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THE TRADE EFFECTS OF CULTURAL DISTANCE AND ECONOMIC SANCTIONS: A STRUCTURAL GRAVITY APPROACH

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Chapter 1

Introduction

The value of worldwide exports of goods and services has increased over the last 30 years, from 3 trillion US$ in 1987 to over 20 trillion US$ in 2017.[1] Moreover, its importance for world GDP has risen during the last decades: the share of global goods' and services' exports of world GDP increased from 18 percent in 1987 to 29 percent in 2017.[2]

These dramatic changes can be largely attributed to lower trade costs. Since the foundation of the General Agreement on Tariffs and Trade (GATT) in 1947, the member countries have continuously worked to promote trade and competition across borders by reducing tariffs. The Uruguay Round from 1986 to 1994 lead to an average reduction of the most favored nation ad valorem tariff rate from 17 percent to 10 percent (Caliendo et al., 2015).

In 1995, the World Trade Organization (WTO) succeeded the GATT and nowadays counts 164 member countries which account for more than 98 percent of world trade volume in 2016 (Koopman & Maurer, 2017). However, the efforts of trade liberalization with respect to tariff reduction have slowed down compared to 1994, especially after the (aborted) Doha Round which started in 2001 and resulted in the Bali agreement in 2013. Instead of clear commitments to decrease tariff rates further, the member countries could only agree to facilitate trade by reducing non-tariff barriers and enhancing trade-related infrastructure, without concrete promises. As a consequence, instead of multilateral trade agreements the number

[1]in current US$. Data source: World Development Indicators.
[2]Data source: World Development Indicators

of regional trade agreements (RTAs) between WTO members has grown even faster than before.

Apart from tariff reductions, other barriers to trade have decreased as well. On the one hand, means of transport across the globe became faster and cheaper. Global standardization of containerization, for example, allowed for quicker (un-)loading of manufactured goods, which in turn greatly reduced port costs (Levinson, 2016) and increased the productivity of dock labor from 1.7 tons in 1965 to 30 tons per hour in 1970 (Bernhofen et al., 2016). Moreover, air transport costs fell by 90 percent between 1955 to 2004 (Hummels, 2007). On the other hand, recent improvements in telecommunications technology also lead to a reduction of costs. For example, costs for international telephone calls per minute decreased by 95 percent from 1980 to 2010 (US Federal Communications Commission, 2012) and the invention of the internet allowed for (nearly) frictionless long-distance information flows at monetary costs of almost zero. These trends serve as evidence for Friedman (2005) and others who claim that the world is becoming more and more borderless or "flat".

However, Head and Mayer (2013) compellingly show that the world is still far away from a state of complete globalization. Despite all of the dramatic developments in the last decades, current trade levels are still much lower than the ones that would occur in the absence of trade impediments. Head and Mayer (2013) compute the "globalization gap" between a benchmark of complete openness, in which products from abroad are just as accessible and desirable as domestic ones, and observed openness[3]. They find that the level of observed openness is less than one-third compared to the benchmark. This gap has been relatively persistent over the last five decades. Hence, there must be trade barriers other than tariffs and transportation costs. A large part of these trade barriers are not directly observable (Anderson and van Wincoop (2004) and Head and Mayer (2013)).

In my dissertation project, I contribute to the empirical literature that aims at exploring the trade effects of these type of trade barriers in several ways. First, I exploit the Global Leadership and Organizational Behavioral Effectiveness (GLOBE) data set (House et al., 2013) to derive proxies for, respectively, cultural distance and cultural proximity between countries. Second, I use these proxies to explain bilateral trade flows. Third, I explore whether the effect of cultural distance on trade flows varies over time. Finally, I analyze the effect of economic sanctions on bilateral trade flows. For the analyses, I utilize a structural gravity approach and employ a modern estimation technique, namely the Poisson Pseudo Maximum Likelihood (PPML) estimator. There are several reasons, why I choose the gravity

[3]Openness is defined as world imports of goods and services divided by world GDP.

framework for my empirical analyses: On the one hand, the model has solid theoretical foundations, which continuously grew over the last 30 years. On the other hand, the predictive power of empirical gravity equations is remarkably high and the estimators are consistent if modern estimation techniques are applied. Last but not least, the model is very intuitive.[4]

Culture and Trade - New Evidence from the GLOBE Data Set. With the help of a simple calculation, Grossman (1998) shows that estimated geographical distance effects are too large to be explained by shipping costs alone. He then speculates that cultural differences or lack of familiarity are the main reasons why distance matters so much. One of the key challenges is, how "culture" can (or should) be measured. Since it is a collective term, it combines various aspects like common values, religion, language, or institutions. This sparked a branch of literature on its own.[5] In chapter 3, I add to this literature and draw on the GLOBE research study by House et al. (2013) to derive a proxy for measuring unobserved cultural distance. The study identifies nine cultural dimensions. Unlike other studies, GLOBE focuses exclusively on managers, allowing for a distinct glimpse into the values of people actually making trade decisions.

In order to quantify the effect of cultural differences on the value of trade I use several specifications of Ordinary Least Squares (OLS) and PPML to estimate the gravity equation with a cross-section for 1994. Following Yotov (2012), I include intra-national together with international trade flows. Furthermore, I provide evidence how cultural differences affect different goods based on the product classification by Rauch (1999).

The results show that several GLOBE measures significantly reduce trade between country pairs within the sample and enhance trade for others. The results differ severely across the goods specifications. Furthermore, the results strongly depend on the choice of the econometric method.

The Effects of Culture on Trade over Time - New Evidence from the GLOBE Data Set. In chapter 4, I focus on the question, whether the effect of cultural differences on trade values discussed in chapter 3 changes over time, or if it remains persistent. On the one hand, it may be possible that due to increased globalization the world has grown closer and cultural differences have lost their importance for international trade. On the other hand, it could be possible that fear of losing cultural identity has grown, leading to a stronger impact of national values, precisely *because* of the globalization process. I draw on the data set used in chapter 3, but

[4] Yotov et al. (2016) provide a compelling guide to trade policy analysis with help of the structural gravity model.

[5] An overview is given in chapter 3.

put it into a panel data setting.

I make use of a state-of-the-art PPML approach using data on international trade flows together with intra-national trade flows (Yotov, 2012) and a comprehensive set of fixed effects including country-pair fixed effects as proposed by Baier and Bergstrand (2007) to consistently estimate a gravity equation using a panel from 1995 to 2004. I distinguish between different industries by making use of the goods classifications following Rauch (1999).

The results show that cultural differences indeed affect trade values differently over time, but their size and impact depends on the chosen measure of cultural distance and on the industry classification.

The Effects of Economic Sanctions on Trade: New Evidence from a Panel PPML Gravity Approach. Instead of trade barriers that are not directly observable but have to be estimated with the help of proxy variables, the focus of chapter 5 lies on a precisely measurable aspect of trade barriers: economic sanctions. At a first glance, the effect of economic sanctions on trade seems to be trivial. If a country bans trade with another country, bilateral trade should be reduced to zero, comparable to the effect of an infinitely high tariff. But this only happens, if bilateral trade is completely blocked. In reality, however, these dramatic measures are hardly applied. Most sanctions only target specific sectors or do not directly influence trade, like travel bans or the freezing of assets. Therefore, the effect of sanctions on trade is more complex. Moreover, the magnitude of the effect of sanctions (and its chance of success) depends on the relative importance of the targeted sector(s) for the target country's economy. Economic sanctions are a popular diplomatic tool for countries to enforce political interests abroad or to punish non-complying countries. There is an ongoing debate in the literature about whether this tool is effective in reaching these goals.

I analyze the consequences of active economic sanctions on bilateral trade values between 1987 and 2005 by using the Threat and Imposition of Economic Sanctions (TIES) data set (Morgan et al., 2014). In order to quantify the direct effects of sanctions on the trade flows between countries I use PPML as well as several other econometric specifications to estimate the gravity equation with country pair, sender-time, and target-time fixed effects (Baier & Bergstrand, 2007). Following Yotov (2012), I include intra-national as well as international trade flows.

The estimates reveal that there is a significant decrease in the value of trade after the introduction of economic sanctions, which turns out to be driven by moderate sanctions. Limited and extensive sanctions do not turn out to significantly influence trade. I additionally check if countries that are affected by sanctions switch to other trade partners. However, I find no robust evidence for such behavior and third-country effects.

The dissertation is structured as follows. In chapter 2, I provide a short introduction of the gravity equation. I give an overview of the evolution of the gravity equation in the context of international economics over the last decades including the most recent developments. Afterwards, the empirical essays are presented in chapters 3 to 5. The final chapter summarizes the main findings and provides an outlook for further research.

Chapter 2

A Brief History of Gravity

The gravity equation is one of the most popular and successful models in economics. It has been used in hundreds of papers which aimed to study and quantify the effects of determinants of international trade. In this chapter, I give a brief overview regarding the evolution of the gravity equation from its early beginnings until the most recent developments by highlighting and describing important milestones.

The gravity equation is based on Newton's *Law of Universal Gravitation* from 1687, which states that the gravitational force F_{ij} exerted on object i by object j is proportional to the mass M_i and M_j of the two objects and inversely proportional to the square of the distance D_{ij} between them:

$$F_{ij} \propto G * \frac{M_i M_j}{(D_{ij})^2},$$

where $G > 0$ is the universal gravitational constant. Nowadays, it is one of the most successful and widely used empirical tools to explain trade flows but its general acceptance took quite a long time: Ravenstein (1885) and Ravenstein (1889) were the first to apply this concept from natural sciences to economics and used it to model migration patterns within the United Kingdom. Tinbergen (1962) first used the gravity model to empirically explain international trade flows. Translated from physics to economics, his model states that trade flows X_{ij} from origin i to destination j are proportional to the economic sizes of the origin and destination country, Y_i and Y_j respectively, and inversely related to the geographical distance

D_{ij} between the two.

$$X_{ij} = c * \frac{Y_i^{\beta_1} Y_j^{\beta_2}}{D_{ij}^{\beta_3}},$$

where $c > 0$ is some constant. Since his work was purely empirical, the research community largely dismissed it due to gravity's lack of (trade) theoretical underpinnings. It took several more years until Anderson (1979) developed an economic model that provided the necessary theoretical foundation. His gravity model features a constant elasticity of substitution import demand system and Armington-style product differentiation by place of origin. Gains from trade arise from the consumption side. However, at this time, this did not inspire much attention in the community of trade economists.

This changed in the year 1995. Trefler (1995) finds that traditional trade models predict higher trade than is actually observed. As a consequence, he stresses the importance of understanding and including hindrances to trade into the analysis. In the same year, Leamer and Levinsohn (1995) provide a graphical persuasion via a scatter diagram illustrating the negative and quasi-linear relationship between distance and bilateral trade volume for West Germany in 1985 to show that distance matters (a lot). In addition, the authors state that the estimators of gravity models "have produced some of the clearest and most robust findings in economics. But, paradoxically, they have had virtually no effect on the subject of international economics" (Handbook of International Economics, chapter 26, page 1384). Krugman (1995) verbally points out why sizes and distances of other economies matter for the bilateral value of trade. He concludes that, so far, there is no foundation in trade theory that allows for a good analysis of multilateral trade in the presence of transport costs. With the help of a gravity equation, McCallum (1995) shows that borders still negatively influence trade even in the presence of RTAs like the North American Free Trade Agreement and the European Union. In his case study, he uses previously unexploited data of inter-provincial trade between 10 Canadian provinces and 30 United States (US) federal states for 1998. He estimates that trade among Canada's provinces is 2200 percent larger than trade between the Canadian provinces and the US. This puzzling result is addressed by Anderson and Van Wincoop (2003). They demonstrate that McCallum's (1995) estimates suffer from omitted variable bias[1] and solve this issue by re-defining the gravity equation, building on the theoretical framework by Anderson (1979):

$$X_{ij} = \frac{Y_i Y_j}{Y^W} \left(\frac{t_{ij}}{\Pi_i P_j} \right)^{1-\sigma},$$

[1] as do indeed all empirical findings that build on Tinbergen's (1962) gravity specification

where Y_W is the sum of world income (or expenditure). t_{ij} denotes overall trade barriers between the country pair ij including cultural distance or active sanctions, and $\sigma > 1$ is the elasticity of substitution. Π_i is exporter i's *outward multilateral resistance term* and P_j is importer j's *inward multilateral resistance* term. As envisioned by Krugman (1995), the multilateral resistance terms capture the fact that bilateral trade does not only depend on bilateral factors but also on trade costs with possible third source and destination countries. Because there are many origins and many destinations, consistent estimations must account for the relative attractiveness of origin-destination pairs.

Eaton and Kortum (2002) provide a different micro-foundation approach compared to Anderson (1979) and Anderson and Van Wincoop (2003): based on homogeneous goods on the demand side, iceberg trade costs, and Ricardian technology with heterogeneous productivity for each country and good due to random productivity draws, their model allows for consumption and production gains from trade. In addition to the now existing consistency with trade theory, Feenstra (2004) and Redding and Venables (2004) show that it is possible to capture the multilateral resistance terms relatively easy with the inclusion of importer and exporter fixed effects. This was the kick-off for a quickly growing number of empirical applications of the gravity equation in research regarding trade flows, giving it the status and recognition it has today.

In 2008, gravity was combined with the *new new trade theory* based on the seminal works of Melitz (2003) and Helpman et al. (2004) on the importance of firm heterogeneity with respect to international trade. Prominent examples are Chaney (2008), Helpman et al. (2008), and Melitz and Ottaviano (2008). Head and Mayer (2014) popularized the term *structural gravity* for models that account for multilateral resistance terms and are able to show that all structural gravity models yield the same macro-level gravity equation.

The estimation techniques of the structural gravity have evolved constantly as well in order to further improve the validity of the results. Santos Silva and Tenreyro (2006) introduced the PPML estimator to estimate the gravity model. This approach comes with several advantages over traditional OLS. PPML allows to estimate the gravity model in its multiplicative instead of a logarithmic form and is therefore able to include information contained in zero trade flows into the sample. Additionally, the PPML estimator accounts for heteroscedasticity, which is often present in trade data and potentially biases the OLS results. Moreover, it can be used to calculate theory-consistent general equilibrium effects of trade policies (Anderson et al. (2015), Larch and Yotov (2016)). To account for endogeneity of trade policy variables and to capture all time-invariant bilateral trade impediments, Baier and Bergstrand (2007) suggest to include country pair fixed effects in addition to the theoretically motivated exporter-time and importer-time fixed effects which control for multilateral resistance. They find that previous estimates of the impact of RTAs on trade that did not properly account for endogeneity are biased downward.

In order to solve the *distance puzzle* popularized by Disdier and Head (2008)[2], Yotov (2012) asserts that the structural gravity only identifies relative trade costs. Therefore, studies that only use data on international trade cannot resolve the distance puzzle, because the effects of distance on international trade are measured relative to other international trade costs. Yotov (2012) recognizes the importance of including intra-national trade flows together with international trade flows as well as measures for internal and bilateral distance in the estimations. When the effects of distance and globalization are estimated relative to internal trade costs, then the distance puzzle disappears. Bergstrand et al. (2015) combine the aforementioned improvements in their econometric analysis and add a measure that captures globalization effects, such as improvements in technology and innovation. They find that the positive effects of RTAs are smaller, compared to previous results in the literature. This upward bias may result from not controlling for time-varying exogenous unobservable country-pair specific changes in bilateral export costs that may decrease the cost of international relative to intra-national trade.

In order to consistently estimate a gravity equation using PPML, a large number of fixed effects is needed. For large samples, this often leads to computational issues. Larch et al. (2017) solve this problem and provide an iterative PPML estimator that is able to control for multilateral resistance and pair-specific heterogeneity using fixed effects. This estimator additionally allows to cluster standard errors in various ways: heteroscedasticity-robust standard errors, country-pair clustered, and multi-way clustered (see Egger and Tarlea (2015) and Cameron et al. (2011)).

In the following chapters, various specifications of the gravity equation will be used to analyze the research questions. The preferred specification is the state-of-the-art PPML specification together with intra- and international trade flows, as well as country pair fixed effects in addition to importer-year and exporter-year fixed effects.

[2] In their meta analysis Disdier and Head (2008) find that the estimated negative impact of distance on trade has remained persistently high, even though these results are in direct contradiction with empirical evidence of declining trade-related costs (Coe et al., 2007).

Chapter 3

Culture and Trade - New Evidence from the GLOBE Data Set

3.1 Introduction

Since the fall of the iron curtain our world steadily has grown closer together. The number of active trade agreements reach an all time high, tariffs are constantly falling, and the digital revolution allows for frictionless communication as well as for the exchange of know-how across the world. This can be interpreted as a constant reduction of monetary trade costs and should therefore lead to a near barrier-free flow of goods across the globe. However, it has been established that hard to observe aspects like culture have an impact on trade costs and, therefore, on the value of trade as well. People with the same cultural background tend to trust each other more, speak a similar language, or simply have similar institutions, thus lowering trade costs. The striking question then is how to properly measure cultural differences.

In this chapter I exploit the Global Leadership and Organizational Behavioral Effectiveness (GLOBE) research study of cross-cultural interactions by House et al. (2013) to derive a proxy for cultural distance. The novel approach of the GLOBE survey is that it specifically targets middle managers. The argument for utilizing this survey is that cultural values of such business leaders are more important for trading decisions than cultural values of other members of a society.

I study the effect of cultural distance on the value of trade between countries by building a cultural distance and a cultural proximity measure using GLOBE. I extent the basic gravity equation by including these measures of bilateral cultural diversion. To the best of my knowledge, GLOBE has never before been implemented into a gravity framework. My preferred specification is a pseudo-poisson maximum likelihood (PPML) estimation which includes zero-trade and intra-national trade flows (Yotov, 2012) and a comprehensive set of fixed effects. In order to point out how the results depend on the estimation method, I use standard OLS as well. The results show that several of the nine GLOBE dimensions play a significant role on the value of trade when aggregating trade across all industries, some have a positive and some have a negative influence.

To analyze if the influence of these effects depends on the type of traded goods, I make use of the product classification by Rauch (1999). The results of the regressions show that a lot of significant effects are lost due the process of aggregation. Larger cultural distance with regard to some dimensions significantly influences bilateral trade especially for goods that are not traded on organized exchanges, whereas other dimensions matter only for goods that are classified to be homogeneous. The same holds true for measures of cultural proximity. Furthermore, I find that the resulting coefficients are robust to the distance measure with respect to their level of significance and direction but vary with the choice of the empirical strategy.

The remainder of this chapter is structured as follows: In the next section I give a short overview of the related literature. In section 3.3 the GLOBE research study and its dimensions are described in detail. I then explain the indices for measuring cultural distance and proximity, the composition of the data set, and the empirical strategy. In sections 3.5 and 3.6 I present my results and discuss them. Finally, I provide a short conclusion and an outlook.

3.2 Related literature

Grossman (1998) performs a simple calculation showing that the estimated negative effects of bilateral distance on trade are too large to be explained by shipping costs alone. He speculates that the reasons why distance matters so much are cultural differences or a lack of familiarity between trade partners. Correspondingly, Anderson (2011) argues that the inclusion of proxies for trade friction like political borders and common language improves the fit of gravity estimations. The challenge is to find such proxies for "culture" which is notoriously hard to measure. In the following I present some examples from the recent literature of different approaches and their findings.

