0.727*** (0.125)	-0.956*** (0.127)	-0.550*** (0.167)	-0.550*** (0.125)	-0.343*** (0.095)	-0.506*** (0.156)	-0.230** (0.107)	-0.514*** (0.069)	-0.727*** (0.090)
1.Adjacency	0.471*** (0.077)	0.406*** (0.116)	0.375*** (0.119)	-0.088 (0.188)	0.098 (0.182)	0.277 (0.236)	0.365* (0.202)	0.214* (0.128)	0.129 (0.246)	-0.223 (0.224)	0.267** (0.119)	0.666*** (0.132)
1.Language	0.136 (0.100)	0.250** (0.119)	0.016 (0.163)	-0.853*** (0.325)	0.326* (0.168)	0.237 (0.193)	0.780*** (0.174)	0.081 (0.171)	1.290*** (0.294)	0.375 (0.237)	0.201** (0.100)	0.457*** (0.133)
1.Colony	0.016 (0.111)	0.224 (0.153)	0.031 (0.192)	0.270 (0.269)	0.414** (0.183)	-0.250 (0.260)	0.271 (0.248)	0.094 (0.155)	-0.130 (0.269)	0.092 (0.277)	0.336** (0.131)	0.267 (0.166)
1.Religion	-0.012 (0.103)	0.026 (0.201)	1.496** (0.725)	1.950*** (0.723)	1.618* (0.882)	0.886 (0.651)	0.295 (0.271)	0.319 (0.252)	3.002*** (0.816)	0.580** (0.247)	0.072 (0.161)	0.483*** (0.135)
ID	-0.028 (0.025)	-0.095** (0.044)	-0.023 (0.048)	-0.043 (0.047)	0.050 (0.080)	-0.338*** (0.107)	-0.081 (0.057)	0.005 (0.041)	-0.104 (0.100)	0.057 (0.093)	-0.072 (0.059)	-0.142*** (0.054)
1.RTA	0.553*** (0.093)	0.461*** (0.148)	-0.502** (0.210)	0.217 (0.146)	0.045 (0.219)	0.348 (0.263)	0.716*** (0.257)	0.361* (0.195)	-0.097 (0.275)	0.438*** (0.168)	0.287** (0.145)	0.644*** (0.136)
EFWi	-0.030 (0.037)	0.126*** (0.043)	-0.017 (0.184)	0.175 (0.135)	0.687*** (0.252)	0.107 (0.175)	0.305 (0.244)	0.423*** (0.110)	0.568*** (0.174)	0.453* (0.265)	0.186*** (0.067)	-0.052 (0.069)
EFWj	0.103*** (0.034)	0.089* (0.052)	0.262* (0.147)	0.264* (0.156)	0.444** (0.188)	0.183 (0.143)	0.168 (0.204)	0.078 (0.098)	0.348* (0.190)	-0.298 (0.342)	0.123* (0.064)	0.191** (0.082)
OPENi	0.373*** (0.074)	0.359*** (0.105)	-0.789** (0.316)	-0.439* (0.262)	1.335** (0.527)	-0.157 (0.156)	-0.724* (0.381)	0.327 (0.240)	-0.312 (0.465)	0.921 (1.132)	0.327** (0.141)	-0.290** (0.145)
OPENj	0.161*** (0.060)	0.036 (0.099)	-0.743*** (0.257)	0.018 (0.408)	0.311 (0.323)	0.234 (0.229)	-0.573* (0.314)	0.072 (0.199)	0.596 (0.471)	0.658** (0.280)	0.127 (0.115)	-0.241* (0.140)
MIGRANTij	0.006 (0.011)	0.004 (0.013)	-0.016 (0.019)	0.068*** (0.019)	0.019 (0.028)	-0.057*** (0.015)	-0.021 (0.027)	0.015 (0.014)	-0.019 (0.030)	-0.020 (0.029)	-0.019 (0.013)	0.025 (0.020)
MIGRANTji	0.071 (0.046)	0.003 (0.048)	0.140*** (0.039)	0.105 (0.064)	0.096 (0.067)	0.063 (0.065)	-0.158** (0.071)	0.011 (0.054)	-0.075 (0.138)	0.091 (0.073)	0.160*** (0.034)	0.099** (0.049)
Constant	-76.944*** (5.323)	-68.474*** (7.767)	-25.406 (23.639)	-82.298*** (20.311)	-48.984 (32.056)	-21.445 (27.567)	-47.982 (37.589)	-74.413*** (20.010)	-131.874*** (32.000)	-43.928 (42.277)	-46.866*** (16.740)	-71.164*** (11.719)
Observations	12,528	12,482	10,174	10,172	10,158	10,595	10,752	10,852	9,741	11,020	11,840	12,288

PPML estimations. Time fixed effects. Country fixed effects: exporter and importer fixed effects.

