

Bilateral Trade in Services:  
Data Analysis for  
Countries with Heterogeneous Cultural Attributes  
by

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An honors thesis submitted in partial fulfillment  
of the requirements for the degree of  
Bachelor of Science  
Business and Economics Honors Program  
NYU Shanghai  
May 2022

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# Preface

As is well known, international trade is the exchange of capital stocks, goods, and services across national borders. It involves the interaction, communication, and negotiation between firms in countries with distinct cultural backgrounds.

The motivation for conducting this research stems from my experience studying international trade with Professor Nan Xu of NYU Shanghai and learning about the role of cultural attributes in economic development from Professor William Easterly of NYU.

With the help of my thesis advisor Professor Lawrence J. White of NYU Stern School of Business, I have conducted extensive quantitative research in the form of international services trade data analysis to transform my previous knowledge and observations into this thesis paper. Through my research, I am able to form a better understanding of the interactions between cultural attributes and trade patterns that will have significant implications for facilitating future trade agreements worldwide.

## Acknowledgements

I would like to, first and foremost, express my most sincere and wholehearted gratitude towards Professor Lawrence J. White, my thesis advisor, for his incredible support, insightful advice, and patient guidance. Our weekly conversations will forever remain a precious memory of my senior year, for your kind words and wise advice showed me the beauty of economics and helped me find my path in academic research.

I would also like to thank my second reader, Professor Nan Xu, for her most invaluable suggestions throughout the research process. Your unequivocal expertise in the field and generous inputs are what made this research possible.

Furthermore, I am incredibly grateful to Professor Marti Subrahmanyam, Professor Christina Wang, and Professor Wendy Jin for organizing the Honors Seminar and Xinyi Yang for arranging all the Friday meetings.

Lastly, I would like to thank all my peers for their illuminating discussions and helpful comments. Thanks to my partner Sarah Armstrong for her mental support in these challenging times. Thanks to my friends Jingzhi Xu and Xilin Chen for supporting me along the way. You all have my deepest gratitude.

# Abstract

The cross-country heterogeneity in cultural attributes plays an essential role in determining how countries conduct trade with each other. This research studies the different effects of individualism and collectivism on bilateral trade in services. I hypothesize that individualism has an overall positive impact on trade in services since it encourages personal freedom and facilitates trusting relationships with everyone, while collectivist countries prefer to trade with like-minded collectivist countries since collectivism builds trust only within a group. I find that individualism does have an overall positive effect on trade in services. The empirical findings also provide statistical evidence supporting the hypothesis that both countries in a bilateral relationship being collectivist encourages trade between them. This research will contribute to the existing literature on the economic impact of cultural heterogeneity and provide insights for fostering healthier trade relationships in the future.

**Keywords:** International trade in services, Gravity model, Individualism, Collectivism, Data analysis

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# 1 Introduction

A critical question that trade economists are trying to answer is what are the main determinants of a country's trade pattern. Politics and geographical separations can undoubtedly explain a part of this preference. At the same time, the Ricardian and Heckscher-Ohlin models have also highlighted the role of technology and factor endowments in determining trade relations.

In recent decades, the concept of institutional quality has quickly captured the attention of trade economists as a potential determinant of trade patterns. Levchenko (2007), for example, constructed a simple trade model which factors in institutional differences and found institutional differences to be an essential determinant of trade patterns. Nunn (2007) similarly established contractual enforcement as a vital determinant of a country's comparative advantage. Even at a state or provincial level, researchers have shown that institutional quality is a significant factor in determining trade, supporting the universality of institutions' role in shaping trade patterns (Feenstra et al., 2013). However, while the works of scholars like Levchenko (2007) and Nunn (2007) have established formal institutions as an essential driver of trade, the fact that a country's institutions are endogenous to its culture means disentangling their effects is key to understanding what really determines who wants to trade with whom.

Culture has different aspects or dimensions (Hofstede, 2001). To avoid over-generalization, I focus on countries' cultural tendencies toward individualism or collectivism. The individualism level of a country measures the extent to which individuals in this country prefer to act alone, as opposed to being integrated into a cohesive group. In essence, individualists appreciate personal freedom, and collectivists value group conformity. Triandis (2001) regarded the individualism-collectivism cultural attribute as one of the most significant cultural differences between societies. It has been the primary variable of interest in many studies, as

Acemoglu et al. (2001), Guiso et al. (2016), and Gorodnichenko and Roland (2017) formally established individualism's role in contributing to economic growth.

It is also a particularly interesting attribute to study in international trade analysis. Individualist values give rise to formal institutions that protect equal rights for *all* since they “pursue their own interest without internalizing collective interests.” In contrast, collectivist values are suitable for the enforcement of contract *only* within the group, given that they “internalize group interests to a greater degree” (Gorodnichenko & Roland, 2017).

To elaborate, a typical collectivist society suppresses individualism, as “good behavior is deemed to result from coercion, not from internalization of the values of society” (Tabellini, 2010). In other words, collectivism forces good behaviors from individuals in society, as the cost of non-compliance would be expulsion or banishment. In an individualist society, however, social exclusion is hardly seen as a punishment for harmful actions, as individual survival does not depend on society's acceptance. Consequently, individualist societies establish legal and governmental institutions as a tool for contractual enforcement (Gorodnichenko & Roland, 2017).

As a result of the different levels of within-group trust and legal institutions, business owners in individualist and collectivist countries will gradually develop varying levels of trust towards “outside” or “foreign” traders. Since trust towards outsiders is critical in the context of international trade, I expect the individualism-collectivism cultural attribute to play a role in determining how countries conduct trade with each other.

Furthermore, I plan to examine mainly international trade in services in this research. The reason is that geographical distance is overwhelmingly the most influential factor in determining trade in goods, as it directly reflects in transportation costs. Therefore, it is likely that much, if not all, of the cultural level “concerns” or “insecurities” in trade in goods will be overshadowed by mere cost

considerations. Hence, since my main goal is to uncover the role of cultural heterogeneity in affecting trade patterns, international services trade is a much more suitable dataset to examine.

This paper is motivated by two fundamental hypotheses: First, I hypothesize that individualism positively affects bilateral trade in services since it encourages personal freedom and builds trusting relationships. In other words, I wish to test whether individualism, generally speaking, leads to higher trade in services volumes. On the other hand, collectivism enforces trustworthy behaviors within the group, so I further hypothesize that both countries in a bilateral relationship being collectivist also encourages trade. If two countries share a common collectivist goal of internalizing group interests, it is conceivable that mutual trust resulting from shared collectivism may transcend national borders. This research will contribute to the existing literature on the economic impact of cultural heterogeneity and provide valuable insights for fostering trade relationships in the future.

It is clear that cultural factors play an essential role in international trade. Past studies have found significant relationships between trade patterns and multiple aspects of national culture, such as linguistic links, religious dissimilarity, and masculinity levels (Guo, 2004; Lewer and Van den Berg, 2007; Kristjánssdóttir et al., 2017). In addition, cultural factors also influence countries' negotiation styles, and therefore trade outcomes. In a case study comparing negotiation styles among BRIC (Brazil, Russia, India, and China) countries, Tu (2015) found that an individualist attitude directly affects the negotiation style employed by firms trading in the international market, consistent with the findings of Oetzel and Ting-Toomeys (2003).

However, quantitative studies on the individualism-collectivism cultural attribute have been scarce, with the majority of relevant research conducted in experimental settings. Hajikhameneh and Kimbrough (2019), for example, designed a lab experiment to examine the extent to which individualism drives people to



abandon an existing trade partnership under varying levels of contractual enforcement and seek more lucrative terms of trade. They found an increased willingness to trade with “strangers” associated with individualists. Moreover, Hofstede et al. (2008) developed a simulation model of the human trading process, where traders decide whether to trust their partners or verify them at a cost. They simulated varying cultural backgrounds and beliefs by manipulating the test parameters, which found that higher success rates resulted from trades where traders are all collectivists or individualists, and that traders who are collectivists prefer to trade with other collectivists.

The remainder of the paper is structured as follows. Section 2 describes the dataset I use and how I incorporate certain variables, Section 3 introduces the gravity model of international trade, Section 4 details the data analysis and the discussion of estimation results, Section 5 lists areas of limitation, and Section 6 concludes.

## **2 Data**

### **2.1 Key Variables**

The first set of key variables of interest is the country-level annual bilateral services trade data from 2010 to 2019 from the UN Comtrade Database. The selection of these ten years is based on the need for a reasonably long period and to avoid the skewing effects of the 2008 recession and the 2020 COVID-19 pandemic. As a result, the trade patterns reflected in the data from 2010 to 2019 should be a good indicator of how internal cultural factors influence trade decisions without the disruption of too many external interferences.

The second set of key variables includes geographical distance, one of the most significant factors determining trade patterns. The data are downloaded from the

GeoDist dataset by CEPII. According to Mayer and Zignago (2011), the GeoDist dataset defines distance as the geographical separation between the most populated cities of each country in *km*, which is a rough approximation of the more informative average port-to-port distance. In addition, the GeoDist dataset also provides other key control variables in bilateral trade analysis, such as indicators for whether the two countries share a common border, language, colonizer, main religion, whether they have had colonial relationships, whether one or both are landlocked nations, and so on.

Granted, distance and other geographical variables are much more influential factors when it comes to trade in commodity goods. After all, transportation cost consideration is the top priority for firms engaging in international goods trade, which is directly correlated with distance. Nevertheless, distance and geographical constraints should be taken into account when examining trade in services datasets, as countries closer in proximity to each other, in general, have stronger economic ties, not to mention that time-zone differences and costs of transportation also play a role in determining the convenience of conducting online business meetings and in-person business trips.

On the other hand, culturally significant variables such as common official language and colonizer are also vital to incorporate. I expect these cultural factors to play a crucial role in determining who wishes to purchase services from whom. The rationale is that when the cost of transportation is a less critical concern, firms opt to choose with whom they trade services by evaluating the relative easiness in business communication and trade terms negotiation. For example, Selmier and Oh (2013) showed that language “closeness” is a critical factor in promoting communication, and therefore encouraging international trade and foreign direct investment (FDI), as “language is both a tool in international economic transactions and a vehicle to transmit cultural values.” Hence, these dummy variables work to control other influences, thus singling out the true effect of individualism

on trade in services.