Boisso and Ferrantino (1997) use linguistic dissimilarity as a proxy for cultural distance. They find a negative effect on international trade between 1960 and 1985 that increases from 1960 until the mid-1970s and becomes smaller afterwards. Melitz (2008) discovers that linguistic diversity and literacy within a country positively influences foreign relative to domestic trade.

Several authors make use of the dimensions of culture introduced by Hofstede (2001) and Hofstede et al. (2010). In these studies, cultural dimensions include *individualism versus collectivism*, *uncertainty avoidance*, *power distance*, *masculinity versus femininity*, and *long term orientation*. Linders et al. (2005) find a positive effect of cultural distance on bilateral trade. They explain this finding by arguing that firms prefer trade to host-country production in culturally distant countries. Using the same cultural dimensions, Lankhuizen and de Groot (2016) find a non-linear relationship between cultural distance and international trade: Cultural distance decreases trade only after a certain threshold is reached, while it has a positive impact on trade below this threshold. Gorodnichenko et al. (2017) provide evidence that the higher the cultural distance between cooperating partners, the smaller is the chance of a firm to be integrated by a foreign company. Using the 2009 Greek debt crisis as a case study, Guiso et al. (2016) argue that cultural differences between countries can lead to a political impasse, making it difficult to reach an optimal outcome.

The World Values Survey (WVS), an international survey undertaken in almost 100 countries over the last 30 years, provides another way to derive proxies for cultural distance. Cyrus (2015) finds that the cultural distance measure derived from the WVS has no effect on the value of bilateral trade but she finds evidence that increasing trade reduces cultural distance. I believe that reverse causality is not an issue for my analyses of trade effects of cultural distance in chapters 3 and 4, since my measures for cultural distance do not vary over time.[1] Coyne and Williamson (2012) discover that increasing openness to trade has a positive effect on culture supporting economic interaction and entrepreneurship, namely trust, perceived level of self-determination, respect for others, and obedience. Spolaore and Wacziarg (2016) show that genetic distance is positively correlated with cultural distance based on results from the WVS. They additionally provide a compelling data base for several measures of distance. It includes measures of genetic distance

[1] Moreover, I apply a battery of fixed effects, as suggested by Baier and Bergstrand (2007).

between countries as well as linguistic, religious, and cultural differences.

Guiso et al. (2009) use a trust-index based on views of European managers. They link higher trust-ratings to higher trade between country pairs, higher foreign direct investment (FDI), and higher portfolio investments as well. Lien and Lo (2017) find significant positive effects on both, trade and FDI, from the establishment of cultural institutions abroad like the German Goethe-Insitute which promote language and culture of a country. Using the Eurovision Song Contest to construct a measure for cultural proximity, Felbermayr and Toubal (2010) find that trade in differentiated goods is affected positively by cultural proximity.

3.3 Cultural distance dimensions

While the WVS relies on interviews with 1,000 randomly chosen people per country, the GLOBE research program by House et al. (2013) collects data specifically from middle managers from 951 organizations from the sectors financial services, food processing, and telecommunications across 60 different cultures between 1994 and 1997. The same three sectors are present in all countries across the survey and their setup is quite similar across countries but each one is fundamentally different compared to the other two. Even though the sample size of the GLOBE survey is smaller than, e.g., the WVS it may still be a relevant alternative to measure cultural distance. The argument is that cultural believes of business leaders are actually more important for international trade than the believes of the remaining population, as these managers actually have the power to influence the decision whether or not to trade with partners across borders. I add to the literature as this group of people may share cultural views that fundamentally differ from the rest of the population.

The GLOBE research program builds on the cultural dimensions introduced by Hofstede (2001) and Hofstede et al. (2010) but implements additional dimensions. The survey identifies nine cultural dimensions that are potentially important when analyzing an international business partner. In the following I will introduce each of these dimensions in detail.

Performance orientation reflects the extent to which a society encourages and rewards innovation and improvement of its members. The overall goal is to achieve and maintain high standards. Countries with a high score regarding performance orientation set a focus on education and learning, emphasize on getting results, set high performance targets, value taking initiative, and prefer explicit and direct communication. This holds especially true for countries like Switzerland, Singapore, or Albania. Low performance oriented countries like Russia, Venezuela, or Greece tend to disapprove of overly ambitious behavior, have a low sense of urgency, and pay special attention to age instead of performance when it comes to promotions.

Assertiveness reflects the degree to which members belonging to a society are firm, tough, dominant, and aggressive in social relationships. Countries like Albania, Nigeria, and Hungary score high on assertiveness and, therefore, tend to value and reward competition, success, and direct communication. Low assertiveness-score countries like Japan, New Zealand, and Sweden place higher value in cooperation and equality.

Uncertainty avoidance mirrors the extend to which members of a society seek order, consistency, structure, formalized procedures, and laws to cover situations in their daily lives. Countries with high uncertainty avoidance-score, like Switzerland, Sweden, and Singapore, set very high stakes in formal interactions including legal contracts and meticulous record-keeping, apply much more calculating when taking risk, and are more resistant to change. The bottom end of the list features countries like Guatemala, Hungary, and Russia.

Power distance reflects the degree to which members of a society accept and approve that power should be shared unevenly. Firms in countries with high a power-distance-score therefore exhibit a distinct hierarchy or chain of command. Countries with the highest power distance are Morocco, Nigeria, and El Salvador, while the Netherlands, Denmark, or the Czech Republic seem to believe in flat hierarchies.

In-group collectivism can be interpreted whether children take pride in the individual accomplishments of their parents and vice versa, whether parents tend to live at home with their children when they get older, and whether children live at home with their parents until they get married. Examples for countries which score high regarding in-group collectivism are the Philippines, Iran, or India. In countries like Sweden, Denmark, and the Czech Republic this does not seem to be the case.

Institutional collectivism measures the degree to which firms and societal institutional practices encourage and reward collective action and collective distribution of resources. Employers in countries with a high institutional-collectivism-score tend to develop long-term relationships with their employees. Employees identify with their firm and make personal sacrifices to fulfill organizational obligations. Countries with the highest score of institutional collectivism are South Korea, Sweden, and Japan, whereas the scores of Hungary, Greece, and the Czech Republic indicate a more individualistic attitude.

Future orientation mirrors the extent to which members of a society believe that their current actions will influence their future. They focus on investments regarding their future, believe in planning for developing their future, and look far into the future for assessing the effects of their current actions. Countries with high future orientation-score like Singapore, Switzerland, or the Netherlands are inclined to save for the future, have more intrinsically motivated individuals and achieve greater economics success. Countries that set a low value in future orientation tend to place higher priorities on immediate gratification and rewards and take a shorter strategic view. Poland, Argentina, and Russia are examples for countries characterized by the latter.

Humane orientation reflects the degree to which a society encourages and rewards its members for being fair, altruistic, friendly, generous, caring, and kind to others. Countries like Malaysia, Philippines, and Ireland emit a high humane-orientation-score. On the other side of the scale are Greece, Spain, or France.

Gender egalitarianism is a measure for the ways in which societies divide roles between women and men. The more gender egalitarian a society is, the less it relies on biology to determine the social roles of women and men. Countries that score higher on gender egalitarianism tend to have similar levels of education for men and women and more women in positions in authority. This seems to be the case in countries like Russia, Hungary, or Poland, while countries like Egypt, Morocco, or South Korea are on the other side of the scale. In those countries women exhibit a lower status in the society, the literacy rate for women is lower than for men, and fewer women are part of the labor force.

Table 3.A.1 in the appendix presents details of the individual rank of each country within the GLOBE survey for all nine cultural dimensions.

Table 3.1 provides summary statistics for the nine GLOBE indicators. The questionnaire allows answers to take discrete values between 1 and 7. The mean ranges from 3.371 to 5.16 and the standard deviations from 0.345 to 0.697[2]. The means of the different indices do not differ much, the standard deviations, however, do. This means that the nine dimensions should be indeed viewed individually since they carry different information. It is interesting to note that the measures for *in-group collectivism* and *institutional collectivism* are quite different with regard to their mean and standard deviation, pointing towards the fact that the distinc-

[2]For a detailed illustration on how the survey is executed and where the numbers result from, see House et al. (2013), Part III and IV.

Table 3.1: Summary statistics of GLOBE dimensions

	Mean	Std. dev.
1. Performance orientation	4.076	0.388
2. Assertiveness	4.136	0.345
3. Uncertainty avoidance	4.131	0.578
4. Power distance	5.158	0.379
5. In-group collectivism	5.160	0.694
6. Institutional collectivism	4.259	0.406
7. Future orientation	3.825	0.448
8. Humane orientation	4.092	0.452
9. Gender egalitarianism	3.371	0.354

tion made by House et al. (2013) offers new insights. The fact that countries like Sweden assign a high value to institutional collectivism but prefer individualism to in-group collectivism supports this.

3.4 Data and estimation strategy

The GLOBE indicators listed above stem from House et al. (2013). To generate a measure of *cultural distance* from the unilateral GLOBE dimensions I compute the absolute value of the difference between any two countries i and j for each of the nine culture dimensions:

$$cult\_dist_{ij} = \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$$

In order to scale the data to be between zero and unity, the cultural distance per country pair is divided by the maximum distance of each dimension. Since the questionnaire allows answers to vary between 1 and 7, the scaling parameter is 6. The drawback of this measure is that after log-linearizing the gravity equation, country pairs with zero distance are omitted. Furthermore, this makes it impossible to include intra-national trade. To allow for this, I create another measure called *cultural proximity* for each of the nine dimensions. Here, maximal proximity takes the value of 1 and the more the countries' views differ, the closer the measure moves to zero. To make sure that the term between zero and unity, I apply the same scaling procedure as for the distance measure.

$$cult\_prox_{ij} = 1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$$

Additional data used for the econometric analysis is derived from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII). Bilateral export data on the 6-digit industry level originally stem from the United Nations Commodity Trade Statistics Database (COMTRADE) and are provided by CEPII's Base Analytique du Commerce International (BACI) for years after 1995 (Gaulier & Zignago, 2010). I follow the proposition of Yotov (2012) and do not just include international but intra-national trade flows as well. Additionally, this ensures theory consistent estimators of bilateral trade policy (Dai et al., 2014) and allows to capture the effect of globalization on international trade (Bergstrand et al., 2015). Information about intra-national trade at the 3-digit industry level is taken from the Trade, Production and Bilateral Protection (TradeProd) data base by CEPII (de Sousa et al., 2012). TradeProd is available for over 150 countries for the period from 1980 to 2006. Other controls like information on regional trade agreements (RTAs), bilateral distance, contiguity, colonial background, and common currency come from CEPII's Gravity (Head et al. (2010) and Head and Mayer (2014)).

I allow for the possibility that cultural distance potentially influences some goods differently and follow the commodity groups classification provided by Rauch (1999). He distinguishes between three categories: products that are traded on an organized exchange, products whose prices are listed in trade publications, and all other products. I combine the former two categories into one called *homogeneous goods*, while referring to the latter as *differentiated goods*.

I expect that cultural distance matters more for differentiated goods than for homogenous goods. The trade value for the latter should not depend on the country of origin or which cultural values a trading partner displays, since these goods are very similar anywhere around the world. Differentiated goods, however, may strongly depend on a culture's bias and its preferences.

I estimate the cross-section for the year 1995, a year for which data is available for a maximum of countries. The sample includes seven African countries, 12 countries from America, 15 from Asia, 18 from Europe, and four from the Middle East. The final data set contains about 3,000 country-pair observations. I provide summary statistics in Table 3.2. 61 pairs have a common currency, 96 have a common

Table 3.2: Summary statistics of cultural distance data set

Total number of pairs with common currency	61
Total number of pairs with colonial background	96
Total number of pairs with common border	98
Total number of RTAs	316

	Min	Max	Mean	Std. Dev.
Perf. Orient. dist.	0	0.327	0.077	0.059
Uncert. Avoid. dist.	0	0.388	0.107	0.085
Power dist.	0	0.428	0.074	0.065
In-Group Coll. dist.	0	0.485	0.124	0.106
Institutional Coll. dist.	0	0.308	0.074	0.065
Assertiveness dist.	0	0.218	0.065	0.046
Fut. Orient. dist.	0	0.377	0.088	0.070
Humane Orient. dist.	0	0.333	0.088	0.066
Gender Egal. dist.	0	0.333	0.070	0.059
Av. cultural dist.	0	0.211	0.085	0.037
Perf. Orient. prox.	0.673	1	0.923	0.059
Uncert. Avoid. prox.	0.612	1	0.893	0.085
Power dist.	0.572	1	0.926	0.065
In-Group Coll. prox.	0.515	1	0.876	0.106
Institutional Coll. prox.	0.692	1	0.926	0.059
Assertiveness prox.	0.782	1	0.935	0.046
Fut. Orient. prox.	0.623	1	0.912	0.070
Humane Orient. prox.	0.667	1	0.912	0.066
Gender Egal. prox.	0.667	1	0.930	0.054
Av. cultural prox.	0.789	1	0.915	0.037
Distance (in km)	9.56	19,650.13	7930.18	4695.57

colonial background, and 98 share a border. Overall, there is a total of 316 active RTAs. The table also indicates minimum and maximum values as well as the mean and standard deviation of the distance and proximity measures computed with the methods described above. The average cultural distance measure is computed by taking the average across all nine dimensions per country pair.

The first specification of the gravity equation is estimated using OLS:

$$ln(X_{ij}) = \beta_1 cult\_dist_{ij} + \beta_2 RTA_{ij} + \beta_3 RTA_{ij,t-5} + \boldsymbol{GRAVITY'_{ij}} * \boldsymbol{\beta} + \mu_i + \lambda_j + \epsilon_{ij} \tag{3.1}$$

Here, X_{ij} denotes the value of exports from exporter i to importer j. The measure for each bilateral cultural distance (and proximity) dimension is given by $cult\_dist_{ij}$ ($cult\_prox_{ij}$). Additionally, specification (3.1) captures active RTAs via the dummy RTA_{ij}, together with a 5 year lag. This allows for time-varying or non-linear effects of RTAs. The vector $\boldsymbol{GRAVITY_{ij}}$ includes the log of bilateral distance and time-invariant dummy variables like common border, common currency, and colonial background. In addition, it includes a dummy that controls for unobservable globalization effects (Bergstrand et al., 2015). It takes the value of unity if international trade occurs, and is zero otherwise. To account for unobservable country-specific variables, exporter and importer fixed effects denoted by μ_i and λ_j are included. ϵ_{ij} denotes the error term.

Specification (3.2) yields the PPML estimation approach. It was first proposed by Santos Silva and Tenreyro (2006) and has several advantages over the traditional OLS. First, the PPML makes use of the multiplicative instead of the logarithmic form of the gravity model. Therefore, it is possible to include observations with zero trade. Second, in the presence of heteroscedasticity the log-linear form of the OLS estimation potentially leads to biased and inconsistent estimators. The PPML performs well under these circumstances. The explanatory variables are the same as in the OLS estimation above.

$$X_{ij} = exp[\beta_1 cult\_dist_{ij} + \beta_2 RTA_{ij} + \beta_3 RTA_{ij,t-5} + \boldsymbol{GRAVITY'_{ij}} * \boldsymbol{\beta} + \mu_i + \lambda_j] * \epsilon_{ij} \tag{3.2}$$

3.5 Cultural distance estimation results

In this section I provide the results of the estimation specifications. Columns (1) to (9) of the following tables consider the cultural dimensions individually, while column (10) contains the effect of the average of all nine dimensions. The dependent variable in panel A is the aggregate bilateral trade value, panel B analyzes the effects of culture on the export value of homogeneous goods, whereas panel C focuses on the trade value of differentiated goods only. All specifications include importer fixed effects and exporter fixed effects. Standard errors are clustered at the country-pair level. For the sake of readability, I display only the variables of interest. In appendix 3.A, I report the complete regression outputs.

Tables 3.3 to 3.5 present the results of the cross-section estimations featuring the measure of cultural distance in logs. In Table 3.3, the results for the OLS estimations are given. To allow for comparison, Table 3.4 re-estimates the same sample using PPML instead of OLS. Table 3.5 increases the sample size of the previous PPML estimation by including zero trade flows. In order to exploit the whole sample, the cultural distance effects are then estimated in levels instead of logs in Table 3.6 and Table 3.7. To allow for a comparison with the previous findings, Table 3.6 shows the results without the inclusion of intra-national trade , the regressions in Table 3.7 utilize the full sample.

Differences in *uncertainty avoidance* and *institutional collectivism* seem to influence the value of overall exports significantly and negatively in panel A of Table 3.3. A 1 percent increase in the distance regarding *uncertainty avoidance* translates to a -0.05 percent decrease in export value at the 5 percent level of significance. A 1 percent increase in bilateral differences with regard to *institutional collectivism* leads to decline of -0.076 percent in the value of exports at the 5 percent level of significance. The sample size varies because some countries they share identical values. As their cultural distance is zero, they are dropped due to the log-linearization.

When focusing on trade with homogenous goods only in panel B, the coefficient for *institutional collectivism* stays significant at the 5 percent level with an average negative impact of -0.067 percent. *Gender egalitarianism* returns with a statistical significance at the 1 percent level. If the distance between a country pair increases by 1 percent with respect to this dimension, trade value is reduced by -0.092 percent.

In panel C the sample exclusively covers exports of differentiated goods. A 1 percent increase in the difference of *uncertainty avoidance* reduces the value of exports by -0.076 percent. This effect is highly significant. If the perception of hierarchy within a society, measured by *power distance*, diverges by 1 percent, this reduces trade on average by -0.079 percent at the 1 percent level of significance. The coefficient of *institutional collectivism* returns statistically significant at 5 percent and negative with the magnitude of -0.066.