Dependent variable: Bilateral Services Exports.

t-statistics are based on robust standard errors clustered at a country pair level.

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 9: The effect of “aggregate” cultural distance on total services trade – alternative estimators

	(9.1) PPML	(9.2) OLS	(9.3) Heckman ML	
CD4	-0.113*** (0.041)	-0.081** (0.036)	-0.095*** (0.035)	0.052 (0.049)
logGDPi	0.702*** (0.029)	1.023*** (0.026)	1.020*** (0.026)	0.143*** (0.037)
logGDPj	0.875*** (0.027)	0.817*** (0.026)	0.791*** (0.026)	0.306*** (0.031)
logDistance	-0.524*** (0.072)	-0.798*** (0.077)	-0.818*** (0.077)	-0.435*** (0.129)
1.Adjacency	0.033 (0.118)	0.294 (0.182)	0.286 (0.182)	-0.193 (0.311)
1.Language	0.326** (0.139)	0.208 (0.161)	0.220 (0.161)	-0.105 (0.264)
1.Colony	0.231 (0.145)	0.667*** (0.219)	0.669*** (0.218)	0.133 (0.324)
1.Religion	-0.007 (0.162)	0.459*** (0.110)		-0.047 (0.115)
ID	-0.035 (0.033)	-0.083*** (0.031)	-0.106*** (0.031)	-0.104*** (0.033)
1.RTA	0.267** (0.131)	-0.015 (0.082)	0.085 (0.083)	0.447*** (0.123)
EFWi	0.394*** (0.084)	0.692*** (0.087)	0.707*** (0.087)	-0.322*** (0.093)
EFWj	0.279*** (0.086)	0.508*** (0.063)	0.556*** (0.062)	0.011 (0.059)
OPENi	0.363*** (0.097)	0.625*** (0.069)	0.604*** (0.069)	0.846*** (0.127)
OPENj	0.407*** (0.069)	0.255*** (0.056)	0.200*** (0.054)	0.181*** (0.070)
MIGRANTij	0.047*** (0.010)	0.029 (0.022)	0.030 (0.022)	0.161* (0.087)
MIGRANTji	0.119*** (0.043)	0.133*** (0.040)	0.135*** (0.038)	0.500 (0.429)
logREMOTENESSi	0.027 (0.123)	0.589*** (0.161)	0.498*** (0.172)	-1.273*** (0.190)
logREMOTENESSj	0.028 (0.076)	-0.224*** (0.084)	-0.200** (0.084)	0.227** (0.109)
Constant	-38.788*** (2.975)	-54.409*** (3.135)	-52.189*** (3.232)	14.088*** (3.964)
athrho				-0.069 (0.063)
Insigma				0.240*** (0.022)
Observations	12,482	11,098	12,482	12,482

Time fixed effects included.

Dependent variable: Bilateral Services Exports.

t-statistics are based on robust standard errors clustered at a country pair level.

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Appendix

Data Description and Sources:

$\log Export_{ijt}$ is the natural logarithm of bilateral trade flows (exports) from country i to country j at time t , measured in US dollars. Source: Eurostat, BOP statistics (2014) for services; OECD.Stat, STAN database (2015) for goods trade.

$\log GDP_{it}$ is the natural logarithm of GDP of country i in time t measured in constant US dollars. Source: World Bank (2014).

$\log GDP_{jt}$ is the natural logarithm of GDP of country j in time t measured in constant US dollars. Source: World Bank (2014).

$\log Distance_{ij}$ is the natural logarithm of the geographical distance between capitals of countries i and j . Source: CEPII database (Mayer 2011).

CD_{ij} is the aggregate cultural distance between countries i and j . Source: own calculation based on the data from Geert Hofstede's web page (2015).

PDI_{ij} is the absolute value of the difference between scores given for the power distance cultural dimension of country i and country j . Source: own calculation based on the data from the Geert Hofstede's web page (2015).