## 2.2 Measure of Individualism

The most commonly adopted country-level measure of individualism (along with other cultural attributes) is the Hofstede Individualism Vs. Collectivism Index developed by Geert Hofstede (2001) as part of Hofstede's cultural dimensions theory. He proposed six cultural dimensions: Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long Term Orientation, and Indulgence. It gives each country an index number ranging from 0 to 100, based on factor analysis using a broad array of survey questions to establish accurate cultural values. Hofstede (2001) initially used surveys of IBM employees in its offices worldwide to construct the index, which he has since expanded to cover around 100 countries now.

## 2.3 Individualism Variable Functional Form

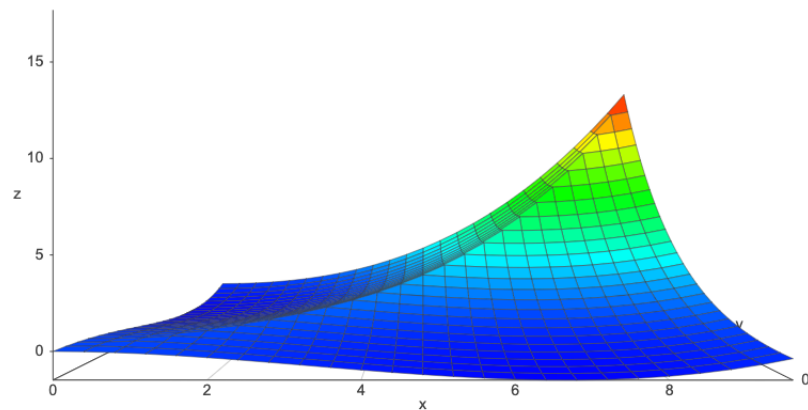


Figure 1: Three-dimensional Representation of the Hypothesis

A key concern with incorporating the “individualism” term in the gravity regression is which functional form to use. To recap, I wish to test two main hypotheses in this paper: First, I wish to test whether individualism leads to higher trade volumes overall. Second, I wish to test whether both countries being collectivist encourages trade. Figure 1 illustrates the hypotheses in a three-dimensional space. As observed in the graph, when both trading partners have high individualism scores, the trade volume reaches its global maximum. Meanwhile, when both partners are collectivist (close to the origins of the  $x$ - and  $y$ -axis), the trade volume reaches a lower local maximum.

To allow for the maximum degree of freedom in interpreting how different types of country-pair affect trade patterns, I will place countries evenly into three categories: High, Medium, and Low, with  $1/3$  cutoffs. Thus, ignoring directionalities, which resolves itself since the trade data is bilateral, there are six possible combinations: LL, LM, LH, MM, MH, and HH. I then enter five of them into the regression equation as dummy variables, using LL as the baseline dummy. Consequently, a positive coefficient on a dummy variable would signify that the country-pair specified by this dummy is more likely to trade with each other. On the other hand, a negative coefficient means it is less influential than the baseline (LL) scenario.

Alternatively, other methods of incorporating individualism into the regression are also plausible. The most straightforward approach is to simply include the importing and exporting country’s respective individualism scores (*Idv\_Own* and *Idv\_Partner*). Still, I am interested in how the differences in individualism play a role in determining trade patterns. An intuitive solution, then, is also to include the absolute differences in individualism scores (*Absdiff*). However, the issue with the *Absdiff* term is its lack of interpretability. To illustrate, suppose I observe a low value of absolute difference: There is no telling whether it reflects a pair of equally individualist or equally collectivist countries. To solve the individualism variable’s

functional form problem, I proposed the following alternative specifications, which I will use for robustness checks:

1.  $Var = Max [0, (Partner - Own)] = \text{“Cultural Insecurity”}$
2.  $Var = Own + Absdiff * I (both\_collectivist)$
3.  $Var = Own + Absdiff + I (both\_high) + I (both\_low)$
4.  $Var = Own + Absdiff / Sum$

Option 1 stems from the concept of “insecurity”, whereby a country may feel culturally insecure only when its partner has a higher individualism score. The intuition for option 2 is that the *Absdiff* term matters only in the case where both countries are collectivists. Option 3, instead, employs indicator variables to help with interpreting the regression results. Finally, in option 4, the *Sum* term represents the sum of both parties’ individualism scores, and is used as a scaling factor.

## 2.4 Instrumental Variables

It is worth noting that while a simple correlation between individualism and higher trade volume may be easy to find, the causal relationship between trade volume and individualism flows both ways: We may not know for sure whether it is the individualistic cultural attribute that promotes trade, or whether countries that historically thrived on trading gradually adopted an individualistic lifestyle, which is a reasonable concern given the critical role maritime and cross-continental trade played historically in the forming of nation-states and accumulation of wealth.

Therefore, the objective is to address the potential endogeneity with the use of instrumental variables. I will mainly use the instrumental variables identified by Gorodnichenko and Roland (2017).

1. The historical pathogen prevalence in the given country's geographical area;
2. The Mahalanobis distance between the country's blood type frequency relative to that in the UK;
3. The Mahalanobis distance between the country's blood type frequency relative to that in the US;
4. The *S-allele* in the serotonin transporter gene *5HTTLPR*;
5. The *G-allele* in polymorphism *A118G* in the  $\mu$ -*opioid* receptor gene.

Firstly, the epidemiological data on historical pathogen prevalence levels are correlated to individualism since a substantial prevalence of harmful pathogens has been shown to drive local populations to adopt a more collectivist lifestyle as a defense mechanism (Murray & Schaller, 2010). The data is collected and organized by Murray and Schaller (2010) for 96 countries, based on the earlier work by Fincher et al. (2008). Additionally, I use the Mahalanobis distance in blood types because the fact that culture is transmitted primarily from parents to offspring means that genetic markers are reasonable proxies for cultural traits. The UK, being one of the most individualist and culturally homogeneous countries, is the ideal candidate for the baseline. The US is another potential candidate. Finally, the last two instrumental variables exploit the correlation between the frequency of specific genes and cultural tendencies. Both genes create psychological pain when experiencing social exclusion, affect personality traits, and explain the prevalence of collectivist culture attributes and social norms as an adaptation to the epidemiological environment (Chiao & Blizinsky, 2010; Way & Liebermann, 2010). I report the first-stage regression results of the 2SLS regression in Table 1.

As shown in Table 1, all five instrumental variables are statistically significant with respect to the Hofstede Individualism Index. Therefore, since they are all decent proxies of individualism, following the approach of Gorodnichenko and

Table 1: 2SLS First-Stage Regression Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Mahalanobis Dist UK	-13.738*** (0.255)		-7.546*** (0.554)		-18.147*** (0.350)		-22.254*** (0.244)		-13.989*** (0.223)
Mahalanobis Dist US		-19.101*** (0.356)	-9.725*** (0.774)						
Frequency of <i>HTTLPR</i>				1.968*** (0.059)	0.025 (0.064)				
Frequency of <i>A118G</i>						-2.451*** (0.112)	-1.004*** (0.075)		
Pathogen Prevalence								-17.109*** (0.323)	-17.431*** (0.282)
Constant	74.417*** (0.271)	81.144*** (0.384)	78.559*** (0.426)	-18.709*** (2.527)	78.609*** (2.907)	100.351*** (1.465)	97.302*** (0.967)	50.069*** (0.272)	62.361*** (0.307)
Observations	12494	12494	12494	9086	9086	6402	6402	12494	12494
Over-id Test <i>p</i> -value			0.001		0.000		0.000		0.000

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . Dependent variable: Individualism Index.

Roland (2017), I will use the Mahalanobis blood distance (UK) as the main IV and the remaining four for robustness checks. An additional reason for using blood distance as the main IV is that, although the pathogen prevalence and the frequency of *5HTTLPR* and *A118G* have all shown statistical significance, they are available only for a subset of countries due to difficulties in collecting genetics data.

In the cases of the alternative IVs, when including the Mahalanobis blood distance as a second predictor, the overidentification test suggests that I cannot reject the null hypothesis that all overidentifying restrictions are jointly valid at any reasonable significance level. Hence, there is strong evidence suggesting that the Mahalanobis blood distance from the UK is a valid IV that captures the link between genetic similarities and individualistic cultural attributes.

Then, I form the six country-pair individualism dummies using the fitted values from the first-stage regression results and the 1/3 cutoffs mentioned earlier. For robustness checks, I will vary the cutoff values and examine if the same results hold.

### 3 The Model

#### 3.1 The Gravity Model of International Trade

To determine the effects of individualism on countries' trade patterns, I will use an alteration of the gravity model, a work-horse of international trade analysis. The general gravity equation has the following multiplicative form:  $X_{ij} = GS_iM_j\phi_{ij}$ , where  $X_{ij}$  is the import volume,  $M_j$  is the importer's GDP,  $S_i$  is the exporter's GDP, and  $G$  is a variable denoting other effects such as world liberalization. Finally,  $\phi_{ij}$  is the inverse of bilateral trade costs  $t_{ij}$ , which are generally assumed in the trade literature to take the form:

$$t_{ij} = dist_{ij} * exp(\delta_1 colony_{ij} + \delta_2 contig_{ij} + \delta_3 comlang\_off_{ij} + \quad (1)$$

$$\delta_4 comcol_{ij} + \delta_5 landlocked_{i,j} + \delta_6 religion_{ij} + \delta_7 join_{i,j}) \quad (2)$$

Hence, in its log-linear form:

$$\ln X_{ijt} = \beta_0 + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \beta_3 \ln(dist_{ijt}) + \quad (3)$$

$$\beta_4 colony_{ij} + \beta_5 contig_{ij} + \beta_6 comlang\_off_{ij} + \quad (4)$$

$$\beta_7 comcol_{ij} + \beta_8 landlocked_i + \beta_9 landlocked_j + \beta_{10} religion_{ij} + \quad (5)$$

$$\beta_{11} join_i + \beta_{12} join_j + \epsilon_{ijt} \quad (6)$$

Here,  $i$  and  $j$  represent the importer and exporter countries, and  $t$  is the time subscript. Furthermore,  $dist_{ij}$  is the geographical distance between the most populated cities of each country measured in  $km$ . In addition,  $colony_{ij}$ ,  $contig_{ij}$ ,  $comlang\_off_{ij}$ ,  $comcol_{ij}$ ,  $landlocked_{i,j}$ , and  $religion_{ij}$  are dummies for whether one trading partner was a colony of the other, whether they share a common border, language and colonizer, whether they are landlocked, and whether they share a common religion. Finally,  $join_{i,j}$  signifies their year of World Trade Organization



(WTO) or General Agreement on Tariffs and Trade (GATT) accession.