Table 3.3: Trade effects of logged cultural distance: OLS estimation (basic sample)

Panel A: **Aggregate trade**	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of Interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
ln(cultural distance)	0.022	0.002	-0.050*	-0.050	0.031	-0.076*	-0.019	-0.012	-0.054	-0.071
	(0.026)	(0.026)	(0.025)	(0.029)	(0.024)	(0.030)	(0.026)	(0.025)	(0.030)	(0.074)
N	2765	2759	2755	2757	2759	2756	2765	2761	2761	2773
adj. R^2	0.841	0.841	0.842	0.841	0.841	0.842	0.841	0.841	0.842	0.841
Panel B: **Homogeneous goods**										
ln(cultural distance)	0.035	0.031	-0.025	-0.049	0.017	-0.067*	-0.037	-0.022	-0.092**	-0.072
	(0.030)	(0.030)	(0.027)	(0.030)	(0.027)	(0.033)	(0.028)	(0.028)	(0.030)	(0.083)
N	2670	2664	2661	2662	2665	2662	2670	2666	2667	2678
adj. R^2	0.784	0.785	0.784	0.786	0.784	0.785	0.784	0.785	0.785	0.784
Panel C: **Differentiated goods**										
ln(cultural distance)	-0.042	0.017	-0.076***	-0.079**	0.037	-0.066*	-0.005	0.035	-0.020	-0.090
	(0.025)	(0.026)	(0.023)	(0.028)	(0.023)	(0.027)	(0.025)	(0.022)	(0.028)	(0.069)
N	2714	2708	2704	2706	2708	2705	2714	2710	2710	2722
adj. R^2	0.887	0.887	0.887	0.887	0.886	0.887	0.887	0.887	0.887	0.887
Gravity controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: ln(trade value). Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, see table 3.2. Estimation (10) uses the average of all 9 dimensions.
Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together.
Standard errors are clustered at the country-pair level, *** p<0.001,** p<0.01, * p<0.05

When comparing the results of the three OLS estimations in Table 3.3 it becomes apparent that it makes a big difference, which goods specification is used. Several parameters are rendered insignificant by the aggregation, while some effects are only driven by either the homogeneous or differentiated goods specification. Out of the ten distance variables of interest, only the coefficient for *institutional collectivism* affects exports across specifications similarly in size and level of significance. It measures collaboration of resources and actions within a firm as well as loyalty. Employees with a high sense of institutional collectivism may have problems seeing eye to eye with firms that encourage individual performances and, therefore, competition. *Uncertainty avoidance* is a mirror to which extent a society seeks structure, formalized procedures, and laws. Thus, it is understandable why large differences regarding this parameter can make negotiations more difficult, especially with goods not traded on an organized exchange. This negative effect is still active in the aggregate. Big differences regarding the acceptance of women as equal partners can make negotiations with parties from certain cultural beliefs harder. However, the negative effect of differences in *gender egalitarianism* only seems to matter for homogeneous goods and vanishes in the aggregate.

Table 3.4 and Table 3.5 show the results for the cross section estimation using PPML. First, the OLS sample is re-estimated via PPML, and afterwards the full sample is used. The structure of the tables follow Table 3.3. The R^2 is calculated by computing the square of the correlation between trade and fitted values following the method described by Tenreyro.[3]

After re-estimating the OLS sample with PPML in Table 3.4 four of the distance variables of interest return statistically significant coefficients for the aggregate level of exports in panel A. If the perception of *power distance* between two countries grows apart by 1 percent, international trade decreases by -0.067 percent. The coefficient is statistically significant at the 1 percent level. Growing differences in *in-group collectivism* lead to a highly significant increase in the export value by -0.09 percent. Different mindsets regarding *future orientation* decrease average trade value by -0.056 percent with critical values of 1 percent. The final statistically significant coefficient at the 5 percent level is *gender egalitarianism* with -0.048.

Like the OLS regression above, the sample is once again split between exports of homogeneous and differentiated goods following Rauch (1999). Panel B displays the homogeneous specification. A 1 percent increase in the bilateral distance of *uncertainty avoidance* decreases trade by -0.048 percent. The coefficient of *in-group collectivism* returns positive with 0.064. Growing distance regarding *institutional*

[3]See `http://personal.lse.ac.uk/tenreyro/r2.do` for details.

Table 3.4: Trade effects of logged cultural distance: PPML estimation (basic sample)

Panel A: **Aggregate trade**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
ln(cultural distance)	0.031	0.010	-0.026	-0.067**	0.090***	0.042	-0.056**	-0.024	-0.048*	0.006
	(0.019)	(0.028)	(0.018)	(0.022)	(0.017)	(0.026)	(0.019)	(0.018)	(0.020)	(0.072)
N	2765	2759	2755	2757	2759	2756	2765	2761	2761	2773
R^2	0.057	0.059	0.060	0.060	0.060	0.058	0.059	0.059	0.061	0.059
Panel B: **Homogeneous goods**										
ln(cultural distance)	0.025	-0.031	-0.048**	-0.024	0.064**	0.092**	-0.042	-0.053**	-0.053*	0.027
	(0.021)	(0.031)	(0.017)	(0.025)	(0.021)	(0.032)	(0.023)	(0.020)	(0.025)	(0.079)
N	2670	2664	2661	2662	2665	2662	2670	2666	2667	2678
R^2	0.059	0.061	0.061	0.061	0.073	0.059	0.060	0.061	0.062	0.060
Panel C: **Differentiated goods**										
ln(cultural distance)	0.038	0.033	-0.006	-0.095***	0.114***	0.007	-0.059**	-0.008	-0.049*	0.003
	(0.021)	(0.029)	(0.021)	(0.023)	(0.019)	(0.027)	(0.021)	(0.020)	(0.022)	(0.078)
N	2714	2708	2704	2706	2708	2705	2714	2710	2710	2722
R^2	0.050	0.052	0.052	0.052	0.047	0.051	0.052	0.052	0.054	0.052
Gravity controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

collectivism increases trade in homogeneous goods by 0.092 percent. The coefficient of *humane orientation* is -0.053. All coefficients above are statistically significant at the 1 percent level. *Gender egalitarianism* is significant at 5 percent and decreases the value of trade by -0.053 percent if this distance measure increases by 1 percent.

Panel C of Table 3.4 features exports of differentiated goods as dependent variable. The same coefficients return significantly as in the full sample specification A. *Power distance* is highly significant at 0.1 percent, with a negative impact on trade of -0.095. The coefficient measuring distance via *in-group collectivism* is highly significant as well. The value of exports for differentiated goods increases by 0.114 percent on average if bilateral cultural distance increases by 1 percent. A negative trade effect of -0.059 percent is estimated for the measure of *future orientation*, at a critical value of 1 percent. The export value of differentiated goods drops by -0.049 percent if views regarding *gender egalitarianism* grow apart by 1 percent. This coefficient is significant at the 5 percent level.

The PPML estimations in Table 3.5 include country pairs with zero trade. As a result, the sample size increases by around 200 observations. In panel A, *in-group collectivism* returns highly significant with a coefficient of 0.09. The coefficient for *power distance* is given by -0.068 and the one for *future orientation* is given by -0.055, both at 1 percent level of significance. *Gender egalitarianism* yields -0.048 at 5 percent level of significance.

The distance dimension of *uncertainty avoidance* has a negative effect on bilateral trade with homogeneous goods in panel B of -0.048. Increasing distance regarding *in-group collectivism* seems to have a positive influence on bilateral trade of 0.066 percent. So does the coefficient of *institutional collectivism* with 0.091. If values regarding *humane orientation* grow apart by 1 percent, this decreases trade by -0.054 percent. All four dimensions are statistically significant at 1 percent. A 1 percent decrease in bilateral perception of *gender egalitarianism* decreases average export value by -0.053 percent at the 5 percent level of significance.

Panel C once again focuses on exports of differentiated goods. The coefficients of *power distance* and *in-group collectivism* return highly significantly, with -0.095 and 0.114, respectively. The measure of *future orientation* returns with -0.059 at 1 percent level of significance. *Gender egalitarianism* is given by -0.049 with critical values of 5 percent.

The results of the PPML estimations in Tables 3.4 and 3.5 are nearly identical. Both show that the effects of the distance variables of interest *power distance* and *future orientation* in the aggregate estimation of panel A are driven by the differentiated goods specification in panel C alone. A possible reason for the significant

Table 3.5: Trade effects of logged cultural distance: PPML estimation (basic sample+zeros in trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
Panel A: **Aggregate trade**										
ln(cultural distance)	0.032	0.010	-0.025	-0.068**	0.090***	0.042	-0.055**	-0.024	-0.048*	0.010
	(0.019)	(0.028)	(0.018)	(0.022)	(0.017)	(0.026)	(0.019)	(0.018)	(0.020)	(0.072)
N	2956	2956	2952	2952	2954	2952	2960	2954	2956	2970
R^2	0.057	0.059	0.060	0.060	0.060	0.058	0.059	0.059	0.061	0.059
Panel B: **Homogeneous goods**										
ln(cultural distance)	0.027	-0.030	-0.048**	-0.025	0.066**	0.091**	-0.040	-0.054**	-0.053*	0.032
	(0.021)	(0.031)	(0.017)	(0.025)	(0.021)	(0.032)	(0.023)	(0.020)	(0.026)	(0.079)
N	2956	2956	2952	2952	2954	2952	2960	2954	2956	2970
R^2	0.059	0.060	0.061	0.061	0.073	0.059	0.060	0.061	0.062	0.060
Panel C: **Differentiated goods**										
ln(cultural distance)	0.039	0.033	-0.006	-0.095***	0.114***	0.007	-0.059**	-0.008	-0.049*	0.004
	(0.021)	(0.029)	(0.021)	(0.023)	(0.019)	(0.027)	(0.021)	(0.020)	(0.022)	(0.078)
N	2956	2956	2952	2952	2954	2952	2960	2954	2956	2970
R^2	0.050	0.052	0.052	0.052	0.047	0.051	0.052	0.052	0.054	0.052
Gravity controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

negative effect of *future orientation* may be that it is important for successful negotiations of differentiated goods that trade partners share a similar strategic view that depends on the focus on immediate or future rewards. *In-group collectivism* and *gender egalitarianism* are significant across all specifications. Different perceptions regarding collectivism seem to influence trade positively. It is interesting to note that differences with regard to *in-group collectivism* has a positive and persistent effect of across all three specifications points, while distance concerning the measure for *institutional collectivism* only seems to influence homogeneous trade. Likewise, the coefficients for *uncertainty avoidance* and *humane orientation* are significant for trade with homogeneous goods only.

When comparing Tables 3.3, 3.4, and 3.5 it becomes apparent that the method of estimation greatly influences the results. Only three coefficients share significance across the three estimation strategies and only two of them have the same sign. Furthermore, it is important to note that trough the process of aggregation a lot of significant information is lost.

In Table 3.6 and Table 3.7 the distance measures enter the estimations in levels, not in logs. This allows to include previously omitted country pairs which share identical cultural believes. Moreover, it allows for the inclusion of intra-national trade as was proposed by Yotov (2012). Since cultural distance within the same country is zero by definition, the process of log-linearizing drops them out of the regressions. In order to compare the results of the level-estimation with the log-estimation in Table 3.5, Table 3.6 does not include intra-national trade.

In panel A of Table 3.6, the coefficients for *power distance*, *future orientation*, and *gender egalitarianism* affect trade negatively, whereas distance in *in-group collectivism* positively influences trade in aggregate goods. These findings are identical to the ones in Table 3.5.

In panel B, *humane orientation* and *gender egalitarianism* exhibit a negative, *in-group collectivism* and *institutional collectivism* a positive impact on trade. All four are statistically significant. The coefficient for *uncertainty avoidance* is statistically insignificant in contrast to Table 3.5.

The four distance measures that affect trade statistically significant for differentiated goods in panel C in Table 3.5 appear in Table 3.6 as well: *Power distance*, *future orientation*, and *gender egalitarianism* with a negative sign, *in-group collectivism* with a positive sign. The coefficient for *assertiveness* is positive and is only statistically significant in levels, not in logs. Overall, however, it does not seem to matter much, if the distance measures are included in level- or in log-form.

The results change dramatically if intra-national trade is included, as Table 3.7

Table 3.6: Trade effects of cultural distance: PPML estimation (basic sample+zeros in trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
Panel A: Aggregate trade										
Cultural distance	-0.716	0.988	-0.023	-1.952***	0.975***	0.451	-1.013**	-0.727	-1.394**	0.314
	(0.477)	(0.599)	(0.269)	(0.544)	(0.207)	(0.525)	(0.347)	(0.393)	(0.531)	(0.883)
N	2970	2970	2970	2970	2970	2970	2970	2970	2970	2970
R^2	0.008	0.006	0.007	0.008	0.006	0.007	0.007	0.008	0.007	0.006
Panel B: Homogeneous goods										
Cultural distance	-0.800	0.003	-0.133	-0.555	0.759**	1.395*	-0.573	-1.209**	-1.504*	0.201
	(0.552)	(0.661)	(0.288)	(0.565)	(0.246)	(0.634)	(0.388)	(0.427)	(0.637)	(0.929)
N	2970	2970	2970	2970	2970	2970	2970	2970	2970	2970
R^2	0.006	0.006	0.006	0.006	0.005	0.005	0.006	0.007	0.006	0.006
Panel C: Differentiated goods										
Cultural distance	-0.467	1.513*	0.169	-2.994***	1.216***	-0.170	-1.153**	-0.479	-1.584**	0.701
	(0.545)	(0.649)	(0.312)	(0.600)	(0.234)	(0.540)	(0.392)	(0.443)	(0.587)	(1.033)
N	2970	2970	2970	2970	2970	2970	2970	2970	2970	2970
R^2	0.004	0.002	0.003	0.005	0.003	0.003	0.003	0.004	0.004	0.003
Gravity controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.7: Trade effects of cultural distance: PPML estimation (basic sample+zeros in trade+intra-nat. trade)

Aggregate trade

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist
Cultural distance	-2.533***	2.486*	-1.224	0.384	0.226	1.091	-2.813***	1.010	-6.006***	-3.255*
	(0.703)	(1.132)	(0.658)	(0.822)	(0.471)	(0.913)	(0.747)	(0.843)	(1.051)	(1.425)
N	3136	3136	3136	3136	3136	3136	3136	3136	3136	3136
R^2	0.070	0.068	0.070	0.069	0.070	0.068	0.069	0.069	0.065	0.072

Homogeneous goods

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Cultural distance	-1.229	1.519	-0.705	2.593**	0.774	2.310*	-2.638**	0.471	-6.098***	-1.130
	(0.885)	(1.168)	(0.691)	(0.868)	(0.553)	(0.923)	(0.853)	(0.902)	(1.259)	(1.683)
N	3136	3136	3136	3136	3136	3136	3136	3136	3136	3136
R^2	0.022	0.021	0.021	0.020	0.021	0.020	0.021	0.021	0.020	0.022

Differentiated goods

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Cultural distance	-3.396***	2.939**	-1.164*	-1.362	0.026	0.300	-2.553***	1.195	-5.522***	-3.960**
	(0.675)	(1.103)	(0.582)	(0.822)	(0.447)	(0.901)	(0.693)	(0.845)	(0.940)	(1.336)
N	3136	3136	3136	3136	3136	3136	3136	3136	3136	3136
R^2	0.065	0.064	0.067	0.067	0.066	0.066	0.065	0.065	0.061	0.067
Gravity controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

demonstrates. The coefficients of five out the ten columns return significant. Increasing distance in the measures for *performance orientation*, *future orientation*, and *gender egalitarianism* influence trade negatively with a shared critical value of 0.1 percent. Their respective coefficients are -2.533, -2.813, and -6.006. Distance in *assertiveness* has a positive impact on trade of 2.486, whereas the *average distance* measure has a negative impact of -3.255, both at the 5 percent level of significance.

Two distance dimensions influence exports of homogeneous goods in panel B positively, *power distance* with a coefficient of 2.593 and *institutional collectivism* with a coefficient of 2.310. The former has a critical value of 1 percent and the latter of 5 percent. Growing distance regarding *future orientation* decreases trade by -2.638 at the 1 percent level of significance. The coefficient for *gender egalitarianism* is -6.098 and highly significant.

Panel C focuses on exports of differentiated goods. Six cultural distance measures return negatively and significantly. The coefficient of *performance orientation* decreases trade by -3.396, the one of *future orientation* by -2.553, and the one of *gender egalitarianism* by 5.522. These positive effects are significant at a critical value of 0.01. The coefficient for the dimension *assertiveness* is 2.939 and the one for *average proximity* is -3.960, both at a critical value of 0.01. *Uncertainty avoidance* returns with -1.164 at the 5 percent level of significance.[4]

3.6 Cultural proximity estimation results

In order to allow for country pairs to share identical values with regard to some of the cultural dimensions I make use of the proximity rather than the distance measure. When using the proximity measure, identical cultural views are reflected by values of unity. Tables 3.8 and 3.9 show the output for the cross-section estimation of the influence of cultural proximity on trade using OLS, Tables 3.10 and 3.11 provide results of the PPML regressions.

Like in the previous regressions focusing on cultural distance, the nine proximity measures are included individually in columns (1) to (9) to see, which potentially influence the value of trade. The final column exhibits the average proximity effect of all nine dimensions. I use aggregated export value as dependent variable first and then distinguish between exports of homogeneous and differentiated goods. Importer and exporter fixed effects are included as well as traditional gravity con-

[4]If the regressions are repeated using the unscaled distance measures, the magnitude of all coefficients is divided by 6.

trols for distance, RTAs, contiguity, common currency, and colonial background. Standard errors are robust and clustered on the country pair level.

To allow for a comparison with the set of distance regressions, the first proximity OLS estimation does not take intra-national trade into account and can be found in Table 3.8. Two out of the nine proximity measures in panel A significantly influence aggregate exports. At the 5 percent level of significance the coefficient for *in-group collectivism* yields that on average a 1 percent increase in the proximity leads to a -0.514 percent decrease of export value. On the other hand, the coefficient for *institutional collectivism* indicates that if country pairs grow closer by 1 percent with regard to this culture indicator, exports increase by 1.053 percent at 5 percent level of significance. The other proximity coefficients seem to play no significant role for exports on the aggregate.

When splitting the sample into homogeneous and differentiated goods, the OLS regression in panel B yields no significant effect for any of the cultural proximity dimensions on trade with homogeneous goods.

For differentiated goods, closer cultural vicinity regarding *performance orientation* increases trade by 1.403 percent and is highly significant in panel C. The same significance is attributed to the measure of *uncertainty avoidance*. Growing closer with respect to this dimension has a positive effect on exports by 1.007. Trade with countries that share more similar views with regard to *in-group collectivism* decreases on average by -0.652 percent with a critical value of 5 percent. A 1 percent increase in bilateral proximity of *institutional collectivism* and *future orientation* increases trade by 1.056 percent and 0.728 percent, respectively. Both coefficients are significant at the 5 percent level.

When comparing the OLS results of Tables 3.3 and 3.8 it becomes apparent that the results are quite different. Only *institutional collectivism* is persistent for the aggregate goods case, *uncertainty avoidance* and *in-group collectivism* are only significant in one of the two specifications. In panel B, the two significant measures in the distance OLS estimation become insignificant after using the proximity measure. *Uncertainty avoidance* and *institutional collectivism* influence trade similarly across both estimations for the differentiated goods case. However, *power distance* is significant when used as a distance measure, whereas *performance orientation*, *in-group collectivism*, and *future orientation* seem only to matter when using the proximity specification.