IDV_{ij} is the absolute value of the difference between scores given for the individualism cultural dimension of country i and country j . Source: own calculation based on the data from the Geert Hofstede's web page (2015).

MAS_{ij} is the absolute value of the difference between scores given for the masculinity cultural dimension of country i and country j . Source: own calculation based on the data from the Geert Hofstede's web page (2015).

UAI_{ij} is the absolute value of the difference between scores given for the uncertainty avoidance cultural dimension of country i and country j . Source: own calculation based on the data from the Geert Hofstede's web page (2015).

$Adjacency_{ij}$ is a dummy variable that equals 1 if countries share a land border. Source: CEPII database (Mayer 2011).

$Language_{ij}$ is a dummy variable that equals 1 if countries have a common official language. Source: CEPII database (Mayer 2011).

$Colony_{ij}$ is a dummy variable that equals 1 if countries have a common colonial history.

Source: CEPII database (Mayer 2011).

$Religion_{ij}$ is a dummy variable that equals 1 if countries have the same main religion.

Source: own computations based on the data provided in the World Factbook (2014).

RTA_{ijt} is a dummy variable that equals 1 if two countries are members of the same RTA in time t . Source: own computations based on the data provided by the WTO's list of trade agreements available on the WTO webpage.

EFW_{it} is the Economic Freedom of the World index for country i in time t . Source: Fraser Institute (2014).

EFW_{jt} is the Economic Freedom of the World index for country j in time t . Source: Fraser Institute (2014).

ID_{ijt} is the institutional distance between countries i and j in time t . Source: own computations based on the data provided by the World Bank's Worldwide Governance Indicators (WGI) (2014).

$COMMUNICATION_{ij}$ is the probability that two randomly selected persons from country i and j speak English. Source: own calculations based on the data provided by the Wikipedia (2015).

$MIGRANT_{ij}$ is the migrant population from country i relative to the total population of country j . Source: Migration DRC (2007).

$MIGRANT_{ji}$ is the migrant population from country j relative to the total population of country i . Source: Migration DRC (2007).

$OPEN_{it}$ is the index of openness to trade ($[\text{exports} + \text{imports}]/\text{GDP}$) for country i in time t .

$OPEN_{jt}$ is the Index of openness to trade ($[\text{exports} + \text{imports}]/\text{GDP}$) for country j in time t .

$\log Remoteness_{it}$ is the natural logarithm of the relative distance of country i in time t .

$\log Remoteness_{jt}$ is the natural logarithm of the relative distance of country j in time t .

Sample description

"home" countries (29)	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan (only for insurance, other business, license, transportation, travel and total services), Latvia, Lithuania, Luxembourg (only for financial, other business, transportation, travel and total services), Malta (missing for cultural services), Netherlands, Poland, Portugal (missing for transportation services), Slovakia, Slovenia, Spain (only for transportation, travel and total services), Sweden, United Kingdom (only for transportation, travel and total services), United States (only for insurance, license, transportation, travel and total services)
"partner" countries (55)	Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, China, Colombia (only for total services exports), Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, India, Indonesia, Iran, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Malaysia, Malta, Mexico, Morocco, Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Romania, Russia, Singapore, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, Thailand, Turkey, United Kingdom, United States, Uruguay, Venezuela

Service types

Communications services	Includes postal, courier and telecommunication services
Computer and information services	Consists of computer services (data processing and software related services), news agency services and other information services (data storage, web search portals etc.)

Construction services	"Covers work performed on construction projects and installation by employees of an enterprise in locations outside the territory of an enterprise" (MSITS, 2002, p.40)
Financial services	Includes advisory, custody and asset management services; commissions and fees associated with financial transactions; credit services; corporate finance services; administration of financial markets
Insurance services	Includes different insurance services such as provision with a life, freight or other direct insurance; reinsurance; pension funds and auxiliary services to insurance.
Other business services	Includes trade related services, merchanting, operational leasing, legal, accounting, auditing, management consulting, advertising, research and development services, architectural, agricultural and mining, waste treatment, services between related enterprises and other business services
Personal, cultural and recreational services	Consists of audiovisual and related services and other personal, cultural and recreational services such as
Royalties and license fees	Payments for the use of registered trademarks; intangible, non-produced, non-financial assets and proprietary rights
Transportation services	Covers all transportation services (rail, road, water, pipeline, freight, passenger) as well as related supporting and auxiliary services
Travel	Covers goods and services acquired by travelers during visits of less than one year

Source: United Nations (2002)