One key focus in the gravity model regression is the treatment of zero trade flows, which are common occurrences in bilateral trade data. Several approaches are available when dealing with zero trade flows. The most straightforward is to use a simple OLS regression with truncation. However, truncating the zeros leads to a loss of useful information unless the zero observations are randomly distributed, which is unlikely. Alternatively, I can employ a Tobit estimator with left-censoring at zero on  $\ln X_{ijt}$ , a common approach in the empirical literature. The Tobit model is suitable if small trade values are rounded to zero or if the recorded zero trade reflects the “desired” negative trade (Bacchetta, 2012). Nevertheless, if the Tobit assumption that the trade volume data are censored below some positive value is not met, the Tobit model will yield biased estimates.

In this research, I use the Tobit estimation model as the central method due to its common usage in treating censored datasets.<sup>1</sup>

### 3.2 Multilateral Trade Resistance

Noteworthy, the gravity model specification above is of the general form, which uses a “naive” trade costs representation. As shown by Anderson and van Wincoop (2003), bilateral trade in a well-specified gravity model is actually determined by *relative* trade costs, which requires the inclusion of a “multilateral trade-resistance” (MTR) term. Their theory suggested that, to determine country  $i$ ’s true propensity to import from country  $j$ , we should consider the  $i$ ’s import cost towards  $j$  *relative* to  $i$ ’s distance-weighted average trade costs facing all world exporters, rather than the *absolute* import cost.

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<sup>1</sup>The (pseudo) Poisson maximum likelihood (PPML) estimation is another commonly used method in modern trade research. It directly estimates the non-linear gravity equation so that I need not drop the zero observations. It has also been shown by Santos Silva and Teneyro (2006) that the PPML method is robust in the presence of heteroskedasticity. However, I do not use the PPML method in this research due to computational difficulties in achieving the convergence of log pseudolikelihood.

To illustrate, Belgium and the Netherlands are two moderately large economies bordered by each other. Intuitively, they should be conducting a considerable amount of trade in services with each other. However, since they both border Germany, a much larger economy with a lower average trade cost, Belgium and the Netherlands will trade less between themselves compared to if, say, they were surrounded by vast spans of deserts or oceans (e.g., Australia and New Zealand).



Figure 2: Map of Belgium, the Netherlands, and Germany (den Ouden, 2015)

Since the multilateral trade resistance term is extremely complex to correctly specify in a linear manner, it is common to control for MTR using a “remoteness” proxy calculated as (Head 2003):

$$Remoteness_i = \sum_j \frac{dist_{ij}}{GDP_j / GDP_{World}}$$

It is not a theoretically correct representation of MTR, as it only captures distance barriers. However, Head (2003) has shown it to be an acceptable linear approximation without using the non-linear procedures of Anderson and van Wincoop (2003), and it is more straightforward to interpret than Baier and Bergstrand’s (2009) method of using a first-order Taylor series expansion of MTR.

Table 2: Summary Statistics

Acronym	Description	Mean	SD	Min	Max	25th Percentile	50th Percentile	75th Percentile
volume	Trade Value in Current USD	323392281.43	2099812987.16	0.00	6.43e+10	0.00	0.00	20,083,677.00
lvolume1	Log(Trade Value + 1) in Current USD	17.52	3.16	6.29	24.89	15.69	17.93	19.75
gdp_importer	Log(Trade Value + 1) in Current USD	17.52	3.16	6.29	24.89	15.69	17.93	19.75
lgdp_importer	Importer GDP in Current USD	7.82e+11	1.59e+12	1756215665.09	1.95e+13	6.55e+10	2.49e+11	8.39e+11
gdp_exporter	Log(Importer GDP) in Current USD	26.34	1.52	21.29	30.60	24.91	26.24	27.46
lgdp_exporter	Exporter GDP in Current USD	1.06e+12	2.73e+12	1756215665.09	2.14e+13	7.48e+10	3.01e+11	7.78e+11
dist	Log(Exporter GDP) in Current USD	26.35	1.63	21.29	30.70	25.04	26.43	27.38
LL	Simple Distance in KM	5.515e+81	4.534e+24	59.62	19,586.18	1,517.00	4,201.94	8,874.13
LL	Log(Simple Distance) in KM	8.16	1.08	4.09	9.88	7.32	8.34	9.09
LM	1 if Low-Low Pair	0.08	0.27	0.00	1.00	0.00	0.00	0.00
LH	1 if Low-Medium Pair	0.10	0.30	0.00	1.00	0.00	0.00	0.00
MM	1 if Low-High Pair	0.11	0.32	0.00	1.00	0.00	0.00	0.00
MH	1 if Medium-High Pair	0.02	0.15	0.00	1.00	0.00	0.00	0.00
HH	1 if Medium-High Pair	0.05	0.22	0.00	1.00	0.00	0.00	0.00
colony	1 if High-High Pair	0.63	0.48	0.00	1.00	0.00	1.00	1.00
contig	1 for Historical Colonial Relationship	0.04	0.20	0.00	1.00	0.00	0.00	0.00
comlang_off	1 for Contiguity	0.07	0.19	0.00	1.00	0.00	0.00	0.00
comcol	1 for Common Official Language	0.00	0.07	0.00	1.00	0.00	0.00	0.00
inlandlocked	1 for Common Colonizer	0.20	0.40	0.00	1.00	0.00	0.00	0.00
extlandlocked	1 if Importer Landlocked	0.11	0.32	0.00	1.00	0.00	0.00	0.00
Religion	1 if Exporter Landlocked	0.16	0.36	0.00	1.00	0.00	0.00	0.00
join_importer	1 if Common Main Religion	1.968e+40	20.31	1,948.00	2,001.00	1,948.00	1,963.00	1,993.00
join_exporter	Importer GATT/WTO Accession Date	1,968.92	20.01	1,948.00	2,008.00	1,950.00	1,963.00	1,990.00
remoteness_importer	Exporter GATT/WTO Accession Date	179.70	445.25	0.00	4,673.40	0.00	15.20	151.53
remoteness_exporter	Remoteness of Importer	71.45	252.43	0.00	2,182.61	0.89	6.26	31.08
	Remoteness of Exporter							

Table 3: Correlation Matrix

	volume	gdp_importer	gdp_exporter	dist	LM	LH	MM	MH	HH	colony
volume	1.000									
gdp_importer	0.257	1.000								
gdp_exporter	0.362	-0.005	1.000							
dist	-0.110	0.082	0.096	1.000						
LM	-0.027	-0.200	-0.094	-0.122	1.000					
LH	0.064	0.222	0.028	0.153	-0.122	1.000				
MM	0.005	-0.083	-0.064	-0.153	-0.053	-0.056	1.000			
MH	0.124	0.058	0.078	0.019	-0.078	-0.082	-0.036	1.000		
HH	-0.065	0.251	0.166	0.180	-0.445	-0.468	-0.205	-0.299	1.000	
colony	0.147	0.151	0.033	0.030	-0.041	0.064	-0.008	-0.001	0.100	1.000
contig	0.229	-0.003	-0.010	-0.223	-0.000	-0.103	0.005	0.032	0.049	0.049
comlang_off	0.258	0.170	0.054	0.085	-0.119	0.089	-0.018	0.016	0.213	0.428
comcol	-0.013	-0.031	-0.024	-0.074	0.061	-0.044	-0.018	-0.026	-0.018	-0.014
imlandlocked	-0.072	-0.191	-0.011	-0.063	0.088	-0.181	0.003	-0.087	-0.127	-0.054
exlandlocked	-0.005	-0.004	-0.109	-0.227	0.067	-0.061	0.111	0.002	-0.092	0.010
religion	-0.021	-0.041	-0.076	-0.046	0.073	-0.093	0.074	0.002	-0.056	0.068
join_importer	-0.197	-0.409	0.000	-0.142	0.180	-0.333	0.047	-0.142	-0.248	-0.140
join_exporter	-0.152	-0.022	-0.143	-0.156	0.120	0.005	-0.011	-0.181	-0.212	-0.066
remoteness_importer	0.209	0.805	-0.018	0.075	-0.072	0.265	-0.033	0.092	-0.121	0.236
remoteness_exporter	0.259	0.005	0.977	0.179	-0.012	0.073	-0.036	0.072	-0.068	0.025
contig		comlang_off	comcol	imlandlocked	exlandlocked	religion	join_importer	join_exporter	remoteness_importer	remoteness_exporter
contig	1.000									
comlang_off	0.155	1.000								
comcol	0.197	0.004	1.000							
imlandlocked	0.060	-0.072	-0.034	1.000						
exlandlocked	0.141	0.023	-0.021	-0.020	1.000					
religion	0.199	-0.038	-0.030	0.038	0.059	1.000				
join_importer	0.034	-0.218	0.095	0.004	0.039	0.039	1.000			
join_exporter	0.034	-0.125	0.101	0.012	0.131	0.025	-0.005	1.000		
remoteness_importer	-0.013	0.209	-0.039	-0.229	-0.007	-0.070	-0.494	0.001	1.000	
remoteness_exporter	-0.029	0.053	-0.021	-0.012	-0.114	-0.088	-0.003	-0.108	-0.007	1.000

## 4 Data Analysis

Table 2 presents the summary statistics of all the variables I enter in the Tobit regression. Henceforth, I will express all the variables in acronyms for simplicity. Furthermore, Table 3 presents the correlation matrix of all the variables of interest.