Table 3.9 presents the results of the OLS cross-section estimation with cultural proximity and includes intra-national trade data. All gravity controls as well as importer and exporter fixed effects are included. Out of the nine measures for

Table 3.8: Trade effects of logged cultural proximity: OLS estimation (basic sample)

Aggregate trade	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
ln(Proximity)	0.185	-0.418	0.316	0.216	-0.514*	1.053*	0.289	0.558	0.380	0.593
	(0.497)	(0.565)	(0.267)	(0.527)	(0.227)	(0.507)	(0.371)	(0.403)	(0.665)	(0.790)
N	2773	2773	2773	2773	2773	2773	2773	2773	2773	2773
adj. R^2	0.841	0.841	0.841	0.841	0.841	0.842	0.841	0.841	0.841	0.841
Homogeneous goods										
ln(Proximity)	0.485	-0.967	-0.129	0.032	-0.234	0.718	0.291	0.761	0.747	0.540
	(0.556)	(0.672)	(0.290)	(0.568)	(0.251)	(0.570)	(0.402)	(0.443)	(0.689)	(0.898)
N	2678	2678	2678	2678	2678	2678	2678	2678	2678	2678
adj. R^2	0.784	0.785	0.784	0.784	0.784	0.784	0.784	0.785	0.784	0.784
Differentiated goods										
ln(Proximity)	1.403**	-0.589	1.007***	0.377	-0.652**	1.056*	0.728*	-0.521	-0.340	0.914
	(0.456)	(0.528)	(0.258)	(0.545)	(0.217)	(0.455)	(0.326)	(0.378)	(0.566)	(0.738)
N	2722	2722	2722	2722	2722	2722	2722	2722	2722	2722
adj. R^2	0.887	0.887	0.887	0.887	0.887	0.887	0.887	0.887	0.887	0.887
Gravity controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: ln(trade value). Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2.
Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together.
Standard errors are clustered at the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.9: Trade effects of logged cultural proximity: OLS estimation (basic sample+intra-nat. trade)

Aggregate trade

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
ln(Proximity)	0.025	-0.355	0.095	0.206	-0.731**	0.866	-0.094	0.345	0.555	-0.230
	(0.517)	(0.568)	(0.283)	(0.549)	(0.239)	(0.512)	(0.421)	(0.422)	(0.674)	(0.834)
N	2823	2823	2823	2823	2823	2823	2823	2823	2823	2823
adj. R^2	0.841	0.841	0.841	0.841	0.841	0.841	0.841	0.841	0.841	0.841

Homogeneous goods

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
ln(Proximity)	0.478	-0.930	-0.208	0.034	-0.433	0.634	0.153	0.699	0.942	0.149
	(0.564)	(0.667)	(0.298)	(0.590)	(0.261)	(0.569)	(0.413)	(0.444)	(0.694)	(0.921)
N	2726	2726	2726	2726	2726	2726	2726	2726	2726	2726
adj. R^2	0.784	0.784	0.784	0.784	0.784	0.784	0.784	0.784	0.784	0.784

Differentiated goods

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ln(Proximity)	1.239*	-0.505	0.720*	0.372	-0.896***	0.838	0.288	-0.794	-0.110	-0.046
	(0.487)	(0.542)	(0.285)	(0.584)	(0.239)	(0.475)	(0.399)	(0.408)	(0.587)	(0.818)
N	2772	2772	2772	2772	2772	2772	2772	2772	2772	2772
adj. R^2	0.882	0.881	0.882	0.881	0.882	0.882	0.881	0.882	0.881	0.881
Gravity controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: ln(trade value). Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2.
Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together.
Standard errors are clustered at the country-pair level, *** p<0.001,** p<0.01, * p<0.05

cultural proximity in panel A, one returns significantly at the 1 percent level. If a country pair grows closer together by 1 percent regarding *in-group collectivism*, aggregate exports decrease on average by -0.731 percent.

In the next two panels the sample is once again split into different goods categories. As can be seen in panel B, none of the proximity dimensions influence exports of homogeneous goods significantly.

For trade with differentiated goods in panel C a proximity increase of 1 percent leads to a rise of exports by 1.239 and 0.720 percent with respect to *performance orientation* and *uncertainty avoidance*, respectively. The coefficients are significant at critical values of 5 percent. Increasing proximity with regard to the cultural dimension *in-group collectivism* influences trade negatively. A 1 percent increase of proximity decreases trade by -0.896 percent at 0.1 percent level of significance.

Comparing the proximity results from Tables 3.8 and 3.9, the proximity measure *in-group collectivism* appears to be robust whether or not intra-national trade is included. The same holds true for the measures *performance orientation* and *uncertainty avoidance*. They remain comparable in size, even though the level of significance varies due to slight changes in the standard errors: The coefficients of *institutional collectivism* and *future orientation* lose their significance when intra-national trade is included into the estimation. Trade with homogeneous goods remains unaffected by the proximity dimensions.

To make the results comparable with the previous OLS regression, the PPML estimation in Table 3.10 includes intra-national trade but no zero trade flows. The findings in Table 3.11 cover the whole sample.

When aggregating all exports per country pair, five of the proximity variables of interest return statistically significant coefficients in panel A of Table 3.10, including *average proximity*. If the perception of *performance orientation* between two countries grows closer together, international trade increases by 2.962. The coefficient is highly statistically significant at the 0.01 percent level. Increasing proximity with regard to *assertiveness* leads to a decrease in the export value by -2.114 percent. The coefficient for *uncertainty avoidance* is given by 1.31. Both coefficients are significant at the 5 percent level. Similar mindsets regarding *future orientation* increase average trade value highly significantly by 2.995. Likewise, the coefficient for *gender egalitarianism* is highly significant with 5.627. The coefficient for the effect of *average proximity* is 4.386 and highly significant as well.

The sample is once again split between exports of homogeneous and differentiated goods. Panel B shows the homogeneous specification. A 1 percent increase in the bilateral proximity of *performance orientation* leads to a highly significant increase

Table 3.10: Trade effects of logged cultural proximity: PPML estimation (basic sample+intra-nat. trade)

Aggregate trade

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
ln(Proximity)	2.962***	-2.144*	1.131*	0.354	-0.099	-0.846	2.955***	-0.107	5.627***	4.386***
	(0.624)	(1.037)	(0.561)	(0.766)	(0.387)	(0.798)	(0.658)	(0.712)	(0.986)	(1.272)
N	2823	2823	2823	2823	2823	2823	2823	2823	2823	2824
R^2	0.068	0.068	0.070	0.070	0.070	0.069	0.065	0.069	0.062	0.071

Homogeneous goods

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ln(Proximity)	2.466***	-1.533	1.062	-1.898*	-0.649	-2.685**	3.321***	0.860	4.980***	2.947
	(0.719)	(1.093)	(0.573)	(0.812)	(0.443)	(0.818)	(0.711)	(0.688)	(1.176)	(1.549)
N	2726	2726	2726	2726	2726	2726	2726	2726	2726	2726
R^2	0.018	0.018	0.018	0.018	0.017	0.017	0.017	0.018	0.018	0.018

Differentiated goods

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ln(Proximity)	3.563***	-2.567*	1.093*	1.739*	0.051	-0.114	2.617***	-0.487	5.000***	4.605***
	(0.605)	(1.001)	(0.493)	(0.749)	(0.366)	(0.786)	(0.592)	(0.710)	(0.875)	(1.176)
N	2772	2772	2772	2772	2772	2772	2772	2772	2772	2772
R^2	0.062	0.065	0.067	0.066	0.067	0.067	0.062	0.066	0.059	0.067
Gravity controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

in trade by 2.466 percent. The coefficient of *power distance* returns negative with -1.898 at a critical value of 5 percent. Growing proximity regarding *institutional collectivism* decreases trade in homogeneous goods by -2.685 percent. If countries improve their similarity with respect to *future orientation* by 1 percent, average exports are expected to grow by 3.321. The coefficient for *gender egalitarianism* is 4.980. All three coefficients above are statistically significant at critical values of 0.01.

Panel C of Table 3.10 features exports of differentiated goods as dependent variable. The coefficient for *performance orientation* is highly significant at 0.1 percent, with a positive impact on bilateral trade of 3.563. The value of exports for differentiated goods decreases by -2.567 percent on average if bilateral cultural proximity measured by *assertiveness* increases by 1 percent. The coefficient is significant at 5 percent. The same level of significance holds for the following two dimensions. Similar views concerning *uncertainty avoidance* lead to an increase in exports by 1.093 percent. A positive trade effect of 1.739 percent is estimated for the measure of *power distance*. If cultural proximity grows by 1 percent, the export value of differentiated goods increases on average by 2.617 percent with regard to *future orientation*, by 5 percent with respect to *gender egalitarianism*, and by 4.605 percent for the measure of *average proximity*. The three dimensions are highly significant at critical values of 0.001.

The choice of estimation method has a big impact on the results of the regression. When re-estimating the OLS-sample using PPML, only two proximity measures overlap with respect to their level of significance and the general direction of the coefficient and even then the actual size of the effect varies greatly.

The estimations in Table 3.11 make use of the whole sample. In five out of the ten columns, the proximity measures have a significant influence on the value of aggregate exports in panel A. The coefficient for *performance orientation* is given by 2.316 and is highly significant. The coefficients for *future orientation* given by 2.502 and for *gender egalitarianism* given by 5.455 are highly significant as well. The measure for proximity regarding *assertiveness* and the *average proximity* share a level of significance of 5 percent. Increasing proximity by 1 percent decreases trade by -2.319 percent with respect to *assertiveness*. *Average proximity* has a positive effect on trade with a coefficient of 2.961.

Panel B yields the results for exports of homogeneous goods. If the trade partners share similar views with respect to *gender egalitarianism*, the value of trade increases by 5.497 at the 0.1 percent level of significance. Two proximity measures return at critical values of 0.01: If similar perception regarding *power distance* increases by 1 percent, average exports fall by -2.387 percent. In contrast to that,

Table 3.11: Trade effects of logged cultural proximity: PPML estimation (basic sample+zeros in trade+intra-nat. trade)

Panel A: **Aggregate trade**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
ln(Proximity)	2.316***	-2.319*	1.039	-0.433	-0.167	-0.948	2.502***	-0.919	5.455***	2.961*
	(0.636)	(1.035)	(0.560)	(0.728)	(0.391)	(0.805)	(0.668)	(0.738)	(0.977)	(1.299)
N	3136	3136	3136	3136	3136	3136	3136	3136	3136	3136
R^2	0.070	0.069	0.070	0.069	0.070	0.069	0.068	0.068	0.063	0.072

Panel B: **Homogeneous goods**

ln(Proximity)	1.095	-1.462	0.562	-2.387**	-0.642	-2.041*	2.323**	-0.478	5.497***	0.983
	(0.798)	(1.073)	(0.591)	(0.758)	(0.460)	(0.815)	(0.760)	(0.792)	(1.160)	(1.530)
N	3136	3136	3136	3136	3136	3136	3136	3136	3136	3136
R^2	0.022	0.021	0.021	0.020	0.021	0.021	0.021	0.021	0.030	0.022

Panel C: **Differentiated goods**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ln(Proximity)	3.141***	-2.709**	1.005*	1.151	0.001	-0.229	2.282***	-1.055	5.052***	3.631**
	(0.613)	(1.005)	(0.492)	(0.731)	(0.371)	(0.796)	(0.617)	(0.739)	(0.877)	(1.213)
N	3136	3136	3136	3136	3136	3136	3136	3136	3136	3136
R^2	0.063	0.065	0.067	0.067	0.067	0.067	0.064	0.064	0.060	0.067
Gravity controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Proximity definition:$1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

the coefficient of *future orientation* is 2.323. Trade is decreased by -2.041 percent if proximity regarding *institutional collectivism* increases by 1 percent at the 5 percent level of significance.

Five out of nine proximity measures and the average proximity influence trade with differentiated goods significantly in panel C. *Performance orientation*, *future orientation*, and *gender egalitarianism* share a 0.1 percent level of significance. The first measure returns with 3.141, the second with 2.282, and the third with 5.052. If proximity increases by 1 percent regarding the dimension of *assertiveness*, exports decrease by 2.709 percent, while they increase by 3.631 percent with regard to the *average proximity* measure. Both coefficients are significant at 1 percent. At a critical value of 5 percent similar views regarding *uncertainty avoidance* have a positive effect on trade of 1.005.

The sample size of the full sample PPML is larger by around 300 observations compared to the PPML without zero trade flows. This changes the results somewhat. For the aggregate goods case in panel A, the coefficients become smaller but remain comparable to the PPML with strictly positive trade flows with respect to magnitude of their impact. The same five coefficients return significantly in both estimations, except for *humane orientation*, which only appears significantly in the full sample estimation. A similar observation can be made for panel B. Four coefficients remain significant in both estimations even though the level of significance varies. *Performance orientation* loses its significance in the full sample. The increase in sample size leads to more variation for differentiated goods in panel C. *Power distance* does not influence trade any more if zero-trade flows are included. The other coefficients remain significant and comparable in size. When comparing the results of Table 3.7 and Table 3.11, the results of the two full-sample estimations appear to be robust with regard to their level of significance. The specification choice does not seem to matter if intra-national trade is accounted for. However, the magnitude of the effects is more plausible in logs than in levels.

3.7 Conclusion

The aim of this chapter was to shed more light on the effect of different cultural beliefs across countries on trade using the nine cultural dimensions of GLOBE.

To quantify bilateral cultural diversion, I introduced two specifications: A distance measure and a proximity measure. Two different estimation strategies have been applied to the cross-section, OLS and PPML together with several different specifications of the data set. Since the OLS method has several drawbacks, the PPML is the preferred estimation strategy. In addition, it allows to include zero trade flows and, therefore, to utilize the whole data set. To allow cultural aspects to affect different goods differently, the goods classification of Rauch (1999) has been applied.

The resulting picture is very rich. Several cultural aspects have a positive effect on trade, while others influence trade negatively. This is surprising and highlights the importance of understanding what exactly the variable measures. The results are quite robust for the two measures but whether cultural (dis-)similarity affects trade positively, negatively, or not at all depends on the estimation method.

As expected, several cultural aspects on the aggregate are driven by trade with differentiated goods, however, homogeneous goods are influenced by some cultural dimensions, that do not matter for the differentiated goods case. Therefore, the importance of cultural aspects varies with the type of good and some effects are lost when using the aggregate only. Finally, it does not seem to matter for the sign and the level of significance if the cultural dimensions enter the structural gravity equation in logs or in levels.

For further research the issue of potential endogeneity within cross-sectional estimations should be addressed by making use of a panel framework. This would allow to properly account for multilateral resistance by including country-pair fixed effects as proposed by Baier and Bergstrand (2007) and lead to unbiased and more plausible estimators.

3.A Additional tables

Table 3.A.1 yields the individual rank of each of the 60 countries within the GLOBE survey for each of the nine cultural dimensions. The rank of 1 corresponds to the lowest score in the sample and 60 to the highest.

Tables 3.A.2 to 3.A.28 yield the complete regression outputs except for the fixed effects dummies. All specifications include importer and exporter fixed effects. The additional gravity controls include common measures for bilateral distance, dummies for RTAs and 5-year lags of RTAs, contiguity, common currency, and colonial ties. Tables 3.A.14 to 3.A.16 and Tables 3.A.20 to 3.A.28 include intranational trade as well as the dummy variable for international border crossings of trade. Tables 3.A.11 to 3.A.16 show the complete results of the regressions estimating cultural distance effects on trade in levels, Tables 3.A.17 to 3.A.28 use the proximity measure instead of distance.

Table 3.A.1: Country rank per GLOBE dimension

Country	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.
Albania	58	60	46	6	50	45	36	45	51
Argentina	10	38	14	56	34	4	2	4	34
Australia	44	40	43	10	10	32	43	32	31
Austria	47	55	55	18	19	34	55	34	16
Bolivia	9	12	4	5	32	22	21	22	37
Brazil	26	36	10	39	23	10	32	10	27
Canada	51	25	47	11	12	35	53	35	49
China	48	11	53	21	52	54	28	54	14
Colombia	22	37	9	50	49	9	9	9	48
Costa Rica	33	10	21	9	27	16	20	16	39
Czech Republic	30	8	45	1	1	3	23	3	52
Denmark	36	13	56	2	2	55	54	55	56
Ecuador	35	30	18	53	53	14	27	14	15
Egypt	41	18	28	17	44	42	34	42	3
El Salvador	13	56	11	58	29	7	31	7	18
England	27	33	49	26	9	31	50	31	47
Finland	16	14	54	15	8	51	48	51	29
France	31	32	44	34	13	17	15	17	42
Georgia	18	35	7	31	59	19	12	19	38
Germany	39	51	57	33	7	8	49	8	17
Greece	1	53	5	41	26	1	11	1	33
Guatemala	15	17	3	52	43	6	5	6	12
Hong Kong	57	57	41	19	28	26	41	26	32
Hungary	4	59	2	49	24	2	4	2	60
India	40	9	32	46	57	36	47	36	7
Indonesia	46	15	35	29	46	46	35	46	25
Iran	54	24	17	43	58	13	24	13	9
Ireland	45	21	40	25	22	52	40	52	22
Israel	28	39	27	8	17	39	33	39	21
Italy	7	29	20	42	20	5	6	5	24
Japan	37	3	29	23	16	58	51	58	20
Kazakhstan	6	47	16	36	25	33	18	33	54
Korea (South)	52	44	8	54	38	59	39	59	1
Kuwait	23	4	38	24	51	40	8	40	2
Malaysia	43	16	52	28	35	48	56	48	36
Mexico	29	46	36	32	48	24	37	24	43
Morocco	24	49	15	59	55	12	7	12	4
Namibia	12	19	37	35	15	27	16	27	55
Netherlands	42	41	50	3	5	38	57	38	35
New Zealand	56	2	51	14	4	56	14	56	23
Nigeria	20	58	39	60	39	29	42	29	11
Philippines	49	23	22	45	60	53	45	53	44
Poland	19	27	12	22	36	44	3	44	58
Portugal	8	6	23	44	33	15	25	15	46
Qatar	5	31	26	7	18	41	30	41	41
Russia	3	7	1	47	42	43	1	43	59
Singapore	59	34	58	20	45	57	60	57	50
Slovenia	11	22	19	38	30	28	19	28	57
South Africa (B.)	55	43	48	4	21	37	58	37	45
South Africa (W.)	32	54	30	27	14	50	44	50	26
Spain	25	45	25	48	31	11	17	11	10
Sweden	14	1	59	12	3	60	52	60	53
Switzerland	60	48	60	16	6	23	59	23	8
Taiwan	53	20	42	30	41	47	38	47	19
Thailand	21	5	24	55	47	21	13	21	30
Turkey	17	50	13	51	56	20	26	20	6
USA	50	52	33	13	11	30	46	30	28
Venezuela	2	42	6	40	37	18	10	18	40
Zambia	34	28	31	37	54	49	22	49	5
Zimbabwe	38	26	34	57	40	25	29	25	13

Table 3.A.2: Trade effects of logged cultural distance (aggregate trade): OLS estimation (basic sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	0.184	0.190	0.185	0.188	0.211	0.149	0.192	0.188	0.172	0.186
	(0.139)	(0.139)	(0.137)	(0.139)	(0.139)	(0.140)	(0.139)	(0.140)	(0.141)	(0.138)
RTA_LAG5	-0.986***	-0.986***	-1.029***	-0.987***	-0.993***	-0.919***	-0.999***	-0.982***	-0.976***	-1.001***
	(0.146)	(0.147)	(0.147)	(0.147)	(0.148)	(0.146)	(0.147)	(0.147)	(0.149)	(0.145)
ldist	-1.361***	-1.364***	-1.355***	-1.365***	-1.359***	-1.345***	-1.360***	-1.358***	-1.367***	-1.358***
	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
CNTG	0.403*	0.368*	0.442**	0.382*	0.393*	0.442*	0.394*	0.392*	0.370*	0.385*
	(0.174)	(0.177)	(0.171)	(0.175)	(0.178)	(0.173)	(0.174)	(0.175)	(0.176)	(0.174)
comcur	-1.238***	-1.225***	-1.283***	-1.211***	-1.249***	-1.215***	-1.242***	-1.217***	-1.201***	-1.225***
	(0.298)	(0.304)	(0.294)	(0.299)	(0.299)	(0.298)	(0.299)	(0.304)	(0.301)	(0.298)
CLNY	0.608***	0.617***	0.587***	0.616***	0.623***	0.537***	0.605***	0.617***	0.628***	0.603***
	(0.133)	(0.132)	(0.132)	(0.130)	(0.132)	(0.136)	(0.132)	(0.132)	(0.132)	(0.132)
ln(cultdist)	0.022	0.002	-0.050*	-0.050	0.031	-0.076*	-0.019	-0.012	-0.054	-0.071
	(0.026)	(0.026)	(0.025)	(0.029)	(0.024)	(0.030)	(0.026)	(0.025)	(0.030)	(0.074)
N	2765	2759	2755	2757	2759	2756	2765	2761	2761	2773
adj. R^2	0.841	0.841	0.842	0.841	0.841	0.842	0.841	0.841	0.842	0.841
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: ln(trade value). Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, see table 3.2. Estimation (10) uses the average of all 9 dimensions.
Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together.
Standard errors are clustered at the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.3: Trade effects of logged cultural distance (homogeneous goods): OLS estimation (basic sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	0.035	0.046	0.035	0.037	0.066	-0.003	0.046	0.038	0.035	0.040
	(0.140)	(0.141)	(0.140)	(0.141)	(0.140)	(0.141)	(0.140)	(0.141)	(0.143)	(0.140)
RTA_LAG5	-0.586***	-0.605***	-0.614***	-0.594***	-0.598***	-0.526***	-0.608***	-0.580***	-0.582***	-0.603***
	(0.147)	(0.148)	(0.147)	(0.148)	(0.149)	(0.147)	(0.148)	(0.148)	(0.150)	(0.146)
ldist	-1.400***	-1.400***	-1.396***	-1.402***	-1.395***	-1.386***	-1.400***	-1.395***	-1.397***	-1.395***
	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)
CNTG	0.407*	0.398*	0.443**	0.380*	0.405*	0.438**	0.390*	0.390*	0.387*	0.385*
	(0.164)	(0.165)	(0.161)	(0.165)	(0.167)	(0.163)	(0.164)	(0.165)	(0.165)	(0.164)
comcur	-1.068***	-1.065***	-1.100***	-1.024***	-1.079***	-1.039***	-1.073***	-1.034***	-1.022***	-1.046***
	(0.266)	(0.265)	(0.263)	(0.267)	(0.266)	(0.263)	(0.263)	(0.266)	(0.268)	(0.265)
CLNY	0.591***	0.577***	0.578***	0.595***	0.601***	0.523***	0.579***	0.602***	0.619***	0.585***
	(0.133)	(0.131)	(0.132)	(0.130)	(0.132)	(0.135)	(0.131)	(0.131)	(0.131)	(0.131)
ln(cultdist)	0.035	0.031	-0.025	-0.049	0.017	-0.067*	-0.037	-0.022	-0.092**	-0.072
	(0.030)	(0.030)	(0.027)	(0.030)	(0.027)	(0.033)	(0.028)	(0.028)	(0.030)	(0.083)
N	2670	2664	2661	2662	2665	2662	2670	2666	2667	2678
adj. R^2	0.784	0.785	0.784	0.786	0.784	0.785	0.784	0.785	0.785	0.784
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: ln(trade value). Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, see table 3.2. Estimation (10) uses the average of all 9 dimensions. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together.
Standard errors are clustered at the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.4: Trade effects of logged cultural distance (differentiated goods): OLS estimation (basic sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	0.347*	0.334*	0.328*	0.344*	0.352*	0.311*	0.349*	0.354*	0.320*	0.336*
	(0.156)	(0.156)	(0.154)	(0.156)	(0.156)	(0.157)	(0.156)	(0.156)	(0.159)	(0.155)
RTA_LAG5	-1.228***	-1.214***	-1.268***	-1.215***	-1.213***	-1.163***	-1.223***	-1.225***	-1.206***	-1.234***
	(0.163)	(0.163)	(0.164)	(0.163)	(0.165)	(0.164)	(0.164)	(0.162)	(0.167)	(0.163)
ldist	-1.409***	-1.421***	-1.410***	-1.415***	-1.414***	-1.401***	-1.407***	-1.411***	-1.422***	-1.408***
	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
CNTG	0.384*	0.364	0.442*	0.381*	0.385*	0.435*	0.400*	0.403*	0.360	0.380*
	(0.188)	(0.192)	(0.184)	(0.188)	(0.191)	(0.186)	(0.188)	(0.187)	(0.190)	(0.188)
comcur	-1.364***	-1.412***	-1.471***	-1.376***	-1.411***	-1.394***	-1.395***	-1.429***	-1.376***	-1.392***
	(0.354)	(0.359)	(0.349)	(0.356)	(0.354)	(0.355)	(0.354)	(0.358)	(0.358)	(0.353)
CLNY	0.650***	0.678***	0.638***	0.673***	0.682***	0.600***	0.668***	0.654***	0.677***	0.657***
	(0.145)	(0.143)	(0.144)	(0.142)	(0.144)	(0.147)	(0.143)	(0.143)	(0.143)	(0.144)
ln(cultdist)	-0.042	0.017	-0.076***	-0.079**	0.037	-0.066*	-0.005	0.035	-0.020	-0.090
	(0.025)	(0.026)	(0.023)	(0.028)	(0.023)	(0.027)	(0.025)	(0.022)	(0.028)	(0.069)
N	2714	2708	2704	2706	2708	2705	2714	2710	2710	2722
adj. R^2	0.887	0.887	0.887	0.887	0.886	0.887	0.887	0.887	0.887	0.887
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: ln(trade value). Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, see Table 3.2. Estimation (10) uses the average of all 9 dimensions.
Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together.
Standard errors are clustered at the country-pair level, *** $p<0.001$,** $p<0.01$, * $p<0.05$

Table 3.A.5: Trade effects of logged cultural distance (aggregate trade): PPML estimation (basic sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	0.490***	0.500***	0.504***	0.494***	0.486***	0.470***	0.527***	0.485***	0.419**	0.501***
	(0.132)	(0.132)	(0.132)	(0.132)	(0.131)	(0.132)	(0.131)	(0.130)	(0.129)	(0.132)
RTA_LAG5	0.168	0.152	0.138	0.090	0.099	0.171	0.147	0.156	0.239*	0.155
	(0.121)	(0.125)	(0.120)	(0.123)	(0.127)	(0.122)	(0.120)	(0.121)	(0.118)	(0.123)
ldist	-0.608***	-0.611***	-0.607***	-0.625***	-0.634***	-0.631***	-0.609***	-0.610***	-0.608***	-0.610***
	(0.041)	(0.042)	(0.042)	(0.043)	(0.041)	(0.038)	(0.041)	(0.041)	(0.042)	(0.041)
CNTG	0.607***	0.582***	0.589***	0.574***	0.589***	0.555***	0.571***	0.587***	0.599***	0.585***
	(0.087)	(0.086)	(0.088)	(0.082)	(0.091)	(0.086)	(0.085)	(0.087)	(0.084)	(0.087)
comcur	-0.475*	-0.485*	-0.478*	-0.406*	-0.442*	-0.456*	-0.492*	-0.449*	-0.396*	-0.463*
	(0.201)	(0.206)	(0.198)	(0.199)	(0.189)	(0.199)	(0.196)	(0.202)	(0.194)	(0.198)
CLNY	0.032	0.041	0.043	0.055	0.007	0.098	0.060	0.055	0.047	0.040
	(0.099)	(0.099)	(0.098)	(0.101)	(0.099)	(0.095)	(0.096)	(0.098)	(0.099)	(0.099)
ln(cultdist)	0.031	0.010	-0.026	-0.067**	0.090***	0.042	-0.056**	-0.024	-0.048*	0.006
	(0.019)	(0.028)	(0.018)	(0.022)	(0.017)	(0.026)	(0.019)	(0.018)	(0.020)	(0.072)
N	2765	2759	2755	2757	2759	2756	2765	2761	2761	2773
R^2	0.057	0.059	0.060	0.060	0.060	0.058	0.059	0.059	0.061	0.059
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{\lvert(cultural\_dimension_i - cultural\_dimension_j)\rvert}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see Table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.6: Trade effects of logged cultural distance (homogeneous goods): PPML estimation (basic sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	0.069	0.079	0.076	0.076	0.070	0.034	0.096	0.052	-0.018	0.076
	(0.150)	(0.150)	(0.147)	(0.151)	(0.148)	(0.152)	(0.151)	(0.150)	(0.144)	(0.150)
RTA_LAG5	0.443**	0.442**	0.399**	0.407**	0.522***	0.463**	0.420**	0.436**	0.529***	0.434**
	(0.146)	(0.150)	(0.142)	(0.150)	(0.153)	(0.148)	(0.146)	(0.146)	(0.141)	(0.148)
ldist	-0.797***	-0.794***	-0.796***	-0.802***	-0.799***	-0.833***	-0.798***	-0.797***	-0.795***	-0.800***
	(0.049)	(0.049)	(0.049)	(0.050)	(0.048)	(0.044)	(0.049)	(0.047)	(0.049)	(0.048)
CNTG	0.484***	0.463***	0.473***	0.461***	0.511***	0.411***	0.455***	0.465***	0.477***	0.467***
	(0.072)	(0.073)	(0.074)	(0.073)	(0.075)	(0.073)	(0.074)	(0.074)	(0.071)	(0.073)
comcur	-0.426	-0.385	-0.450*	-0.385	-0.419	-0.392	-0.440*	-0.383	-0.337	-0.414
	(0.225)	(0.227)	(0.221)	(0.237)	(0.217)	(0.226)	(0.224)	(0.228)	(0.216)	(0.224)
CLNY	-0.058	-0.045	-0.045	-0.046	-0.064	0.106	-0.036	-0.011	-0.039	-0.050
	(0.129)	(0.126)	(0.127)	(0.129)	(0.127)	(0.108)	(0.125)	(0.124)	(0.128)	(0.128)
ln(cultdist)	0.025	-0.031	-0.048**	-0.024	0.064**	0.092**	-0.042	-0.053**	-0.053*	0.027
	(0.021)	(0.031)	(0.017)	(0.025)	(0.021)	(0.032)	(0.023)	(0.020)	(0.025)	(0.079)
N	2670	2664	2661	2662	2665	2662	2670	2666	2667	2678
R^2	0.059	0.061	0.061	0.061	0.073	0.059	0.060	0.061	0.062	0.060
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see Table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.7: Trade effects of logged cultural distance (differentiated goods): PPML estimation (basic sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	0.709***	0.712***	0.722***	0.711***	0.689***	0.698***	0.753***	0.713***	0.638***	0.721***
	(0.149)	(0.148)	(0.149)	(0.146)	(0.148)	(0.148)	(0.146)	(0.144)	(0.147)	(0.150)
RTA_LAG5	0.022	-0.004	0.002	-0.093	-0.157	0.009	0.001	0.006	0.089	0.006
	(0.131)	(0.134)	(0.130)	(0.129)	(0.137)	(0.130)	(0.129)	(0.130)	(0.127)	(0.132)
ldist	-0.532***	-0.543***	-0.534***	-0.558***	-0.585***	-0.548***	-0.532***	-0.536***	-0.535***	-0.535***
	(0.047)	(0.048)	(0.048)	(0.048)	(0.047)	(0.047)	(0.047)	(0.047)	(0.048)	(0.048)
CNTG	0.662***	0.631***	0.639***	0.622***	0.609***	0.630***	0.621***	0.638***	0.653***	0.637***
	(0.104)	(0.101)	(0.104)	(0.096)	(0.111)	(0.103)	(0.101)	(0.103)	(0.101)	(0.105)
comcur	-0.544*	-0.584*	-0.536*	-0.469*	-0.497*	-0.541*	-0.559*	-0.532*	-0.466*	-0.533*
	(0.245)	(0.249)	(0.239)	(0.229)	(0.229)	(0.241)	(0.238)	(0.243)	(0.236)	(0.240)
CLNY	0.083	0.093	0.093	0.117	0.041	0.084	0.114	0.096	0.098	0.092
	(0.103)	(0.102)	(0.102)	(0.103)	(0.102)	(0.107)	(0.100)	(0.104)	(0.102)	(0.102)
ln(cultdist)	0.038	0.033	-0.006	-0.095***	0.114***	0.007	-0.059**	-0.008	-0.049*	0.003
	(0.021)	(0.029)	(0.021)	(0.023)	(0.019)	(0.027)	(0.021)	(0.020)	(0.022)	(0.078)
N	2714	2708	2704	2706	2708	2705	2714	2710	2710	2722
R^2	0.050	0.052	0.052	0.052	0.047	0.051	0.052	0.052	0.054	0.052
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see Table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** $p<0.001$,** $p<0.01$, * $p<0.05$