### 4.1 Empirical Results

To begin with, given that I aim to incorporate the individualism cultural attribute variables into the existing gravity model specification, I naturally want to verify whether adding individualism affects the conclusion for other gravity variables. Table 4 presents the regression results of individualism's effect on international trade in services with extended control variables, using UN Comtrade data from 2010 to 2019. The dependent variable is  $lvolume1$  ( $\log(volume + 1)$ ) to suit the Tobit estimation method. "Plus one" is needed here since, for zero trade flows,  $\log(0 + 1) = 0$ , while  $\log(0)$  is undefined and must be dropped. As mentioned earlier, I wish to keep the zero trade flow observations to avoid any loss of useful information. It is also noteworthy that the trade volume in this research refers to one-way trade flows instead of aggregate two-way trade flows.

The four columns in Table 4 show the regression results under different combinations of country and time fixed effects.

Column (1):

$$\ln X_{ijt} = \beta_0 + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \beta_3 \ln(dist_{ijt}) + \quad (7)$$

$$\beta_4 colony_{ij} + \beta_5 contig_{ij} + \beta_6 comlang\_off_{ij} + \quad (8)$$

$$\beta_7 comcol_{ij} + \beta_8 landlocked_i + \beta_9 landlocked_j + \beta_{10} religion_{ij} + \quad (9)$$

$$\beta_{11} join_i + \beta_{12} join_j + \epsilon_{ijt} \quad (10)$$

Column (2):

$$\ln X_{ijt} = \beta_0 + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \beta_3 \ln(dist_{ijt}) + \quad (11)$$

$$\beta_4 colony_{ij} + \beta_5 contig_{ij} + \beta_6 comlang\_off_{ij} + \quad (12)$$

$$\beta_7 comcol_{ij} + \beta_8 landlocked_i + \beta_9 landlocked_j + \beta_{10} religion_{ij} + \quad (13)$$

$$\beta_{11} join_i + \beta_{12} join_j + \theta_i + \epsilon_{ijt} \quad (14)$$

where  $\theta_i$  is country fixed effect.

Column (3):

$$\ln X_{ijt} = \beta_0 + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \beta_3 \ln(dist_{ijt}) + \quad (15)$$

$$\beta_4 colony_{ij} + \beta_5 contig_{ij} + \beta_6 comlang\_off_{ij} + \quad (16)$$

$$\beta_7 comcol_{ij} + \beta_8 landlocked_i + \beta_9 landlocked_j + \beta_{10} religion_{ij} + \quad (17)$$

$$\beta_{11} join_i + \beta_{12} join_j + \theta_t + \epsilon_{ijt} \quad (18)$$

where  $\theta_t$  is time fixed effect.

Column (4):

$$\ln X_{ijt} = \beta_0 + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \beta_3 \ln(dist_{ijt}) + \quad (19)$$

$$\beta_4 colony_{ij} + \beta_5 contig_{ij} + \beta_6 comlang\_off_{ij} + \quad (20)$$

$$\beta_7 comcol_{ij} + \beta_8 landlocked_i + \beta_9 landlocked_j + \beta_{10} religion_{ij} + \quad (21)$$

$$\beta_{11} join_i + \beta_{12} join_j + \theta_i + \theta_t + \epsilon_{ijt} \quad (22)$$

where  $\theta_i$  is country fixed effect and  $\theta_t$  is time fixed effect.

Notably, the empirical findings shown in Table 4 are mostly consistent with the traditional gravity model predictions. First, when controlled for both time and country fixed effects, the GDP levels of both countries contribute positively

Table 4: Tobit Regression Results for Trade in Services

	(1)	(2)	(3)	(4)
	lvolume1	lvolume1	lvolume1	lvolume1
lgdp_importer	0.760*** (0.039)	0.769*** (0.036)	0.896*** (0.041)	0.835*** (0.038)
lgdp_exporter	0.761*** (0.028)	0.177** (0.070)	0.837*** (0.028)	0.545*** (0.083)
ldist	-1.315*** (0.041)	-0.979*** (0.068)	-1.296*** (0.042)	-0.978*** (0.069)
LM	-0.527*** (0.108)	-0.695*** (0.104)	-0.476*** (0.109)	-0.681*** (0.105)
LH	0.533*** (0.120)	0.519*** (0.128)	0.511*** (0.121)	0.505*** (0.129)
MM	-0.540*** (0.188)	-1.125*** (0.216)	-0.511*** (0.189)	-1.124*** (0.217)
MH	0.196 (0.154)	-0.205 (0.198)	0.171 (0.155)	-0.218 (0.199)
HH	0.905*** (0.202)	0.820*** (0.260)	0.836*** (0.204)	0.784*** (0.263)
colony	0.739*** (0.215)	0.968*** (0.193)	0.704*** (0.217)	0.950*** (0.194)
contig	-0.028 (0.231)	0.185 (0.212)	-0.048 (0.232)	0.168 (0.213)
comlang_off	0.888*** (0.179)	0.683*** (0.168)	0.819*** (0.181)	0.638*** (0.169)
comcol	1.524*** (0.478)	2.087*** (0.433)	1.508*** (0.482)	2.048*** (0.435)
imlandlocked	0.301*** (0.105)	0.395*** (0.096)	0.269** (0.106)	0.367*** (0.096)
exlandlocked	-0.083 (0.130)	-3.429*** (0.451)	-0.070 (0.131)	-2.565*** (0.466)
religion	-0.251** (0.101)	-0.280*** (0.105)	-0.263*** (0.102)	-0.266** (0.106)
join_importer	-0.037*** (0.003)	-0.036*** (0.003)	-0.029*** (0.003)	-0.032*** (0.003)
join_exporter	-0.002 (0.002)	-0.009 (0.007)	0.000 (0.002)	-0.005 (0.007)
remoteness_importer	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)
remoteness_exporter	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.001*** (0.000)
_cons	64.449*** (8.128)	88.603*** (14.535)	38.143*** (8.469)	61.245*** (14.993)
N	10416	10416	10416	10416
Time FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.10. Dependent variable: Log(Trade Volume+1).

to bilateral services trade and in similar magnitudes. Meanwhile, the two trading partners tend to trade more services with each other when they share a common colonizer, official language, or have colonial ties (i.e., one used to be a colony of the other). In addition, we observe that the earlier a country joins the WTO or its predecessor GATT, the more it trades with other countries. However, the results also suggest a significant and negative relationship between partners sharing a common main religion and their bilateral trade volumes. I do not have a straightforward explanation for it, and it may be categorized as modeling errors.

Interestingly, another pattern shown in the results is that services trade volume decreases as the distance between the two countries increases. What is more, whether the two countries are landlocked also plays a role. While somewhat counterintuitive for trade in services, which, after all, does not rely on the transportation of physical goods, there are several plausible explanations. As mentioned earlier, geographical proximity allows for more convenient business travel. Also, online business meetings are more constrained by time-zone differences if the two trading firms are far from each other longitude-wise. Finally, it is not hard to imagine that a country's main trading partners in services may be affected by with whom they trade goods. Such economic ties resulting from centuries of trading in goods could well influence their choices of partners.

Most important, the regression results presented in Table 4 confirm that individualism does indeed have an overall positive effect on services trade volumes in a bilateral trade relationship. To elaborate, the baseline (predicted) individualism dummy variable is LL (i.e., a collectivist-collectivist pair), equivalent to having a zero coefficient. Then, we observe that HH has the highest positive coefficient, meaning that it promotes trade in services more than the baseline LL. Also, the dummies' coefficients increase as the pair's individualism characteristic moves from LL to LH and from MM to MH to HH. This shows that, in general, countries with higher levels of collectivism are statistically less likely to conduct services trade



with others, while countries whose populations are predominately individualist tend to engage more in international trade in services. This is consistent with the aforementioned cultural theory prediction that individualism encourages personal freedom and builds trusting relationships, promoting trading activities.

Furthermore, the estimation outcomes provide statistical evidence supporting the hypothesis that, if both countries in a bilateral relationship are highly collectivist, it encourages trade in services between them. Recall that in Figure 1, I illustrate the hypothesized relationship between the individualism levels of the two partners and their bilateral services trade volume with a “J” shaped pattern. The actual findings in Table 4 corroborate this pattern. To reiterate, the baseline scenario LL has a coefficient of zero. In comparison, in all four columns, MM has a negative and significant coefficient, while HH has a positive and significant coefficient. As a country-pair moves from LL to MM to HH, individualism’s trade-promoting “strength” first decreases and then increases to a global maximum. Similarly, holding one country’s individualism indicator constant, the same “J” shaped pattern emerges. To illustrate, whether we examine the move from LL to LM to LH (holding L constant) or from HL to HM to HH (holding H constant), the coefficients exhibit the decrease-and-increase pattern. The finding shows that the cultural norm of collectivist countries’ tendencies to cluster does translate into higher trade volumes, and that mutual trust resulting from shared collectivism does transcend national borders. In addition, the results provide further support for the effect of cultural heterogeneity as a whole on trade.

Last, it is also worth noting that the coefficient for  $\log(GDP)_{importer}$  increases slightly whenever I include country fixed effects. Under ordinary circumstances, the coefficients for  $\log(GDP)_{exporter}$  and  $\log(GDP)_{importer}$  should be more or less equal, since I am examining one-way bilateral trade flows, meaning that there are two observations for each country-pair at any given time. This inconsistency in coefficient values may be attributed to the fact that simple country fixed effects

are used in the Tobit regression, in this case, by including exporter country dummies (using importer dummies would achieve exactly the same effect). Instead, a potential solution would be to incorporate country-pair dummies in the Tobit regression. However, with around 3,000 total country pairs in the dataset, it would require the same number of dummies to be included, exceeding the computational capabilities of my computer as well as that of the statistical software I am using. In any case, such inconsistency should lead only to somewhat biased results for the  $\log(GDP)$  terms, and will not affect the explanatory power of the individualism dummies in which I am most interested.