Table 3.A.8: Trade effects of logged cultural distance (aggregate trade): PPML estimation (basic sample+zeros in trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	0.490***	0.500***	0.503***	0.493***	0.486***	0.470***	0.527***	0.485***	0.418**	0.501***
	(0.132)	(0.132)	(0.131)	(0.132)	(0.131)	(0.132)	(0.130)	(0.130)	(0.129)	(0.132)
RTA_LAG5	0.167	0.150	0.137	0.088	0.097	0.169	0.145	0.154	0.237*	0.154
	(0.121)	(0.125)	(0.120)	(0.123)	(0.127)	(0.122)	(0.120)	(0.121)	(0.118)	(0.123)
ldist	-0.608***	-0.611***	-0.607***	-0.625***	-0.634***	-0.631***	-0.609***	-0.610***	-0.608***	-0.610***
	(0.041)	(0.042)	(0.042)	(0.043)	(0.041)	(0.038)	(0.041)	(0.041)	(0.042)	(0.041)
CNTG	0.608***	0.582***	0.589***	0.574***	0.589***	0.555***	0.571***	0.587***	0.599***	0.586***
	(0.087)	(0.086)	(0.088)	(0.082)	(0.091)	(0.086)	(0.085)	(0.087)	(0.084)	(0.087)
comcur	-0.477*	-0.486*	-0.478*	-0.408*	-0.443*	-0.456*	-0.492*	-0.450*	-0.397*	-0.464*
	(0.201)	(0.206)	(0.198)	(0.199)	(0.188)	(0.199)	(0.196)	(0.202)	(0.194)	(0.198)
CLNY	0.031	0.040	0.042	0.054	0.006	0.097	0.059	0.054	0.046	0.039
	(0.099)	(0.099)	(0.098)	(0.101)	(0.099)	(0.095)	(0.096)	(0.098)	(0.099)	(0.099)
ln(cultdist)	0.032	0.010	-0.025	-0.068**	0.090***	0.042	-0.055**	-0.024	-0.048*	0.010
	(0.019)	(0.028)	(0.018)	(0.022)	(0.017)	(0.026)	(0.019)	(0.018)	(0.020)	(0.072)
N	2956	2956	2952	2952	2954	2952	2960	2954	2956	2970
R^2	0.057	0.059	0.060	0.060	0.060	0.058	0.059	0.059	0.061	0.059
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see Table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.9: Trade effects of logged cultural distance (homogeneous goods): PPML estimation (basic sample+zeros in trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	0.073	0.084	0.080	0.080	0.074	0.038	0.100	0.056	-0.014	0.080
	(0.150)	(0.150)	(0.148)	(0.151)	(0.148)	(0.152)	(0.152)	(0.150)	(0.144)	(0.150)
RTA_LAG5	0.439**	0.436**	0.394**	0.401**	0.516***	0.457**	0.414**	0.431**	0.524***	0.430**
	(0.146)	(0.150)	(0.142)	(0.150)	(0.153)	(0.148)	(0.146)	(0.146)	(0.141)	(0.148)
ldist	-0.796***	-0.793***	-0.795***	-0.801***	-0.798***	-0.832***	-0.797***	-0.796***	-0.794***	-0.799***
	(0.049)	(0.049)	(0.049)	(0.050)	(0.048)	(0.044)	(0.049)	(0.047)	(0.049)	(0.048)
CNTG	0.486***	0.463***	0.473***	0.461***	0.511***	0.411***	0.456***	0.466***	0.477***	0.468***
	(0.072)	(0.074)	(0.074)	(0.073)	(0.075)	(0.074)	(0.074)	(0.074)	(0.072)	(0.074)
comcur	-0.432	-0.390	-0.453*	-0.389	-0.422	-0.396	-0.443*	-0.386	-0.341	-0.419
	(0.225)	(0.227)	(0.221)	(0.237)	(0.217)	(0.226)	(0.224)	(0.228)	(0.216)	(0.224)
CLNY	-0.058	-0.046	-0.045	-0.047	-0.065	0.104	-0.038	-0.011	-0.040	-0.050
	(0.129)	(0.126)	(0.127)	(0.130)	(0.127)	(0.109)	(0.125)	(0.124)	(0.128)	(0.128)
ln(cultdist)	0.027	-0.030	-0.048**	-0.025	0.066**	0.091**	-0.040	-0.054**	-0.053*	0.032
	(0.021)	(0.031)	(0.017)	(0.025)	(0.021)	(0.032)	(0.023)	(0.020)	(0.026)	(0.079)
N	2956	2956	2952	2952	2954	2952	2960	2954	2956	2970
R^2	0.059	0.060	0.061	0.061	0.073	0.059	0.060	0.061	0.062	0.060
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see Table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.10: Trade effects of logged cultural distance (differentiated goods): PPML estimation (basic sample+zeros in trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	0.709***	0.712***	0.722***	0.711***	0.689***	0.698***	0.753***	0.713***	0.638***	0.721***
	(0.149)	(0.148)	(0.149)	(0.146)	(0.148)	(0.148)	(0.146)	(0.144)	(0.147)	(0.150)
RTA_LAG5	0.022	-0.005	0.001	-0.094	-0.158	0.008	0.000	0.005	0.088	0.005
	(0.131)	(0.134)	(0.130)	(0.129)	(0.137)	(0.130)	(0.129)	(0.130)	(0.127)	(0.132)
ldist	-0.533***	-0.543***	-0.534***	-0.559***	-0.586***	-0.548***	-0.532***	-0.536***	-0.535***	-0.535***
	(0.047)	(0.048)	(0.048)	(0.048)	(0.046)	(0.047)	(0.047)	(0.047)	(0.048)	(0.048)
CNTG	0.662***	0.630***	0.638***	0.622***	0.609***	0.629***	0.621***	0.638***	0.653***	0.637***
	(0.104)	(0.101)	(0.104)	(0.096)	(0.111)	(0.103)	(0.101)	(0.103)	(0.101)	(0.105)
comcur	-0.545*	-0.585*	-0.537*	-0.470*	-0.497*	-0.542*	-0.559*	-0.533*	-0.466*	-0.534*
	(0.245)	(0.249)	(0.239)	(0.229)	(0.229)	(0.241)	(0.238)	(0.243)	(0.236)	(0.240)
CLNY	0.083	0.093	0.092	0.117	0.040	0.084	0.114	0.096	0.097	0.092
	(0.103)	(0.102)	(0.102)	(0.103)	(0.103)	(0.107)	(0.100)	(0.104)	(0.102)	(0.102)
ln(cultdist)	0.039	0.033	-0.006	-0.095***	0.114***	0.007	-0.059**	-0.008	-0.049*	0.004
	(0.021)	(0.029)	(0.021)	(0.023)	(0.019)	(0.027)	(0.021)	(0.020)	(0.022)	(0.078)
N	2956	2956	2952	2952	2954	2952	2960	2954	2956	2970
R^2	0.050	0.052	0.052	0.052	0.047	0.051	0.052	0.052	0.054	0.052
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see Table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.11: Trade effects of cultural distance (aggregate trade): PPML estimation (basic sample+zeros in trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	0.514***	0.506***	0.503***	0.484***	0.462***	0.488***	0.548***	0.480***	0.503***	0.497***
	(0.131)	(0.131)	(0.132)	(0.130)	(0.132)	(0.133)	(0.130)	(0.130)	(0.130)	(0.132)
RTA_LAG5	0.143	0.120	0.150	0.104	0.170	0.158	0.126	0.139	0.166	0.157
	(0.121)	(0.125)	(0.121)	(0.120)	(0.119)	(0.122)	(0.120)	(0.121)	(0.120)	(0.122)
ldist	-0.610***	-0.618***	-0.609***	-0.622***	-0.636***	-0.622***	-0.608***	-0.612***	-0.591***	-0.612***
	(0.041)	(0.042)	(0.041)	(0.043)	(0.041)	(0.040)	(0.041)	(0.041)	(0.041)	(0.041)
CNTG	0.573***	0.594***	0.584***	0.566***	0.609***	0.570***	0.556***	0.580***	0.623***	0.587***
	(0.088)	(0.084)	(0.087)	(0.083)	(0.085)	(0.083)	(0.086)	(0.088)	(0.087)	(0.087)
comcur	-0.441*	-0.497*	-0.466*	-0.468*	-0.434*	-0.467*	-0.540**	-0.387	-0.456*	-0.464*
	(0.199)	(0.201)	(0.196)	(0.195)	(0.189)	(0.198)	(0.199)	(0.207)	(0.197)	(0.198)
CLNY	0.043	0.034	0.039	0.059	0.016	0.068	0.055	0.058	0.044	0.039
	(0.099)	(0.099)	(0.099)	(0.101)	(0.100)	(0.091)	(0.098)	(0.097)	(0.099)	(0.099)
Cultural distance	-0.716	0.988	-0.023	-1.952***	0.975***	0.451	-1.013**	-0.727	-1.394**	0.314
	(0.477)	(0.599)	(0.269)	(0.544)	(0.207)	(0.525)	(0.347)	(0.393)	(0.531)	(0.883)
N	2970	2970	2970	2970	2970	2970	2970	2970	2970	2970
R^2	0.008	0.006	0.007	0.008	0.006	0.007	0.007	0.008	0.007	0.006
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see Table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.12: Trade effects of cultural distance (homogeneous goods): PPML estimation (basic sample+zeros in trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	0.098	0.084	0.089	0.079	0.063	0.045	0.109	0.050	0.089	0.081
	(0.149)	(0.151)	(0.149)	(0.150)	(0.150)	(0.152)	(0.151)	(0.151)	(0.146)	(0.150)
RTA_LAG5	0.412**	0.422**	0.412**	0.411**	0.457**	0.440**	0.405**	0.408**	0.432**	0.425**
	(0.146)	(0.151)	(0.146)	(0.147)	(0.148)	(0.148)	(0.146)	(0.146)	(0.144)	(0.147)
ldist	-0.797***	-0.797***	-0.796***	-0.800***	-0.809***	-0.837***	-0.796***	-0.801***	-0.777***	-0.798***
	(0.048)	(0.049)	(0.049)	(0.049)	(0.048)	(0.044)	(0.049)	(0.048)	(0.049)	(0.048)
CNTG	0.449***	0.465***	0.463***	0.460***	0.487***	0.422***	0.448***	0.455***	0.505***	0.466***
	(0.073)	(0.073)	(0.074)	(0.075)	(0.071)	(0.072)	(0.074)	(0.073)	(0.075)	(0.074)
comcur	-0.389	-0.418	-0.428	-0.417	-0.401	-0.426	-0.464*	-0.297	-0.415	-0.418
	(0.226)	(0.228)	(0.221)	(0.224)	(0.220)	(0.225)	(0.228)	(0.235)	(0.222)	(0.224)
CLNY	-0.046	-0.050	-0.051	-0.047	-0.066	0.052	-0.042	-0.015	-0.044	-0.050
	(0.127)	(0.126)	(0.128)	(0.130)	(0.129)	(0.107)	(0.127)	(0.125)	(0.128)	(0.128)
Cultural distance	-0.800	0.003	-0.133	-0.555	0.759**	1.395*	-0.573	-1.209**	-1.504*	0.201
	(0.552)	(0.661)	(0.288)	(0.565)	(0.246)	(0.634)	(0.388)	(0.427)	(0.637)	(0.929)
N	2970	2970	2970	2970	2970	2970	2970	2970	2970	2970
R^2	0.006	0.006	0.006	0.006	0.005	0.005	0.006	0.007	0.006	0.006
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see Table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.13: Trade effects of cultural distance (differentiated goods): PPML estimation (basic sample+zeros in trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	0.729***	0.725***	0.714***	0.695***	0.658***	0.727***	0.778***	0.706***	0.722***	0.709***
	(0.149)	(0.146)	(0.150)	(0.145)	(0.149)	(0.151)	(0.146)	(0.145)	(0.147)	(0.151)
RTA_LAG5	-0.002	-0.047	0.017	-0.081	0.010	0.002	-0.024	-0.005	0.021	0.015
	(0.130)	(0.135)	(0.130)	(0.126)	(0.126)	(0.130)	(0.129)	(0.130)	(0.129)	(0.131)
ldist	-0.536***	-0.550***	-0.536***	-0.559***	-0.579***	-0.530***	-0.532***	-0.537***	-0.515***	-0.541***
	(0.047)	(0.049)	(0.047)	(0.048)	(0.046)	(0.050)	(0.047)	(0.046)	(0.047)	(0.048)
CNTG	0.630***	0.649***	0.639***	0.606***	0.664***	0.642***	0.603***	0.634***	0.680***	0.641***
	(0.104)	(0.099)	(0.103)	(0.097)	(0.104)	(0.100)	(0.102)	(0.105)	(0.104)	(0.104)
comcur	-0.519*	-0.583*	-0.523*	-0.545*	-0.493*	-0.533*	-0.617*	-0.481	-0.523*	-0.534*
	(0.241)	(0.245)	(0.238)	(0.232)	(0.229)	(0.240)	(0.240)	(0.250)	(0.238)	(0.239)
CLNY	0.095	0.087	0.093	0.130	0.058	0.082	0.111	0.103	0.097	0.089
	(0.102)	(0.102)	(0.102)	(0.103)	(0.102)	(0.102)	(0.101)	(0.102)	(0.102)	(0.102)
Cultural distance	-0.467	1.513*	0.169	-2.994***	1.216***	-0.170	-1.153**	-0.479	-1.584**	0.701
	(0.545)	(0.649)	(0.312)	(0.600)	(0.234)	(0.540)	(0.392)	(0.443)	(0.587)	(1.033)
N	2970	2970	2970	2970	2970	2970	2970	2970	2970	2970
R^2	0.004	0.002	0.003	0.005	0.003	0.003	0.003	0.004	0.004	0.003
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see Table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.14: Trade effects of cultural distance (aggregate trade): PPML estimation (basic sample+zeros in trade+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist
RTA	-0.577	-0.652	-0.562	-0.652	-0.668*	-0.679*	-0.452	-0.626	-0.581	-0.557
	(0.328)	(0.346)	(0.328)	(0.336)	(0.323)	(0.346)	(0.324)	(0.340)	(0.307)	(0.326)
RTA_LAG5	1.381***	1.406***	1.332***	1.405***	1.429***	1.426***	1.271***	1.384***	1.351***	1.337***
	(0.362)	(0.375)	(0.356)	(0.363)	(0.348)	(0.371)	(0.350)	(0.363)	(0.323)	(0.353)
ldist	-0.369***	-0.402***	-0.384***	-0.396***	-0.395***	-0.418***	-0.363***	-0.405***	-0.335***	-0.362***
	(0.078)	(0.080)	(0.078)	(0.079)	(0.079)	(0.086)	(0.077)	(0.078)	(0.075)	(0.078)
CNTG	0.791***	0.837***	0.807***	0.811***	0.820***	0.805***	0.785***	0.810***	0.930***	0.789***
	(0.157)	(0.153)	(0.153)	(0.154)	(0.161)	(0.155)	(0.154)	(0.153)	(0.153)	(0.153)
comcur	2.754***	2.675***	2.573***	2.666***	2.693***	2.700***	2.492***	2.484***	2.430***	2.621***
	(0.632)	(0.634)	(0.620)	(0.624)	(0.607)	(0.636)	(0.627)	(0.656)	(0.574)	(0.611)
CLNY	0.061	0.066	0.082	0.064	0.066	0.102	0.100	0.044	0.158	0.095
	(0.191)	(0.208)	(0.179)	(0.197)	(0.201)	(0.207)	(0.167)	(0.199)	(0.175)	(0.177)
INTL_BRDR	-0.610	-0.925	-0.776	-0.794	-0.785	-0.780	-0.814	-1.015	-0.813	-0.648
	(0.668)	(0.667)	(0.645)	(0.655)	(0.656)	(0.667)	(0.654)	(0.730)	(0.593)	(0.647)
Cultural distance	-2.533***	2.486*	-1.224	0.384	0.226	1.091	-2.813***	1.010	-6.006***	-3.255*
	(0.703)	(1.132)	(0.658)	(0.822)	(0.471)	(0.913)	(0.747)	(0.843)	(1.051)	(1.425)
N	3136	3136	3136	3136	3136	3136	3136	3136	3136	3136
R^2	0.070	0.068	0.070	0.069	0.070	0.068	0.069	0.069	0.065	0.072
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see Table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.15: Trade effects of cultural distance (homogeneous goods): PPML estimation (basic sample+zeros in trade+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist
RTA	-1.273***	-1.308***	-1.247***	-1.314***	-1.362***	-1.366***	-1.109**	-1.292***	-1.216***	-1.274***
	(0.355)	(0.367)	(0.374)	(0.364)	(0.357)	(0.376)	(0.363)	(0.371)	(0.347)	(0.364)
RTA_LAG5	2.227***	2.239***	2.186***	2.214***	2.309***	2.280***	2.107***	2.227***	2.162***	2.211***
	(0.385)	(0.394)	(0.404)	(0.390)	(0.375)	(0.404)	(0.385)	(0.393)	(0.365)	(0.391)
ldist	-0.578***	-0.593***	-0.586***	-0.602***	-0.593***	-0.638***	-0.553***	-0.596***	-0.504***	-0.580***
	(0.084)	(0.082)	(0.082)	(0.083)	(0.082)	(0.086)	(0.080)	(0.081)	(0.077)	(0.082)
CNTG	0.471**	0.499**	0.482**	0.496**	0.521**	0.467**	0.446**	0.483**	0.609***	0.476**
	(0.157)	(0.155)	(0.155)	(0.154)	(0.161)	(0.155)	(0.157)	(0.154)	(0.169)	(0.154)
comcur	3.314***	3.263***	3.190***	3.294***	3.334***	3.336***	3.086***	3.178***	3.015***	3.238***
	(0.774)	(0.773)	(0.782)	(0.777)	(0.760)	(0.792)	(0.783)	(0.797)	(0.700)	(0.764)
CLNY	0.171	0.161	0.180	0.123	0.147	0.231	0.204	0.159	0.261	0.183
	(0.208)	(0.216)	(0.199)	(0.212)	(0.221)	(0.231)	(0.184)	(0.215)	(0.188)	(0.202)
INTL_BRDR	0.851	0.672	0.745	0.677	0.739	0.765	0.719	0.653	0.703	0.802
	(0.803)	(0.802)	(0.796)	(0.803)	(0.801)	(0.815)	(0.801)	(0.855)	(0.715)	(0.792)
Cultural distance	-1.229	1.519	-0.705	2.593**	0.774	2.310*	-2.638**	0.471	-6.098***	-1.130
	(0.885)	(1.168)	(0.691)	(0.868)	(0.553)	(0.923)	(0.853)	(0.902)	(1.259)	(1.683)
N	3136	3136	3136	3136	3136	3136	3136	3136	3136	3136
R^2	0.022	0.021	0.021	0.020	0.021	0.020	0.021	0.021	0.020	0.022
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see Table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.16: Trade effects of cultural distance (differentiated goods): PPML estimation (basic sample+zeros in trade+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist
RTA	0.526*	0.423	0.450	0.402	0.402	0.399	0.551*	0.420	0.360	0.487*
	(0.260)	(0.271)	(0.242)	(0.259)	(0.255)	(0.267)	(0.237)	(0.261)	(0.223)	(0.246)
RTA_LAG5	0.304	0.333	0.325	0.372	0.361	0.360	0.271	0.338	0.409	0.306
	(0.263)	(0.270)	(0.234)	(0.254)	(0.253)	(0.259)	(0.233)	(0.253)	(0.212)	(0.241)
ldist	-0.266**	-0.312***	-0.290***	-0.294***	-0.300***	-0.307**	-0.277**	-0.315***	-0.268**	-0.264**
	(0.084)	(0.087)	(0.085)	(0.085)	(0.085)	(0.094)	(0.085)	(0.084)	(0.082)	(0.084)
CNTG	0.891***	0.957***	0.904***	0.906***	0.916***	0.915***	0.891***	0.917***	1.016***	0.884***
	(0.154)	(0.152)	(0.153)	(0.149)	(0.156)	(0.153)	(0.152)	(0.152)	(0.148)	(0.152)
comcur	1.795***	1.666***	1.637***	1.664***	1.688***	1.692***	1.570**	1.472**	1.587***	1.668***
	(0.500)	(0.503)	(0.482)	(0.488)	(0.485)	(0.495)	(0.493)	(0.518)	(0.457)	(0.483)
CLNY	0.129	0.167	0.150	0.178	0.154	0.164	0.168	0.120	0.234	0.164
	(0.154)	(0.162)	(0.151)	(0.156)	(0.158)	(0.154)	(0.140)	(0.158)	(0.150)	(0.144)
INTL_BRDR	-1.967***	-2.374***	-2.126***	-2.135***	-2.176***	-2.179***	-2.156***	-2.444***	-2.056***	-1.969***
	(0.557)	(0.563)	(0.542)	(0.540)	(0.548)	(0.549)	(0.549)	(0.621)	(0.503)	(0.548)
Cultural distance	-3.396***	2.939**	-1.164*	-1.362	0.026	0.300	-2.553***	1.195	-5.522***	-3.960**
	(0.675)	(1.103)	(0.582)	(0.822)	(0.447)	(0.901)	(0.693)	(0.845)	(0.940)	(1.336)
N	3136	3136	3136	3136	3136	3136	3136	3136	3136	3136
R^2	0.065	0.064	0.067	0.067	0.066	0.066	0.065	0.065	0.061	0.067
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension)-min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see Table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.17: Trade effects of logged cultural proximity (aggregate trade): OLS estimation (basic sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
RTA	0.190	0.191	0.198	0.189	0.191	0.196	0.195	0.167	0.181	0.189
	(0.139)	(0.139)	(0.138)	(0.139)	(0.140)	(0.138)	(0.139)	(0.141)	(0.140)	(0.138)
RTA_LAG5	-0.988***	-0.994***	-1.022***	-0.988***	-0.925***	-0.975***	-1.002***	-0.979***	-0.981***	-1.001***
	(0.146)	(0.147)	(0.149)	(0.146)	(0.147)	(0.145)	(0.147)	(0.147)	(0.148)	(0.145)
ldist	-1.360***	-1.363***	-1.359***	-1.361***	-1.359***	-1.345***	-1.360***	-1.361***	-1.360***	-1.359***
	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
CNTG	0.392*	0.399*	0.386*	0.393*	0.408*	0.399*	0.392*	0.379*	0.396*	0.388*
	(0.174)	(0.174)	(0.174)	(0.174)	(0.174)	(0.173)	(0.174)	(0.176)	(0.174)	(0.174)
comcur	-1.226***	-1.241***	-1.256***	-1.233***	-1.229***	-1.230***	-1.269***	-1.140***	-1.222***	-1.230***
	(0.299)	(0.298)	(0.296)	(0.298)	(0.298)	(0.296)	(0.297)	(0.309)	(0.298)	(0.297)
CLNY	0.610***	0.609***	0.601***	0.611***	0.629***	0.575***	0.603***	0.623***	0.614***	0.605***
	(0.131)	(0.132)	(0.132)	(0.131)	(0.132)	(0.132)	(0.132)	(0.132)	(0.131)	(0.132)
ln(Proximity)	0.185	-0.418	0.316	0.216	-0.514*	1.053*	0.289	0.558	0.380	0.593
	(0.497)	(0.565)	(0.267)	(0.527)	(0.227)	(0.507)	(0.371)	(0.403)	(0.665)	(0.790)
N	2773	2773	2773	2773	2773	2773	2773	2773	2773	2773
adj. R^2	0.841	0.841	0.841	0.841	0.841	0.842	0.841	0.841	0.841	0.841
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: ln(trade value). Proximity definition: $1-\frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension)-min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. Standard errors are clustered at the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.18: Trade effects of logged cultural proximity (homogeneous goods): OLS estimation (basic sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
RTA	0.047	0.047	0.038	0.042	0.043	0.047	0.048	0.014	0.028	0.042
	(0.140)	(0.140)	(0.141)	(0.140)	(0.141)	(0.140)	(0.140)	(0.142)	(0.142)	(0.140)
RTA_LAG5	-0.590***	-0.604***	-0.576***	-0.590***	-0.562***	-0.581***	-0.604***	-0.579***	-0.577***	-0.602***
	(0.147)	(0.148)	(0.150)	(0.147)	(0.149)	(0.147)	(0.147)	(0.148)	(0.148)	(0.146)
ldist	-1.396***	-1.403***	-1.399***	-1.398***	-1.398***	-1.388***	-1.397***	-1.399***	-1.396***	-1.396***
	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.050)	(0.051)	(0.051)	(0.051)
CNTG	0.390*	0.406*	0.397*	0.394*	0.401*	0.397*	0.393*	0.374*	0.399*	0.389*
	(0.164)	(0.163)	(0.164)	(0.164)	(0.164)	(0.163)	(0.163)	(0.166)	(0.164)	(0.164)
comcur	-1.041***	-1.077***	-1.040***	-1.051***	-1.050***	-1.050***	-1.090***	-0.929***	-1.036***	-1.051***
	(0.266)	(0.265)	(0.264)	(0.265)	(0.265)	(0.264)	(0.267)	(0.278)	(0.265)	(0.265)
CLNY	0.590***	0.586***	0.598***	0.594***	0.601***	0.569***	0.585***	0.609***	0.599***	0.588***
	(0.131)	(0.131)	(0.132)	(0.131)	(0.131)	(0.132)	(0.132)	(0.131)	(0.131)	(0.131)
ln(Proximity)	0.485	-0.967	-0.129	0.032	-0.234	0.718	0.291	0.761	0.747	0.540
	(0.556)	(0.672)	(0.290)	(0.568)	(0.251)	(0.570)	(0.402)	(0.443)	(0.689)	(0.898)
N	2678	2678	2678	2678	2678	2678	2678	2678	2678	2678
adj. R^2	0.784	0.785	0.784	0.784	0.784	0.784	0.784	0.785	0.784	0.784
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: ln(trade value). Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2.
Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together.
Standard errors are clustered at the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.19: Trade effects of logged cultural proximity (differentiated goods): OLS estimation (basic sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
RTA	0.355*	0.343*	0.368*	0.340*	0.343*	0.347*	0.355*	0.359*	0.345*	0.339*
	(0.155)	(0.155)	(0.154)	(0.155)	(0.156)	(0.155)	(0.155)	(0.157)	(0.156)	(0.155)
RTA_LAG5	-1.216***	-1.226***	-1.325***	-1.217***	-1.138***	-1.206***	-1.253***	-1.225***	-1.223***	-1.238***
	(0.163)	(0.163)	(0.168)	(0.163)	(0.164)	(0.162)	(0.165)	(0.163)	(0.164)	(0.164)
ldist	-1.404***	-1.415***	-1.407***	-1.413***	-1.411***	-1.397***	-1.410***	-1.412***	-1.413***	-1.409***
	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
CNTG	0.380*	0.398*	0.367	0.391*	0.410*	0.396*	0.388*	0.405*	0.389*	0.382*
	(0.188)	(0.187)	(0.187)	(0.188)	(0.188)	(0.186)	(0.186)	(0.187)	(0.188)	(0.188)
comcur	-1.371***	-1.414***	-1.480***	-1.405***	-1.398***	-1.400***	-1.497***	-1.480***	-1.404***	-1.399***
	(0.353)	(0.354)	(0.350)	(0.354)	(0.353)	(0.352)	(0.353)	(0.361)	(0.354)	(0.353)
CLNY	0.657***	0.664***	0.634***	0.667***	0.690***	0.631***	0.647***	0.658***	0.666***	0.658***
	(0.143)	(0.143)	(0.144)	(0.142)	(0.143)	(0.144)	(0.143)	(0.143)	(0.142)	(0.144)
ln(Proximity)	1.403**	-0.589	1.007***	0.377	-0.652**	1.056*	0.728*	-0.521	-0.340	0.914
	(0.456)	(0.528)	(0.258)	(0.545)	(0.217)	(0.455)	(0.326)	(0.378)	(0.566)	(0.738)
N	2722	2722	2722	2722	2722	2722	2722	2722	2722	2722
adj. R^2	0.887	0.887	0.887	0.887	0.887	0.887	0.887	0.887	0.887	0.887
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: ln(trade value). Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2.
Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together.
Standard errors are clustered at the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.20: Trade effects of logged cultural proximity (aggregate trade): OLS estimation (basic sample+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
INTL_BRDR	-3.105***	-3.136***	-3.103***	-3.095***	-3.230***	-3.076***	-3.102***	-3.019***	-3.062***	-3.125***
	(0.497)	(0.503)	(0.499)	(0.499)	(0.502)	(0.500)	(0.501)	(0.506)	(0.502)	(0.504)
RTA	0.330*	0.332*	0.332*	0.330*	0.335*	0.335*	0.327*	0.317*	0.319*	0.329*
	(0.157)	(0.157)	(0.157)	(0.158)	(0.158)	(0.157)	(0.156)	(0.161)	(0.158)	(0.158)
RTA_LAG5	-0.896***	-0.902***	-0.906***	-0.896***	-0.813***	-0.885***	-0.892***	-0.891***	-0.887***	-0.892***
	(0.148)	(0.149)	(0.152)	(0.149)	(0.152)	(0.148)	(0.149)	(0.150)	(0.150)	(0.149)
ldist	-1.246***	-1.248***	-1.246***	-1.247***	-1.244***	-1.234***	-1.247***	-1.247***	-1.245***	-1.247***
	(0.071)	(0.072)	(0.071)	(0.071)	(0.071)	(0.072)	(0.071)	(0.071)	(0.071)	(0.071)
CNTG	0.502**	0.506**	0.500**	0.502**	0.526**	0.505**	0.502**	0.493**	0.505**	0.504**
	(0.182)	(0.181)	(0.182)	(0.182)	(0.182)	(0.181)	(0.182)	(0.184)	(0.182)	(0.182)
comcur	-0.912**	-0.922**	-0.920**	-0.916**	-0.910**	-0.914**	-0.900*	-0.856*	-0.903*	-0.912**
	(0.351)	(0.353)	(0.353)	(0.351)	(0.352)	(0.349)	(0.364)	(0.352)	(0.352)	(0.351)
CLNY	0.667***	0.664***	0.664***	0.666***	0.689***	0.637***	0.670***	0.674***	0.671***	0.670***
	(0.128)	(0.128)	(0.129)	(0.128)	(0.129)	(0.129)	(0.129)	(0.128)	(0.128)	(0.129)
ln(Proximity)	0.025	-0.355	0.095	0.206	-0.731**	0.866	-0.094	0.345	0.555	-0.230
	(0.517)	(0.568)	(0.283)	(0.549)	(0.239)	(0.512)	(0.421)	(0.422)	(0.674)	(0.834)
N	2823	2823	2823	2823	2823	2823	2823	2823	2823	2823
adj. R^2	0.841	0.841	0.841	0.841	0.841	0.841	0.841	0.841	0.841	0.841
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: ln(trade value). Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2.
Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together.
Standard errors are clustered at the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.21: Trade effects of logged cultural proximity (homogeneous goods): OLS estimation (basic sample+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
INTL_BRDR	-2.048***	-2.159***	-2.092***	-2.082***	-2.156***	-2.062***	-2.092***	-1.910***	-2.008***	-2.073***
	(0.443)	(0.446)	(0.445)	(0.444)	(0.447)	(0.445)	(0.441)	(0.462)	(0.446)	(0.457)
RTA	0.133	0.133	0.121	0.127	0.130	0.131	0.131	0.102	0.110	0.127
	(0.151)	(0.151)	(0.153)	(0.152)	(0.152)	(0.151)	(0.152)	(0.153)	(0.152)	(0.151)
RTA_LAG5	-0.489**	-0.503***	-0.468**	-0.489**	-0.440**	-0.480**	-0.496**	-0.478**	-0.474**	-0.492**
	(0.151)	(0.151)	(0.155)	(0.151)	(0.154)	(0.150)	(0.151)	(0.152)	(0.152)	(0.151)
ldist	-1.312***	-1.320***	-1.316***	-1.315***	-1.314***	-1.306***	-1.315***	-1.316***	-1.313***	-1.315***
	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)	(0.066)	(0.065)	(0.065)	(0.065)	(0.065)
CNTG	0.470**	0.485**	0.478**	0.473**	0.487**	0.476**	0.473**	0.455**	0.479**	0.472**
	(0.169)	(0.168)	(0.169)	(0.169)	(0.169)	(0.168)	(0.168)	(0.170)	(0.169)	(0.168)
comcur	-0.909***	-0.943***	-0.901***	-0.918***	-0.918***	-0.918***	-0.938***	-0.806**	-0.901***	-0.918***
	(0.268)	(0.268)	(0.268)	(0.268)	(0.268)	(0.267)	(0.269)	(0.281)	(0.269)	(0.268)
CLNY	0.636***	0.634***	0.647***	0.640***	0.653***	0.618***	0.636***	0.655***	0.646***	0.639***
	(0.128)	(0.129)	(0.130)	(0.128)	(0.129)	(0.130)	(0.130)	(0.129)	(0.129)	(0.129)
ln(Proximity)	0.478	-0.930	-0.208	0.034	-0.433	0.634	0.153	0.699	0.942	0.149
	(0.564)	(0.667)	(0.298)	(0.590)	(0.261)	(0.569)	(0.413)	(0.444)	(0.694)	(0.921)
N	2726	2726	2726	2726	2726	2726	2726	2726	2726	2726
adj. R^2	0.784	0.784	0.784	0.784	0.784	0.784	0.784	0.784	0.784	0.784
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: ln(trade value). Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2.
Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together.
Standard errors are clustered at the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.22: Trade effects of logged cultural proximity (differentiated goods): OLS estimation (basic sample+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
INTL_BRDR	-3.782***	-3.921***	-3.853***	-3.858***	-4.032***	-3.850***	-3.894***	-4.081***	-3.889***	-3.883***
	(0.570)	(0.579)	(0.575)	(0.575)	(0.577)	(0.576)	(0.578)	(0.578)	(0.577)	(0.578)
RTA	0.529**	0.518**	0.535**	0.515**	0.521**	0.520**	0.521**	0.542**	0.516**	0.514**
	(0.176)	(0.176)	(0.176)	(0.177)	(0.177)	(0.176)	(0.176)	(0.179)	(0.176)	(0.177)
RTA_LAG5	-1.107***	-1.116***	-1.182***	-1.108***	-1.008***	-1.098***	-1.122***	-1.120***	-1.110***	-1.108***
	(0.163)	(0.163)	(0.168)	(0.163)	(0.167)	(0.162)	(0.165)	(0.163)	(0.164)	(0.164)
ldist	-1.280***	-1.290***	-1.284***	-1.288***	-1.284***	-1.276***	-1.287***	-1.287***	-1.288***	-1.288***
	(0.076)	(0.077)	(0.076)	(0.076)	(0.076)	(0.077)	(0.076)	(0.076)	(0.076)	(0.076)
CNTG	0.491*	0.506**	0.483*	0.499*	0.529**	0.503*	0.499*	0.521**	0.499*	0.500*
	(0.197)	(0.195)	(0.196)	(0.196)	(0.197)	(0.195)	(0.196)	(0.196)	(0.196)	(0.197)
comcur	-1.044*	-1.082**	-1.126**	-1.075**	-1.066**	-1.070**	-1.106**	-1.196**	-1.070**	-1.068**
	(0.405)	(0.408)	(0.407)	(0.405)	(0.406)	(0.405)	(0.420)	(0.402)	(0.407)	(0.406)
CLNY	0.729***	0.736***	0.716***	0.738***	0.766***	0.711***	0.732***	0.724***	0.739***	0.741***
	(0.141)	(0.141)	(0.142)	(0.140)	(0.141)	(0.142)	(0.142)	(0.140)	(0.141)	(0.142)
ln(Proximity)	1.239*	-0.505	0.720*	0.372	-0.896***	0.838	0.288	-0.794	-0.110	-0.046
	(0.487)	(0.542)	(0.285)	(0.584)	(0.239)	(0.475)	(0.399)	(0.408)	(0.587)	(0.818)
N	2772	2772	2772	2772	2772	2772	2772	2772	2772	2772
adj. R^2	0.882	0.881	0.882	0.881	0.882	0.882	0.881	0.882	0.881	0.881
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: ln(trade value). Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2.
Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together.
Standard errors are clustered at the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.23: Trade effects of logged cultural proximity (aggregate trade): PPML estimation (basic sample+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
RTA	-0.593	-0.680*	-0.583	-0.683*	-0.692*	-0.709*	-0.444	-0.681*	-0.613*	-0.546
	(0.329)	(0.346)	(0.329)	(0.336)	(0.324)	(0.347)	(0.322)	(0.343)	(0.308)	(0.322)
RTA_LAG5	1.412***	1.436***	1.356***	1.447***	1.454***	1.459***	1.274***	1.440***	1.382***	1.339***
	(0.366)	(0.377)	(0.359)	(0.364)	(0.352)	(0.373)	(0.349)	(0.370)	(0.326)	(0.350)
ldist	-0.370***	-0.405***	-0.388***	-0.398***	-0.400***	-0.422***	-0.367***	-0.401***	-0.345***	-0.354***
	(0.080)	(0.082)	(0.080)	(0.081)	(0.081)	(0.089)	(0.080)	(0.079)	(0.077)	(0.080)
CNTG	0.771***	0.825***	0.792***	0.793***	0.801***	0.790***	0.767***	0.795***	0.912***	0.767***
	(0.158)	(0.154)	(0.153)	(0.153)	(0.161)	(0.155)	(0.154)	(0.154)	(0.153)	(0.154)
comcur	2.833***	2.713***	2.605***	2.704***	2.725***	2.738***	2.499***	2.685***	2.483***	2.647***
	(0.632)	(0.630)	(0.618)	(0.620)	(0.605)	(0.634)	(0.626)	(0.666)	(0.572)	(0.605)
CLNY	0.116	0.113	0.141	0.133	0.123	0.158	0.151	0.122	0.217	0.161
	(0.187)	(0.205)	(0.173)	(0.193)	(0.197)	(0.204)	(0.159)	(0.197)	(0.170)	(0.165)
INTL_BRDR	-0.507	-0.859	-0.734	-0.715	-0.725	-0.718	-0.773	-0.755	-0.745	-0.538
	(0.668)	(0.663)	(0.642)	(0.649)	(0.652)	(0.665)	(0.653)	(0.730)	(0.591)	(0.638)
ln(Proximity)	2.962***	-2.144*	1.131*	0.354	-0.099	-0.846	2.955***	-0.107	5.627***	4.386***
	(0.624)	(1.037)	(0.561)	(0.766)	(0.387)	(0.798)	(0.658)	(0.712)	(0.986)	(1.272)
N	2823	2823	2823	2823	2823	2823	2823	2823	2823	2823
R^2	0.068	0.068	0.070	0.070	0.070	0.069	0.065	0.069	0.062	0.071
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.24: Trade effects of logged cultural proximity (homogeneous goods): PPML estimation (basic sample+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
[RTA	-1.506***	-1.576***	-1.474***	-1.587***	-1.629***	-1.672***	-1.307***	-1.605***	-1.495***	-1.483***
	(0.337)	(0.350)	(0.353)	(0.346)	(0.337)	(0.364)	(0.344)	(0.353)	(0.333)	(0.343)
RTA_LAG5	2.225***	2.243***	2.157***	2.222***	2.316***	2.314***	2.058***	2.273***	2.178***	2.171***
	(0.378)	(0.386)	(0.391)	(0.381)	(0.366)	(0.403)	(0.377)	(0.388)	(0.362)	(0.379)
ldist	-0.836***	-0.860***	-0.853***	-0.871***	-0.865***	-0.930***	-0.820***	-0.849***	-0.786***	-0.830***
	(0.073)	(0.072)	(0.072)	(0.072)	(0.072)	(0.074)	(0.068)	(0.072)	(0.067)	(0.071)
CNTG	0.267	0.319*	0.292	0.308*	0.331*	0.269	0.239	0.299*	0.398*	0.275
	(0.154)	(0.151)	(0.150)	(0.149)	(0.155)	(0.150)	(0.155)	(0.152)	(0.163)	(0.151)
comcur	1.474**	1.372*	1.236*	1.382*	1.448**	1.397*	1.011	1.560**	1.343**	1.348*
	(0.547)	(0.547)	(0.563)	(0.547)	(0.538)	(0.555)	(0.546)	(0.583)	(0.518)	(0.538)
CLNY	0.201	0.174	0.216	0.152	0.172	0.302	0.225	0.222	0.295	0.231
	(0.197)	(0.212)	(0.185)	(0.206)	(0.214)	(0.226)	(0.169)	(0.208)	(0.176)	(0.184)
INTL_BRDR	-0.328	-0.609	-0.554	-0.580	-0.517	-0.547	-0.673	-0.277	-0.375	-0.362
	(0.565)	(0.562)	(0.554)	(0.561)	(0.570)	(0.564)	(0.544)	(0.616)	(0.521)	(0.548)
ln(Proximity)	2.466***	-1.533	1.062	-1.898*	-0.649	-2.685**	3.321***	0.860	4.980***	2.947
	(0.719)	(1.093)	(0.573)	(0.812)	(0.443)	(0.818)	(0.711)	(0.688)	(1.176)	(1.549)
N	2726	2726	2726	2726	2726	2726	2726	2726	2726	2726
R^2	0.018	0.018	0.018	0.018	0.017	0.017	0.017	0.018	0.018	0.018
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.25: Trade effects of logged cultural proximity (differentiated goods): PPML estimation (basic sample+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
RTA	0.486	0.378	0.408	0.351	0.356	0.350	0.521*	0.360	0.315	0.453
	(0.262)	(0.270)	(0.241)	(0.258)	(0.255)	(0.267)	(0.234)	(0.263)	(0.225)	(0.243)
RTA_LAG5	0.350	0.379	0.365	0.427	0.402	0.409	0.306	0.396	0.449*	0.344
	(0.269)	(0.273)	(0.238)	(0.257)	(0.257)	(0.263)	(0.234)	(0.261)	(0.218)	(0.243)
ldist	-0.264**	-0.310***	-0.290***	-0.294***	-0.303***	-0.306**	-0.279**	-0.310***	-0.274**	-0.256**
	(0.086)	(0.089)	(0.087)	(0.086)	(0.087)	(0.096)	(0.087)	(0.086)	(0.084)	(0.086)
CNTG	0.880***	0.950***	0.896***	0.893***	0.904***	0.906***	0.879***	0.907***	1.002***	0.869***
	(0.155)	(0.153)	(0.154)	(0.149)	(0.156)	(0.153)	(0.152)	(0.152)	(0.148)	(0.152)
comcur	1.882***	1.734***	1.697***	1.731***	1.742***	1.754***	1.618***	1.646**	1.653***	1.736***
	(0.496)	(0.497)	(0.476)	(0.482)	(0.479)	(0.489)	(0.489)	(0.519)	(0.454)	(0.476)
CLNY	0.184	0.214	0.208	0.244	0.209	0.214	0.219	0.193	0.290*	0.222
	(0.147)	(0.158)	(0.144)	(0.149)	(0.151)	(0.148)	(0.133)	(0.152)	(0.143)	(0.134)
INTL_BRDR	-1.861***	-2.289***	-2.057***	-2.039***	-2.101***	-2.100***	-2.087***	-2.226***	-1.987***	-1.846***
	(0.552)	(0.555)	(0.533)	(0.532)	(0.542)	(0.543)	(0.544)	(0.612)	(0.499)	(0.537)
ln(Proximity)	3.563***	-2.567*	1.093*	1.739*	0.051	-0.114	2.617***	-0.487	5.000***	4.605***
	(0.605)	(1.001)	(0.493)	(0.749)	(0.366)	(0.786)	(0.592)	(0.710)	(0.875)	(1.176)
N	2772	2772	2772	2772	2772	2772	2772	2772	2772	2772
R^2	0.062	0.065	0.067	0.066	0.067	0.067	0.062	0.066	0.059	0.067
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** $p<0.001$,** $p<0.01$, * $p<0.05$