## 4.2 Trade in Goods

Services trade volume is the optimal dependent variable to examine in this research, as I aim to uncover the role of cultural heterogeneity in affecting international trade patterns. As mentioned earlier, in terms of trade in goods, the overwhelming influence of distance may crowd out any cultural level “concerns” or “insecurities” brought about by differences in individualism levels. Therefore, I conduct a parallel estimation for trade in goods to complement the previous analysis and determine whether individualism’s effect is more prominent in services trade.

If individualism’s trade-promoting power is more significant when countries trade services, the results for trade in goods should reflect a weaker effect of individualism. In addition, I expect the geographical variables ( $ldist_{ij}$ ,  $contig_{ij}$ , and  $landlocked_{ij}$ ) to have higher coefficients. Table 5 reports the estimation outcomes with trade in goods as the dependent variable. As expected, the results are highly consistent with the gravity model predictions. Moreover, we observe that the individualism dummies are less significantly correlated with trade volume in goods, with only HH being statistically significant at a 1% significance level, which is

Table 5: Tobit Regression Results for Trade in Goods

	(1)	(2)	(3)	(4)
	lvolume1	lvolume1	lvolume1	lvolume1
lgdp_importer	0.994*** (0.016)	1.122*** (0.015)	1.080*** (0.017)	1.113*** (0.015)
lgdp_exporter	1.181*** (0.016)	0.357*** (0.031)	1.262*** (0.016)	0.276*** (0.041)
ldist	-1.301*** (0.031)	-1.300*** (0.029)	-1.282*** (0.031)	-1.301*** (0.029)
LM	-0.072 (0.072)	-0.169** (0.068)	-0.069 (0.071)	-0.173** (0.068)
LH	0.193** (0.078)	0.037 (0.073)	0.169** (0.077)	0.038 (0.073)
MM	0.038 (0.095)	-0.181* (0.103)	0.054 (0.093)	-0.191* (0.103)
MH	0.105 (0.083)	-0.200** (0.090)	0.089 (0.082)	-0.204** (0.090)
HH	0.022 (0.112)	-0.378*** (0.119)	-0.027 (0.111)	-0.377*** (0.119)
colony	0.430** (0.171)	0.406*** (0.149)	0.343** (0.169)	0.411*** (0.149)
contig	0.730*** (0.165)	0.507*** (0.141)	0.729*** (0.163)	0.507*** (0.141)
comlang_off	0.344*** (0.083)	0.690*** (0.074)	0.412*** (0.082)	0.686*** (0.074)
comcol	0.110 (0.115)	0.481*** (0.102)	0.205* (0.114)	0.475*** (0.102)
imlandlocked	-0.435*** (0.074)	-0.321*** (0.063)	-0.376*** (0.074)	-0.326*** (0.063)
exlandlocked	-0.611*** (0.076)	-5.468*** (0.233)	-0.559*** (0.075)	-5.650*** (0.241)
religion	0.237*** (0.069)	0.245*** (0.064)	0.190*** (0.069)	0.248*** (0.064)
join_importer	-0.003** (0.001)	0.001 (0.001)	-0.000 (0.001)	0.000 (0.001)
join_exporter	-0.002* (0.001)	0.013*** (0.004)	0.000 (0.001)	0.012*** (0.004)
remoteness_importer	0.000 (0.000)	-0.000** (0.000)	-0.000 (0.000)	-0.000* (0.000)
remoteness_exporter	-0.000*** (0.000)	-0.000 (0.000)	-0.000*** (0.000)	0.000 (0.000)
_cons	-16.957*** (4.085)	-34.501*** (8.913)	-31.900*** (4.143)	-29.421*** (9.072)
N	44080	44080	44080	44080
Time FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.10. Dependent variable: Log(Trade Volume+1).

hardly surprising. When firms in a country decide with whom to trade goods, cultural factors are far less substantial compared to other determinants like comparative advantage. In conclusion, the empirical findings verify the hypothesis that cultural heterogeneity, particularly that of individualism, matters more for trade in services.

### 4.3 Robustness Checks

To complete the study, I check the robustness of my estimation model. First, I examine several alternative specifications of the individualism variable. These alternative variables are named  $idv_1$ ,  $idv_2$ ,  $idv_3$ , and  $idv_4$ , corresponding to the four specifications mentioned in Section 2.3. In particular:  $idv_1$  equals the maximum between zero and the extent to which the importer's partner country has a higher individualism score;  $idv_2$  equals the importer's individualism score times an indicator of whether both countries are collectivists;  $idv_3$  equals the importer's individualism score plus two indicators of whether both countries are collectivists or individualists; and  $idv_4$  equals the importer's individualism score divided by the sum of the two partners' individualism scores. The rationales for these specifications are explained earlier in Section 2.3. The regression results under these alternative specifications are presented in Tables 6-9 in Appendix A. The estimated effect of individualism with  $idv_1$  is significant but opposite to the baseline results, while the rest produce highly consistent estimations that support the overall positive role of individualism.

In addition, I verify the robustness of the instrumental variables by substituting for the main IV (i.e., the Mahalanobis distance between the country's blood type frequency relative to that in the UK) the following alternative IVs proposed by Gorodnichenko and Roland (2017): (1) the Mahalanobis distance between the country's blood type frequency relative to that in the US; (2) the *S-allele* in the

serotonin transporter gene *5HTTLPR*; (3) the *G-allele* in polymorphism *A118G* in the  $\mu$ -*opioid* receptor; and (4) the historical pathogen prevalence in the given country’s geographical area. The estimation outcomes under these alternative IVs are shown in Tables 10-13 in Appendix A. The outcomes are mostly consistent with the baseline outcome, with a few notable exceptions. In particular, we notice a lack of the “J” shaped pattern in Table 11 and an overall negative effect of individualism in Table 13. The former issue may be explained by the limited country coverage of accurate genetic variables and the fact that genetic data are more available for high-income developed countries. On the other hand, the latter may be due to poor data quality or model specification errors.

Finally, I vary the cutoff values of individualism country-pair dummies to verify if the same regression results hold. Specifically, I test the following alternative specifications: (1) the cutoffs are the 20th and the 80th percentiles; (2) the cutoffs are the 40th and the 60th percentiles; and (3) the cutoffs are the 60th and the 80th percentiles. The results of robustness checks are reported in Table 14, Table 15, and Table 16 in Appendix A. Across all three cases, the model produces similar results compared to the baseline specification. Hence, I conclude that the “arbitrary” 1/3 cutoffs I employ in this research do not influence the estimation outcomes in a significant way.

## 5 Limitations

This research has several potential limitations. I base the gravity specification in my model on trade in goods. Therefore, it is possible that employing the same set of control variables is not optimal for analyzing trade in services, although Kimura and Lee (2006) found that services trade is better suited to the traditional gravity model than goods trade. Furthermore, I do not include GDP per capita terms and lag terms in the gravity regression, as Santos Silva and Tenreyro

(2006) used. In addition, as mentioned earlier, I do not use the (pseudo) Poisson maximum likelihood (PPML) approach due to the computational difficulties involved, even though Santos Silva and Tenreyro (2006) have shown PPML to be a superior estimation method in the presence of a high percentage of zero trade flows, as is the case with services trade. Finally, even the PPML approach can only explain the existence of zero observations as a measurement error or prohibitively high trade costs. On the other hand, Helpman, Melitz, and Rubinstein (2008) developed a two-stage estimation procedure based on heterogeneous firms to explain cross-country zero trade flows, whereby zero observations are linked to high (bilateral) fixed costs of trade. The Helpman, Melitz, and Rubinstein (HMR) methodology, if employed, can extract more information from zero trade flows and obtain more consistent estimates of trade volume. In future adaptations of this research, I will apply the HMR method to improve the model accuracy.

## 6 Conclusion

To sum up, the empirical findings support both of my hypotheses. First, I find that individualism, generally speaking, leads to higher levels of trade in services. The evidence clearly shows that heterogeneity in countries' individualism-collectivism cultural attributes does indeed contribute to how they conduct services trade with each other. Namely, the more individualist a country is, the more it will trade with others, validating my first hypothesis. Second, the estimation results provide statistical evidence supporting my second hypothesis: If both countries in a bilateral relationship are highly collectivist, they trade more in services between themselves. It implies that collectivist countries' trust towards insiders applies to the case where they trade with other collectivist countries. In other words, trust as a result of cultural norms does extend beyond national borders.

These findings further our understanding of how various cultural factors con-

tribute to international trade patterns, adding to the existing literature on the economic impact of cultural heterogeneity. In addition, equipped with a better understanding of how culture interacts with trade, we can gain valuable insights for facilitating regional and global trade agreements in the future.

## 7 References

Acemoglu, D., Johnson, S., & Robinson, J. A. (2001). The colonial origins of comparative development: An empirical investigation. *American Economic Review*, 91(5), 1369-1401.

Anderson, J. E. and van Wincoop, E. (2003), “Gravity with gravitas: a solution to the border puzzle”, *American Economic Review* 93: 170–92.

Bacchetta, M. (2012). A practical guide to trade policy analysis. United Nations Conference on Trade and Development.

Baier, S. L., & Bergstrand, J. H. (2009). Bonus vetus OLS: A simple method for approximating international trade-cost effects using the gravity equation. *Journal of International Economics*, 77(1), 77-85.

Chiao, J. Y., & Blizinsky, K. D. (2010). Culture–gene coevolution of individualism–collectivism and the serotonin transporter gene. *Proceedings of the Royal Society B: Biological Sciences*, 277(1681), 529-537.

den Ouden, M. (2015). Map of Benelux. Wikimedia Commons. Retrieved 2022, from <https://commons.wikimedia.org/wiki/File:Map-Belgium-Holland.svg>.

Feenstra, R. C., Hong, C., Ma, H., & Spencer, B. J. (2013). Contractual versus non-contractual trade: The role of institutions in China. *Journal of Economic Behavior & Organization*, 94, 281-294.

Guiso, L., Sapienza, P., & Zingales, L. (2016). Long-term persistence. *Journal of the European Economic Association*, 14(6), 1401-1436.