Table 3.A.26: Trade effects of logged cultural proximity (aggregate trade): PPML estimation (basic sample+zeros in trade+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
	(0.156)	(0.155)	(0.153)	(0.154)	(0.160)	(0.155)	(0.153)	(0.153)	(0.153)	(0.153)
RTA	-0.579	-0.652	-0.559	-0.652	-0.666*	-0.677*	-0.448	-0.627	-0.581	-0.556
	(0.328)	(0.346)	(0.329)	(0.336)	(0.324)	(0.345)	(0.324)	(0.339)	(0.307)	(0.326)
RTA_LAG5	1.385***	1.405***	1.329***	1.405***	1.427***	1.423***	1.268***	1.383***	1.350***	1.337***
	(0.362)	(0.375)	(0.357)	(0.363)	(0.349)	(0.370)	(0.350)	(0.363)	(0.324)	(0.354)
ldist	-0.369***	-0.403***	-0.384***	-0.396***	-0.395***	-0.418***	-0.362***	-0.406***	-0.335***	-0.362***
	(0.078)	(0.080)	(0.078)	(0.079)	(0.079)	(0.086)	(0.077)	(0.078)	(0.075)	(0.078)
CNTG	0.793***	0.839***	0.806***	0.812***	0.818***	0.805***	0.785***	0.810***	0.927***	0.790***
	(0.157)	(0.153)	(0.153)	(0.154)	(0.161)	(0.155)	(0.153)	(0.153)	(0.153)	(0.153)
comcur	2.758***	2.675***	2.569***	2.673***	2.689***	2.693***	2.485***	2.466***	2.434***	2.620***
	(0.631)	(0.634)	(0.621)	(0.624)	(0.608)	(0.636)	(0.627)	(0.657)	(0.574)	(0.611)
CLNY	0.061	0.066	0.083	0.063	0.067	0.100	0.100	0.044	0.154	0.095
	(0.192)	(0.208)	(0.179)	(0.197)	(0.200)	(0.206)	(0.167)	(0.199)	(0.175)	(0.177)
INTL_BRDR	-0.618	-0.916	-0.790	-0.796	-0.781	-0.780	-0.829	-1.028	-0.822	-0.660
	(0.667)	(0.667)	(0.645)	(0.655)	(0.655)	(0.667)	(0.654)	(0.729)	(0.594)	(0.646)
ln(Proximity)	2.316***	-2.319*	1.039	-0.433	-0.167	-0.948	2.502***	-0.919	5.455***	2.961*
	(0.636)	(1.035)	(0.560)	(0.728)	(0.391)	(0.805)	(0.668)	(0.738)	(0.977)	(1.299)
N	3136	3136	3136	3136	3136	3136	3136	3136	3136	3136
R^2	0.070	0.069	0.070	0.069	0.070	0.069	0.068	0.068	0.063	0.072
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.27: Trade effects of logged cultural proximity (homogeneous goods): PPML estimation (basic sample+zeros in trade+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
RTA	-1.275***	-1.307***	-1.249***	-1.313***	-1.362***	-1.363***	-1.105**	-1.291***	-1.217***	-1.275***
	(0.356)	(0.367)	(0.375)	(0.364)	(0.357)	(0.375)	(0.363)	(0.371)	(0.348)	(0.364)
RTA_LAG5	2.229***	2.238***	2.188***	2.210***	2.309***	2.276***	2.103***	2.225***	2.162***	2.213***
	(0.385)	(0.394)	(0.405)	(0.390)	(0.376)	(0.403)	(0.386)	(0.393)	(0.366)	(0.391)
ldist	-0.579***	-0.593***	-0.586***	-0.603***	-0.594***	-0.638***	-0.554***	-0.597***	-0.504***	-0.580***
	(0.084)	(0.082)	(0.082)	(0.083)	(0.082)	(0.086)	(0.080)	(0.081)	(0.077)	(0.082)
CNTG	0.472**	0.500**	0.482**	0.495**	0.519**	0.467**	0.446**	0.482**	0.605***	0.477**
	(0.157)	(0.155)	(0.155)	(0.154)	(0.160)	(0.155)	(0.157)	(0.154)	(0.168)	(0.154)
comcur	3.312***	3.263***	3.192***	3.293***	3.336***	3.331***	3.070***	3.155***	3.021***	3.246***
	(0.774)	(0.774)	(0.783)	(0.777)	(0.760)	(0.792)	(0.786)	(0.798)	(0.701)	(0.763)
CLNY	0.171	0.161	0.181	0.124	0.149	0.229	0.203	0.158	0.256	0.183
	(0.208)	(0.216)	(0.199)	(0.212)	(0.220)	(0.230)	(0.184)	(0.215)	(0.189)	(0.202)
INTL_BRDR	0.844	0.671	0.738	0.683	0.749	0.771	0.690	0.631	0.694	0.801
	(0.802)	(0.802)	(0.797)	(0.803)	(0.799)	(0.816)	(0.804)	(0.855)	(0.716)	(0.790)
ln(Proximity)	1.095	-1.462	0.562	-2.387**	-0.642	-2.041*	2.323**	-0.478	5.497***	0.983
	(0.798)	(1.073)	(0.591)	(0.758)	(0.460)	(0.815)	(0.760)	(0.792)	(1.160)	(1.530)
N	3136	3136	3136	3136	3136	3136	3136	3136	3136	3136
R^2	0.022	0.021	0.021	0.020	0.021	0.021	0.021	0.021	0.030	0.022
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Table 3.A.28: Trade effects of logged cultural proximity (differentiated goods): PPML estimation (basic sample+zeros in trade+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
RTA	0.524*	0.423	0.455	0.402	0.404	0.400	0.553*	0.419	0.363	0.488*
	(0.260)	(0.271)	(0.242)	(0.260)	(0.255)	(0.267)	(0.236)	(0.261)	(0.224)	(0.245)
RTA_LAG5	0.307	0.335	0.321	0.372	0.359	0.360	0.270	0.339	0.405	0.305
	(0.263)	(0.270)	(0.235)	(0.255)	(0.253)	(0.259)	(0.233)	(0.254)	(0.212)	(0.241)
ldist	-0.265**	-0.311***	-0.290***	-0.293***	-0.300***	-0.306**	-0.277**	-0.315***	-0.268**	-0.263**
	(0.084)	(0.087)	(0.085)	(0.085)	(0.085)	(0.094)	(0.085)	(0.084)	(0.082)	(0.084)
CNTG	0.893***	0.958***	0.904***	0.907***	0.915***	0.915***	0.890***	0.917***	1.014***	0.884***
	(0.154)	(0.152)	(0.153)	(0.149)	(0.155)	(0.153)	(0.152)	(0.152)	(0.148)	(0.152)
comcur	1.794***	1.675***	1.636***	1.671***	1.685***	1.691***	1.565**	1.470**	1.578***	1.667***
	(0.500)	(0.503)	(0.482)	(0.488)	(0.485)	(0.495)	(0.493)	(0.519)	(0.457)	(0.482)
CLNY	0.128	0.168	0.151	0.176	0.154	0.163	0.168	0.122	0.230	0.164
	(0.154)	(0.162)	(0.151)	(0.156)	(0.157)	(0.154)	(0.140)	(0.158)	(0.150)	(0.144)
INTL_BRDR	-1.974***	-2.362***	-2.135***	-2.138***	-2.176***	-2.177***	-2.172***	-2.442***	-2.075***	-1.983***
	(0.556)	(0.562)	(0.541)	(0.541)	(0.548)	(0.549)	(0.549)	(0.620)	(0.503)	(0.547)
ln(Proximity)	3.141***	-2.709**	1.005*	1.151	0.001	-0.229	2.282***	-1.055	5.052***	3.631**
	(0.613)	(1.005)	(0.492)	(0.731)	(0.371)	(0.796)	(0.617)	(0.739)	(0.877)	(1.213)
N	3136	3136	3136	3136	3136	3136	3136	3136	3136	3136
R^2	0.063	0.065	0.067	0.067	0.067	0.067	0.064	0.064	0.060	0.067
Importer, exporter fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