Guo, R. (2004). How culture influences foreign trade: evidence from the US and China. *The Journal of Socio-Economics*, 33(6), 785-812.

Gorodnichenko, Y., and Roland, G. (2017). Culture, institutions, and the wealth of nations. *Review of Economics and Statistics*, 99(3), 402-416.

Hajikhameh, A., & Kimbrough, E. O. (2019). Individualism, collectivism, and trade. *Experimental Economics*, 22(2), 294-324.



- Head, K. (2003). Gravity for beginners. University of British Columbia, 2053.
- Helpman, E., Melitz, M., Rubinstein, Y. (2008). Estimating trade flows: Trading partners and trading volumes. *The Quarterly Journal of Economics*, 123(2), 441-487.
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. Sage Publications.
- Hofstede, G. J., Jonker, C. M., & Verwaart, T. (2008). Individualism and collectivism in trade agents. In *International Conference on Industrial, Engineering and Other Applications of Applied Intelligent Systems* (pp. 492-501). Springer, Berlin, Heidelberg.
- Kimura, F., Lee, H. H. (2006). The gravity equation in international trade in services. *Review of World Economics*, 142(1), 92-121.
- Kristjánisdóttir, H., Gulaugsson, . Ö., Gumundsdóttir, S., & Aalsteinsson, G. D. (2017). Hofstede national culture and international trade. *Applied Economics*, 49(57), 5792-5801.
- Levchenko, A. A. (2007). Institutional quality and international trade. *The Review of Economic Studies*, 74(3), 791-819.
- Lewer, J. J., & Van den Berg, H. (2007). Religion and international trade: does the sharing of a religious culture facilitate the formation of trade networks?. *American Journal of Economics and Sociology*, 66(4), 765-794.
- Mayer, T., Zignago, S. (2011). Notes on cepii's distances measures: The geodist database. CEPII Working Paper, 25.
- Nunn, N. (2007). Relationship-specificity, incomplete contracts, and the pattern of trade. *The Quarterly Journal of Economics*, 122(2), 569-600.
- Oetzel, J. G., & Ting-Toomey, S. (2003). Face concerns in interpersonal conflict: A cross-cultural empirical test of the face negotiation theory. *Communication Research*, 30(6), 599-624.
- Santos Silva, J., & Tenreyro, S. (2006). The log of gravity. *The Review of*

Economics and Statistics, 88(4), 641-658.

Selmier, W. T., & Oh, C. H. (2013). The power of major trade languages in trade and foreign direct investment. *Review of International Political Economy*, 20(3), 486-514.

Tabellini, G. (2010). Culture and institutions: economic development in the regions of Europe. *Journal of the European Economic Association*, 8(4), 677-716.

Triandis, H. C. (2001). Individualism-collectivism and personality. *Journal of Personality*, 69(6), 907-924.

Tu, Y. T. (2015). A cross-cultural comparison of Brazil, Russia, India, and China (BRIC) on negotiation styles. *The Anthropologist*, 19(2), 457-467.

Way, B. M., & Lieberman, M. D. (2010). Is there a genetic contribution to cultural differences? Collectivism, individualism and genetic markers of social sensitivity. *Social Cognitive and Affective Neuroscience*, 5(2-3), 203-211.

## 8 Appendix A: Tables

Appendix A lists Table 14-13 which details the robustness checks results for various cutoff values and alternative IVs.

Table 6: Tobit Regression Results with the  $idv_1$  Individualism Variable

	(1)	(2)	(3)	(4)
	lvolume1	lvolume1	lvolume1	lvolume1
lgdp_importer	0.869*** (0.038)	0.891*** (0.035)	1.014*** (0.041)	0.962*** (0.037)
lgdp_exporter	0.768*** (0.029)	0.140** (0.070)	0.851*** (0.029)	0.542*** (0.083)
ldist	-1.255*** (0.043)	-0.979*** (0.070)	-1.235*** (0.043)	-0.979*** (0.071)
idv_1	0.002 (0.004)	-0.025*** (0.004)	0.004 (0.004)	-0.025*** (0.004)
colony	0.706*** (0.222)	0.901*** (0.198)	0.666*** (0.224)	0.878*** (0.200)
contig	0.058 (0.238)	0.169 (0.218)	0.032 (0.240)	0.151 (0.220)
comlang_off	1.036*** (0.184)	0.732*** (0.172)	0.948*** (0.185)	0.682*** (0.174)
comcol	1.465*** (0.493)	1.899*** (0.447)	1.472*** (0.497)	1.870*** (0.450)
imlandlocked	0.189* (0.107)	0.218** (0.095)	0.168 (0.108)	0.194** (0.096)
exlandlocked	-0.161 (0.135)	-3.590*** (0.463)	-0.142 (0.136)	-2.644*** (0.478)
religion	-0.350*** (0.104)	-0.391*** (0.108)	-0.358*** (0.105)	-0.373*** (0.108)
join_importer	-0.038*** (0.003)	-0.032*** (0.003)	-0.029*** (0.003)	-0.028*** (0.003)
join_exporter	-0.004* (0.002)	-0.012* (0.007)	-0.001 (0.002)	-0.007 (0.007)
remoteness_importer	-0.000* (0.000)	-0.000* (0.000)	-0.000 (0.000)	-0.000* (0.000)
remoteness_exporter	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.001*** (0.000)
_cons	67.511*** (7.778)	85.033*** (14.761)	37.702*** (8.166)	55.028*** (15.236)
<i>N</i>	10416	10416	10416	10416
Time FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . Dependent variable:  $\text{Log}(\text{Trade Volume}+1)$ .

Table 7: Tobit Regression Results with the *idv*<sub>2</sub> Individualism Variable

	(1)	(2)	(3)	(4)
	lvolume1	lvolume1	lvolume1	lvolume1
lgdp_importer	0.768*** (0.039)	0.796*** (0.036)	0.912*** (0.042)	0.863*** (0.038)
lgdp_exporter	0.772*** (0.028)	0.184*** (0.070)	0.847*** (0.028)	0.545*** (0.083)
ldist	-1.312*** (0.042)	-1.023*** (0.069)	-1.289*** (0.042)	-1.022*** (0.069)
idv_2	0.025*** (0.003)	0.027*** (0.003)	0.021*** (0.003)	0.026*** (0.003)
colony	0.646*** (0.216)	0.829*** (0.194)	0.623*** (0.219)	0.814*** (0.195)
contig	0.083 (0.232)	0.249 (0.213)	0.050 (0.234)	0.228 (0.215)
comlang_off	0.941*** (0.179)	0.663*** (0.168)	0.877*** (0.181)	0.624*** (0.169)
comcol	1.070** (0.483)	1.520*** (0.438)	1.121** (0.488)	1.506*** (0.441)
imlandlocked	-0.252** (0.115)	-0.193* (0.102)	-0.209* (0.116)	-0.197* (0.103)
exlandlocked	-0.177 (0.131)	-3.334*** (0.454)	-0.156 (0.132)	-2.493*** (0.468)
religion	-0.230** (0.102)	-0.235** (0.106)	-0.254** (0.103)	-0.224** (0.107)
join_importer	-0.034*** (0.003)	-0.030*** (0.003)	-0.026*** (0.003)	-0.026*** (0.003)
join_exporter	-0.006*** (0.002)	-0.011* (0.007)	-0.003 (0.002)	-0.007 (0.007)
remoteness_importer	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)
remoteness_exporter	0.000* (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.001*** (0.000)
_cons	64.232*** (7.600)	80.370*** (14.405)	38.093*** (7.968)	53.508*** (14.867)
<i>N</i>	10416	10416	10416	10416
Time FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.10. Dependent variable: Log(Trade Volume+1).

Table 8: Tobit Regression Results with the *idv*<sub>3</sub> Individualism Variable

	(1)	(2)	(3)	(4)
	lvolume1	lvolume1	lvolume1	lvolume1
lgdp_importer	0.805*** (0.039)	0.824*** (0.036)	0.948*** (0.041)	0.891*** (0.037)
lgdp_exporter	0.781*** (0.028)	0.172** (0.070)	0.859*** (0.029)	0.546*** (0.083)
ldist	-1.326*** (0.043)	-1.005*** (0.069)	-1.302*** (0.043)	-1.004*** (0.069)
idv_3	0.010*** (0.001)	0.015*** (0.001)	0.009*** (0.001)	0.014*** (0.001)
colony	0.665*** (0.218)	0.852*** (0.194)	0.635*** (0.220)	0.834*** (0.196)
contig	0.037 (0.234)	0.239 (0.214)	0.010 (0.236)	0.219 (0.215)
comlang_off	1.046*** (0.181)	0.801*** (0.168)	0.963*** (0.183)	0.754*** (0.169)
comcol	1.360*** (0.485)	1.834*** (0.438)	1.366*** (0.490)	1.806*** (0.441)
imlandlocked	0.103 (0.105)	0.188** (0.093)	0.087 (0.106)	0.166* (0.093)
exlandlocked	-0.113 (0.132)	-3.387*** (0.455)	-0.098 (0.134)	-2.513*** (0.470)
religion	-0.271*** (0.103)	-0.263** (0.106)	-0.287*** (0.104)	-0.250** (0.107)
join_importer	-0.035*** (0.003)	-0.030*** (0.003)	-0.027*** (0.003)	-0.026*** (0.003)
join_exporter	-0.006*** (0.002)	-0.014** (0.007)	-0.003 (0.002)	-0.010 (0.007)
remoteness_importer	-0.000** (0.000)	-0.000*** (0.000)	-0.000** (0.000)	-0.000*** (0.000)
remoteness_exporter	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.001*** (0.000)
_cons	65.763*** (7.654)	85.127*** (14.459)	38.109*** (8.023)	57.195*** (14.926)
<i>N</i>	10416	10416	10416	10416
Time FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.10. Dependent variable: Log(Trade Volume+1).

Table 9: Tobit Regression Results with the *idv*<sub>4</sub> Individualism Variable

	(1)	(2)	(3)	(4)
	lvolume1	lvolume1	lvolume1	lvolume1
lgdp_importer	0.755*** (0.038)	0.803*** (0.035)	0.887*** (0.041)	0.867*** (0.037)
lgdp_exporter	0.771*** (0.027)	0.181*** (0.070)	0.842*** (0.028)	0.541*** (0.083)
ldist	-1.274*** (0.040)	-1.011*** (0.068)	-1.258*** (0.041)	-1.010*** (0.068)
idv_4	0.031*** (0.002)	0.028*** (0.002)	0.028*** (0.002)	0.027*** (0.002)
colony	0.689*** (0.212)	0.865*** (0.192)	0.662*** (0.214)	0.850*** (0.193)
contig	0.092 (0.227)	0.213 (0.211)	0.061 (0.229)	0.194 (0.212)
comlang_off	0.905*** (0.176)	0.691*** (0.166)	0.842*** (0.178)	0.649*** (0.167)
comcol	1.121** (0.473)	1.672*** (0.432)	1.137** (0.477)	1.644*** (0.435)
imlandlocked	-0.008 (0.103)	0.110 (0.092)	-0.016 (0.104)	0.089 (0.093)
exlandlocked	-0.169 (0.129)	-3.282*** (0.450)	-0.151 (0.130)	-2.442*** (0.465)
religion	-0.165* (0.100)	-0.210** (0.105)	-0.186* (0.101)	-0.197* (0.106)
join_importer	-0.030*** (0.003)	-0.028*** (0.003)	-0.023*** (0.003)	-0.024*** (0.003)
join_exporter	-0.004** (0.002)	-0.008 (0.007)	-0.002 (0.002)	-0.004 (0.007)
remoteness_importer	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
remoteness_exporter	0.000* (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.001*** (0.000)
_cons	53.938*** (7.549)	68.799*** (14.305)	29.677*** (7.873)	42.297*** (14.736)
<i>N</i>	10416	10416	10416	10416
Time FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . Dependent variable:  $\text{Log}(\text{Trade Volume} + 1)$ .

Table 10: Tobit Regression Results with the Mahalanobis Distance (US) IV

	(1)	(2)	(3)	(4)
	lvolume1	lvolume1	lvolume1	lvolume1
lgdp_importer	0.827*** (0.038)	0.850*** (0.035)	0.965*** (0.041)	0.917*** (0.037)
lgdp_exporter	0.774*** (0.028)	0.162** (0.070)	0.853*** (0.029)	0.549*** (0.083)
ldist	-1.289*** (0.042)	-0.983*** (0.068)	-1.272*** (0.042)	-0.983*** (0.069)
LM	-0.512*** (0.112)	-0.754*** (0.104)	-0.476*** (0.113)	-0.743*** (0.105)
LH	0.230** (0.117)	0.219* (0.116)	0.227* (0.118)	0.201* (0.117)
MM	-0.449** (0.185)	-1.464*** (0.206)	-0.433** (0.186)	-1.442*** (0.207)
MH	-0.108 (0.141)	-0.582*** (0.173)	-0.103 (0.143)	-0.587*** (0.175)
HH	0.465** (0.181)	0.417* (0.219)	0.439** (0.183)	0.373* (0.221)
colony	0.671*** (0.218)	0.878*** (0.193)	0.637*** (0.220)	0.858*** (0.194)
contig	-0.041 (0.234)	0.126 (0.212)	-0.064 (0.236)	0.110 (0.214)
comlang_off	1.045*** (0.181)	0.844*** (0.167)	0.963*** (0.183)	0.797*** (0.169)
comcol	1.343*** (0.484)	1.997*** (0.434)	1.342*** (0.488)	1.966*** (0.437)
imlandlocked	0.217** (0.107)	0.276*** (0.096)	0.191* (0.108)	0.247** (0.097)
exlandlocked	-0.074 (0.132)	-3.674*** (0.453)	-0.059 (0.134)	-2.763*** (0.468)
religion	-0.183* (0.104)	-0.152 (0.108)	-0.199* (0.105)	-0.142 (0.109)
join_importer	-0.038*** (0.003)	-0.036*** (0.003)	-0.030*** (0.003)	-0.032*** (0.003)
join_exporter	-0.004* (0.002)	-0.020*** (0.007)	-0.001 (0.002)	-0.016** (0.007)
remoteness_importer	-0.000* (0.000)	-0.000* (0.000)	-0.000* (0.000)	-0.000* (0.000)
remoteness_exporter	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.001*** (0.000)
._cons	68.023*** (7.833)	110.634*** (14.843)	39.966*** (8.198)	81.675*** (15.329)
N	10416	10416	10416	10416
Time FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.10. Dependent variable: Log(Trade Volume+1).

Table 11: Tobit Regression Results with the *5HTTLPR* IV

	(1)	(2)	(3)	(4)
	lvolume1	lvolume1	lvolume1	lvolume1
lgdp_importer	0.947*** (0.065)	1.106*** (0.071)	1.237*** (0.071)	1.307*** (0.077)
lgdp_exporter	0.679*** (0.057)	-0.375*** (0.128)	0.955*** (0.061)	0.656*** (0.149)
ldist	-1.004*** (0.061)	-0.804*** (0.091)	-0.948*** (0.064)	-0.777*** (0.095)
LM	0.352* (0.202)	0.548*** (0.196)	0.689*** (0.211)	0.812*** (0.206)
LH	-0.034 (0.199)	0.383* (0.216)	0.445** (0.210)	0.713*** (0.230)
MM	0.552 (0.400)	0.919** (0.450)	1.077*** (0.418)	1.452*** (0.474)
MH	0.570** (0.241)	1.216*** (0.313)	1.292*** (0.254)	1.809*** (0.333)
HH	0.573** (0.257)	1.427*** (0.363)	1.425*** (0.274)	2.067*** (0.388)
colony	0.407 (0.276)	0.411 (0.265)	0.303 (0.287)	0.337 (0.278)
contig	0.299 (0.274)	0.434 (0.268)	0.341 (0.285)	0.425 (0.281)
comlang_off	0.996*** (0.244)	1.063*** (0.248)	1.029*** (0.253)	1.047*** (0.260)
comcol	-1.068 (1.456)	-0.781 (1.398)	-1.005 (1.508)	-0.608 (1.461)
imlandlocked	0.535*** (0.157)	0.636*** (0.151)	0.521*** (0.163)	0.582*** (0.159)
exlandlocked	-0.049 (0.210)	-0.133 (0.408)	-0.069 (0.218)	0.304 (0.427)
religion	-0.356** (0.153)	-0.283* (0.164)	-0.332** (0.159)	-0.237 (0.172)
join_importer	-0.034*** (0.004)	-0.028*** (0.004)	-0.018*** (0.004)	-0.016*** (0.004)
join_exporter	-0.009*** (0.003)	-0.015* (0.009)	-0.000 (0.003)	0.009 (0.010)
remoteness_importer	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
remoteness_exporter	0.000*** (0.000)	0.001** (0.000)	-0.000 (0.000)	-0.001*** (0.000)
._cons	67.679*** (12.390)	87.541*** (22.130)	2.260 (13.525)	-15.252 (24.581)
N	4504	4504	4504	4504
Time FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.10. Dependent variable: Log(Trade Volume+1).



Table 12: Tobit Regression Results with the *A118G* IV

	(1)	(2)	(3)	(4)
	lvolume1	lvolume1	lvolume1	lvolume1
lgdp_importer	0.828*** (0.055)	0.833*** (0.051)	0.867*** (0.059)	0.794*** (0.053)
lgdp_exporter	0.723*** (0.048)	0.230*** (0.087)	0.796*** (0.049)	0.329*** (0.105)
ldist	-1.033*** (0.058)	-0.956*** (0.074)	-1.095*** (0.058)	-0.978*** (0.072)
LM	0.059 (0.143)	0.093 (0.129)	-0.006 (0.141)	0.041 (0.127)
LH	0.420*** (0.130)	0.517*** (0.113)	0.445*** (0.128)	0.538*** (0.111)
MM	0.079 (0.274)	0.057 (0.287)	-0.078 (0.271)	-0.052 (0.283)
MH	0.569*** (0.182)	0.740*** (0.205)	0.497*** (0.180)	0.696*** (0.203)
HH	0.612*** (0.213)	0.940*** (0.231)	0.651*** (0.210)	0.978*** (0.227)
colony	0.383* (0.231)	0.373* (0.195)	0.313 (0.227)	0.338* (0.190)
contig	-0.116 (0.262)	-0.160 (0.226)	-0.199 (0.258)	-0.176 (0.220)
comlang_off	0.689*** (0.189)	0.535*** (0.170)	0.633*** (0.185)	0.507*** (0.166)
comcol	-1.112 (1.105)	-1.093 (0.926)	-0.911 (1.085)	-0.876 (0.903)
imlandlocked	-0.117 (0.154)	-0.083 (0.129)	-0.092 (0.152)	-0.040 (0.126)
exlandlocked	-0.052 (0.172)	43.637*** (6.213)	-0.099 (0.169)	37.868*** (6.099)
religion	0.381** (0.153)	0.544*** (0.139)	0.409*** (0.150)	0.557*** (0.136)
join_importer	-0.018*** (0.004)	-0.017*** (0.003)	-0.016*** (0.004)	-0.019*** (0.003)
join_exporter	-0.001 (0.003)	-1.061*** (0.146)	0.001 (0.003)	-0.921*** (0.144)
remoteness_importer	0.000 (0.000)	0.000* (0.000)	0.000*** (0.000)	0.000*** (0.000)
remoteness_exporter	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
._cons	23.682** (10.752)	2101.638*** (285.769)	11.626 (11.336)	1830.547*** (281.532)
<i>N</i>	2972	2972	2972	2972
Time FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.10. Dependent variable: Log(Trade Volume+1).

Table 13: Tobit Regression Results with the Historical Pathogen Prevalence IV

	(1)	(2)	(3)	(4)
	lvolume1	lvolume1	lvolume1	lvolume1
lgdp_importer	0.930*** (0.039)	0.935*** (0.036)	1.098*** (0.041)	1.019*** (0.038)
lgdp_exporter	0.779*** (0.028)	0.118* (0.067)	0.869*** (0.028)	0.560*** (0.081)
ldist	-1.205*** (0.044)	-0.968*** (0.066)	-1.186*** (0.044)	-0.976*** (0.067)
LM	-1.004*** (0.106)	-1.165*** (0.094)	-1.050*** (0.107)	-1.190*** (0.095)
LH	-0.107 (0.102)	-0.422*** (0.100)	-0.023 (0.103)	-0.360*** (0.101)
MM	-0.695* (0.363)	-1.892*** (0.375)	-0.704* (0.365)	-1.957*** (0.378)
MH	-0.408** (0.169)	-1.334*** (0.188)	-0.423** (0.170)	-1.323*** (0.189)
HH	0.318* (0.190)	-0.652*** (0.211)	0.442** (0.191)	-0.530** (0.213)
colony	0.538** (0.217)	0.825*** (0.192)	0.474** (0.218)	0.781*** (0.194)
contig	0.069 (0.236)	0.229 (0.213)	0.053 (0.237)	0.212 (0.215)
comlang_off	1.075*** (0.172)	0.794*** (0.159)	0.951*** (0.173)	0.722*** (0.160)
comcol	1.450*** (0.420)	1.520*** (0.376)	1.456*** (0.422)	1.493*** (0.378)
imlandlocked	0.325*** (0.112)	0.640*** (0.102)	0.290** (0.113)	0.600*** (0.103)
exlandlocked	-0.193 (0.137)	-3.535*** (0.453)	-0.188 (0.138)	-2.489*** (0.467)
religion	-0.459*** (0.104)	-0.627*** (0.107)	-0.464*** (0.105)	-0.605*** (0.107)
join_importer	-0.032*** (0.003)	-0.034*** (0.003)	-0.022*** (0.003)	-0.028*** (0.003)
join_exporter	-0.003 (0.002)	-0.007 (0.007)	0.000 (0.002)	-0.003 (0.007)
remoteness_importer	-0.000* (0.000)	-0.000 (0.000)	-0.000* (0.000)	-0.000 (0.000)
remoteness_exporter	0.000 (0.000)	0.000 (0.000)	-0.000* (0.000)	-0.001*** (0.000)
._cons	52.757*** (8.098)	79.145*** (14.408)	18.283** (8.487)	45.196*** (14.878)
N	10792	10792	10792	10792
Time FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.10. Dependent variable: Log(Trade Volume+1).

Table 14: Tobit Regression Results with 20% and 80% Cutoffs

	(1)	(2)	(3)	(4)
	lvolume1	lvolume1	lvolume1	lvolume1
lgdp_importer	0.843*** (0.039)	0.878*** (0.037)	0.989*** (0.042)	0.946*** (0.039)
lgdp_exporter	0.762*** (0.028)	0.148** (0.070)	0.846*** (0.029)	0.548*** (0.083)
ldist	-1.244*** (0.044)	-0.972*** (0.071)	-1.224*** (0.045)	-0.971*** (0.071)
LM1	0.112 (0.138)	-0.099 (0.134)	0.154 (0.139)	-0.113 (0.135)
LH1	0.535*** (0.178)	0.303* (0.175)	0.494*** (0.180)	0.281 (0.177)
MM1	0.296* (0.160)	-0.494** (0.218)	0.331** (0.162)	-0.544** (0.220)
MH1	0.575*** (0.186)	-0.238 (0.250)	0.529*** (0.187)	-0.280 (0.252)
HH1	0.860** (0.393)	0.050 (0.428)	0.771* (0.397)	0.031 (0.431)
colony	0.662*** (0.221)	0.858*** (0.200)	0.631*** (0.223)	0.836*** (0.202)
contig	0.082 (0.238)	0.243 (0.221)	0.062 (0.240)	0.225 (0.222)
comlang_off	0.973*** (0.183)	0.807*** (0.173)	0.900*** (0.185)	0.754*** (0.174)
comcol	1.532*** (0.491)	2.017*** (0.449)	1.528*** (0.495)	1.979*** (0.451)
imlandlocked	0.305*** (0.115)	0.213* (0.111)	0.281** (0.116)	0.176 (0.111)
exlandlocked	-0.106 (0.135)	-3.495*** (0.465)	-0.087 (0.136)	-2.554*** (0.479)
religion	-0.339*** (0.105)	-0.407*** (0.109)	-0.357*** (0.106)	-0.387*** (0.109)
join_importer	-0.035*** (0.003)	-0.036*** (0.003)	-0.027*** (0.003)	-0.031*** (0.003)
join_exporter	-0.003 (0.002)	-0.008 (0.007)	-0.000 (0.002)	-0.004 (0.007)
remoteness_importer	-0.000* (0.000)	-0.000 (0.000)	-0.000* (0.000)	-0.000 (0.000)
remoteness_exporter	0.000* (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.001*** (0.000)
._cons	60.900*** (8.142)	84.495*** (14.941)	32.105*** (8.525)	55.183*** (15.414)
N	10416	10416	10416	10416
Time FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.10. Dependent variable: Log(Trade Volume+1).

Table 15: Tobit Regression Results with 40% and 60% Cutoffs

	(1)	(2)	(3)	(4)
	lvolume1	lvolume1	lvolume1	lvolume1
lgdp_importer	0.760*** (0.039)	0.769*** (0.036)	0.896*** (0.041)	0.835*** (0.038)
lgdp_exporter	0.761*** (0.028)	0.177** (0.070)	0.837*** (0.028)	0.545*** (0.083)
ldist	-1.315*** (0.041)	-0.979*** (0.068)	-1.296*** (0.042)	-0.978*** (0.069)
LM	-0.527*** (0.108)	-0.695*** (0.104)	-0.476*** (0.109)	-0.681*** (0.105)
LH	0.533*** (0.120)	0.519*** (0.128)	0.511*** (0.121)	0.505*** (0.129)
MM	-0.540*** (0.188)	-1.125*** (0.216)	-0.511*** (0.189)	-1.124*** (0.217)
MH	0.196 (0.154)	-0.205 (0.198)	0.171 (0.155)	-0.218 (0.199)
HH	0.905*** (0.202)	0.820*** (0.260)	0.836*** (0.204)	0.784*** (0.263)
colony	0.739*** (0.215)	0.968*** (0.193)	0.704*** (0.217)	0.950*** (0.194)
contig	-0.028 (0.231)	0.185 (0.212)	-0.048 (0.232)	0.168 (0.213)
comlang_off	0.888*** (0.179)	0.683*** (0.168)	0.819*** (0.181)	0.638*** (0.169)
comcol	1.524*** (0.478)	2.087*** (0.433)	1.508*** (0.482)	2.048*** (0.435)
imlandlocked	0.301*** (0.105)	0.395*** (0.096)	0.269** (0.106)	0.367*** (0.096)
exlandlocked	-0.083 (0.130)	-3.429*** (0.451)	-0.070 (0.131)	-2.565*** (0.466)
religion	-0.251** (0.101)	-0.280*** (0.105)	-0.263*** (0.102)	-0.266** (0.106)
join_importer	-0.037*** (0.003)	-0.036*** (0.003)	-0.029*** (0.003)	-0.032*** (0.003)
join_exporter	-0.002 (0.002)	-0.009 (0.007)	0.000 (0.002)	-0.005 (0.007)
remoteness_importer	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)
remoteness_exporter	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.001*** (0.000)
._cons	64.449*** (8.128)	88.603*** (14.535)	38.143*** (8.469)	61.245*** (14.993)
N	10416	10416	10416	10416
Time FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.10. Dependent variable: Log(Trade Volume+1).

Table 16: Tobit Regression Results with 60% and 80% Cutoffs

	(1)	(2)	(3)	(4)
	lvolume1	lvolume1	lvolume1	lvolume1
lgdp_importer	0.760*** (0.039)	0.769*** (0.036)	0.896*** (0.041)	0.835*** (0.038)
lgdp_exporter	0.761*** (0.028)	0.177** (0.070)	0.837*** (0.028)	0.545*** (0.083)
ldist	-1.315*** (0.041)	-0.979*** (0.068)	-1.296*** (0.042)	-0.978*** (0.069)
LM	-0.527*** (0.108)	-0.695*** (0.104)	-0.476*** (0.109)	-0.681*** (0.105)
LH	0.533*** (0.120)	0.519*** (0.128)	0.511*** (0.121)	0.505*** (0.129)
MM	-0.540*** (0.188)	-1.125*** (0.216)	-0.511*** (0.189)	-1.124*** (0.217)
MH	0.196 (0.154)	-0.205 (0.198)	0.171 (0.155)	-0.218 (0.199)
HH	0.905*** (0.202)	0.820*** (0.260)	0.836*** (0.204)	0.784*** (0.263)
colony	0.739*** (0.215)	0.968*** (0.193)	0.704*** (0.217)	0.950*** (0.194)
contig	-0.028 (0.231)	0.185 (0.212)	-0.048 (0.232)	0.168 (0.213)
comlang_off	0.888*** (0.179)	0.683*** (0.168)	0.819*** (0.181)	0.638*** (0.169)
comcol	1.524*** (0.478)	2.087*** (0.433)	1.508*** (0.482)	2.048*** (0.435)
imlandlocked	0.301*** (0.105)	0.395*** (0.096)	0.269** (0.106)	0.367*** (0.096)
exlandlocked	-0.083 (0.130)	-3.429*** (0.451)	-0.070 (0.131)	-2.565*** (0.466)
religion	-0.251** (0.101)	-0.280*** (0.105)	-0.263*** (0.102)	-0.266** (0.106)
join_importer	-0.037*** (0.003)	-0.036*** (0.003)	-0.029*** (0.003)	-0.032*** (0.003)
join_exporter	-0.002 (0.002)	-0.009 (0.007)	0.000 (0.002)	-0.005 (0.007)
remoteness_importer	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)
remoteness_exporter	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.001*** (0.000)
_cons	64.449*** (8.128)	88.603*** (14.535)	38.143*** (8.469)	61.245*** (14.993)
N	10416	10416	10416	10416
Time FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.10. Dependent variable: Log(Trade Volume+1).