LHS variable: trade value. Proximity definition: $1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show dimensions of cultural distance, estimation (10) uses the average of all 9 dimensions, see table 3.2. Gravity controls include distance, RTA, RTA Lag5, contiguity, common currency, and colonial ties. Following Rauch (1999), homogeneous goods and reference priced goods are grouped together. The R^2 is calculated by hand following Tenreyro. Standard errors are clustered on the country-pair level, *** p<0.001,** p<0.01, * p<0.05

Chapter 4

The Effects of Culture on Trade over Time - New Evidence from the GLOBE Data Set

4.1 Introduction

As discussed in the previous chapter, cultural differences can have an impact on bilateral trade flows. The intuition is that people with the same cultural background tend to trust each other more, speak a similar language, or simply have similar institutions, which can facilitate trade. In the cross-sectional analysis presented in the previous chapter, I show that different cultural dimensions may have differential effects on bilateral trade values: similarity in some dimensions raise trade flows, while similarity in other dimensions reduces trade flows. Moreover, there are cultural dimensions which do not seem to have an impact on trade.

A major concern with the cross-sectional approach that could be raised is a potential endogeneity problem. Especially trade policy variables are potentially not exogeneous and may be correlated with unobservable cross-sectional trade costs. To overcome this issue, Baier and Bergstrand (2007) suggest to use panel data together with country pair fixed effects. In this chapter, I therefore turn to a panel data approach.[1] Within this framework, I can ask how the importance of cultural dimensions on trade flows has changed over time. The value of world exports has experienced a meteoric rise from an export value of 3,375 billion $ in 1990 to over 17,513 billion $ in 2017.[2] Overall transportation costs have fallen, trade agreements reach an all time high, and information can be sent without delay anywhere across the globe. What does this process mean for the influence of cultural differences on trade? On the one hand it may be possible that due to increased globalization the world has grown closer together and cultural differences have lost their importance for international trade. On the other hand, it could be possible that the fear of losing cultural identity has grown, leading to a stronger impact *because* of the globalization process.

To answer this question, I estimate several specifications of the gravity equation by means of a pseudo-poisson maximum likelihood (PPML) estimation which includes zeros and intra-national trade flows (Yotov, 2012) together with a comprehensive set of fixed effects. I treat cultural distance similarly to geographical distance, therefore the measure enters the trade costs function. As a proxy for cultural distance I use the Global Leadership and Organizational Behavioral Effectiveness (GLOBE) research study of cross-cultural interactions (House et al., 2013), which identifies nine cultural dimensions. To analyze if these dimensions affect certain groups of industries differently, I make use of the product classification by Rauch (1999).

The results show that the effect of cultural distance on trade is not persistent but varies over time for many of the nine GLOBE dimensions. However, the effects do not follow a clear trend and depend on the cultural dimensions analyzed. Bilateral trade flows have become more responsive to some cultural dimensions and less responsive to others, relative to the effect in the base year. In addition, several significant effects are only driven by trade with goods that are not traded on organized exchanges, whereas the influence of other dimensions matters only for goods that are classified to be homogeneous. To my knowledge, this finding has not been widely discussed in the literature.

The remainder of this chapter is structured as follows: In the next section gives a short overview of the related literature regarding the estimation of time-invariant trade costs. Section 4.3 describes the GLOBE research study and its dimensions. Then, I explain the indices for measuring cultural distance and proximity as well as the composition of the data set. Section 4.5 provides an overview of the estimation specifications. In section 4.6 I present my results and discuss them and offer a short

[1] The methodology and data closely match the approach presented in Chapter 3.
[2] Source: IMF data on FOB Exports

conclusion and an outlook in section 4.7.

4.2 Related literature

Substantial research has been done in the field of cultural impacts on trade. An overview of recent empirical studies which use proxies for cultural differences and their impact on trade can be found in chapter 3 and is therefore not repeated here. The most important insight from the previous review is that size and direction of the impact vary across studies and depend on the choice of the proxies for culture.

With my proxy I assume that cultural differences are persistent or take a long time to change. Therefore, I treat them as part of time-invariant trade costs. It is a challenge to consistently estimate the effect of such time-invariant trade costs on trade values within a gravity framework. An example is the literature regarding the so called "distance-elasticity puzzle". For many years, empirical findings did not support the anecdotal evidence that distance effects of bilateral trade flows have declined over time (Disdier & Head, 2008). Below I discuss some recent examples of empirical work concerning this issue. The common feature is that they all use yearly interactions with the distance measure in order to quantify the change of the effect and the estimation method PPML.

Yotov (2012) finds a solution to the distance puzzle in international goods trade. He states that previous researchers using structural gravity only identified relative international trade costs relative to other relative international trade costs. That is the reason, why the negative effect of distance remains roughly constant over time. He stresses the importance to include intra-national trade flows and intra-national distances in order to identify the impact of international trade costs on international trade relative to intra-national trade costs. Together with distance-time interactions, he finds that the relative effects of distance effects on commodity trade flows have dropped significantly between 1965 and 2005. A similar strategy is applied by Anderson and Yotov (2017) with data from 1988 to 2006. In contrast to Yotov (2012), they do not find evidence for a declining but for a persistent effect of bilateral distance on the value of trade. By using data on global bank linkages between countries instead of trade flows, Brei and von Peter (2018) uncover that the effect of distance on assets and liabilities of banks from 1977 to 2012 is similar to the distance effect on trade, even though transport costs are immaterial. The distance effect is substantially negative but decreases over time. Instead of intra-national trade they use domestic banking activity for their regression. However, all three approaches potentially suffer from omitted variable bias, as they do not control for unobserved heterogeneity across country pairs by including pair fixed effects (Baier & Bergstrand, 2007). Bosquet and Boulhol (2015) include pair fixed effects in their analysis but do not account for intra-national trade flows and no intra-national distances. By analyzing bilateral trade flows between 1952 and 2006, they find no evidence for a declining effect of bilateral distance elasticities. Following Yotov (2012) in his arguments, their interpretation of the results is flawed. Bergstrand et al. (2015) address these issues in their paper and make use of intra-national distance, intra-national trade flows, and include pair fixed effects together with importer- and exporter-year fixed effects in order to consistently estimate the effects of distance on trade. They conclude that the negative effect of bilateral distance on international trade flows has decreased by 1.2 percent per year for the interval from 1990 to 2002.

Since I am interested in how the influence of cultural differences changes over time, I follow the methodology of Bergstrand et al. (2015) in my analysis.

4.3 Cultural distance dimensions

The well-known WVS data set consists of interviews with 1,000 randomly chosen people per country. In contrast, the GLOBE research program by House et al. (2013) sent its questionnaires exclusively to middle managers from 951 organizations from the sectors financial services, food processing, and telecommunications across 60 different cultures between the years 1994 and 1997. The same three sectors are present in all countries across the survey and their setup is quite similar across countries but each one is fundamentally different compared to the other two. This deliberate limitation explains, why the size of the GLOBE survey is smaller than, e.g., the WVS. However, it may still be a relevant alternative to measure cultural distance, as the cultural believes of business leaders are actually more important for international trade than the believes of the remaining population. This is due to the fact that these managers actually have the power to influence the decision whether or not to trade with partners across borders. I add to the literature as this group of people may share cultural views that fundamentally differ from the rest of the population. The GLOBE research program builds on the cultural dimensions introduced by Hofstede (2001) and Hofstede et al. (2010)[3] but implements additional dimensions. The survey identifies nine cultural dimensions in total that are potentially important when analyzing an international business

[3]Their dimensions are called *individualism versus collectivism*, *uncertainty avoidance*, *power distance*, *masculinity versus femininity*, and *long term orientation*

partner. In the following I briefly introduce each of these dimensions.

Performance orientation reflects the amount to which a society encourages and rewards innovation and improvement of its members. *Assertiveness* reflects the degree to which members belonging to a society are firm, tough, dominant, and aggressive in social relationships. *Power distance* reflects the degree to which members of a society accept and approve that power should be shared unevenly. *In-group collectivism* can be interpreted whether children take pride in the individual accomplishments of their parents and vice versa, whether parents tend to live at home with their children when they get older, and whether children live at home with their parents until they get married. *Institutional collectivism* shows the degree to which firms and societal institutional practices encourage and reward collective action and collective distribution of resources. *Future orientation* mirrors the extent to which members of a society believe that their current actions will influence their future. *Humane orientation* reflects the degree to which a society encourages and rewards its members for being fair, altruistic, friendly, generous, caring, and kind to others. *Gender egalitarianism* is a measure for the ways in which societies divide roles between women and men.

I provide a detailed description of the nine cultural dimensions in the previous chapter. Furthermore, I give information about the mean and the standard deviation for each dimension and offer a detailed list of all countries within the GLOBE survey as well as their ranking.[4]

4.4 Data

The GLOBE indicators listed above stem from House et al. (2013). The methods of generating the measures for cultural distance and proximity are identical to the ones in the previous chapter. I compute the absolute value of the difference between any two countries i and j for each of the nine culture dimensions and divide it by 6:

$$cult\_dist_{ij} = \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$$

The drawback of this measure is once again that after taking logs of cultural dis-

[4] For a detailed illustration on how the survey is executed, see House et al. (2013), Part III and IV.

tances, country pairs with zero distance are omitted. Therefore, *cultural proximity* is computed, where zero distance translates to a proximity value of unity.

$$cult\_prox_{ij} = 1 - \frac{|(cult\_dimension_i - cult\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$$

Additionally, I generate measures for the average effect of cultural distance and proximity. The composition of the data set is similar to chapter 3. However, instead of cross-sectional data I now extract panel data. The source of bilateral export data on the 6-digit industry level, which originally stems from COMTRADE, is provided by CEPII's BACI for years after 1994 (Gaulier & Zignago, 2010). Information about intra-national trade at the 3-digit level is taken from the Trade-Prod data base by CEPII (de Sousa et al., 2012). This allows to consistently estimate time invariant trade costs (Yotov, 2012) and to capture the effects of globalization on international trade (Bergstrand et al., 2015). Additional controls like active RTAs, bilateral distance, contiguity, colonial background, and common currency come from CEPII's Gravity (Head et al. (2010) and Head and Mayer (2014)).

Like in chapter 3, I do not just use aggregate trade flows but I allow for the possibility that cultural distance potentially influences some industries differently by using the product classification by Rauch (1999). The product categories are called *homogeneous goods* and *differentiated goods*.

Since trade flows do not adjust on a yearly basis I restrict my sample to three-year intervals as suggested by Olivero and Yotov (2012). The final data set contains about 12,000 country pair observations with four three-year intervals ranging from 1995 to 2004. Covered within the sample are seven African countries, 12 countries from America, 15 from Asia, 18 from Europe, and four from the Middle East. The minimum and maximum values, the mean, and the standard deviation of the distance and proximity dimensions are identical to the ones in previous chapter and can be found in the <Table 3.2, which yields the summary statistics for the cross sectional data set. The same holds true regarding the number of country pairs which share a colonial background and a common border. Differences arise in the number of countries with a common currency. Their number has increased from 96 to 151[5] and the number of active RTAs has increased from 316 to 592.

[5] This increase is mainly due to the introduction of the Euro in the year 2002.

4.5 Estimation strategy

The PPML approach proposed by Santos Silva and Tenreyro (2006) that I use in this chapter has several advantages over the traditional OLS. First, PPML makes use of the multiplicative instead of the logarithmic form of the gravity model. Therefore, it is possible to include observations with zero trade flows. Second, in the presence of heteroscedasticity the estimation of the gravity equation in log-linear form is potentially biased and inconsistent, the PPML performs well under these circumstances.

Specification (4.1) is designed to yield the average effect of cultural distance on trade:

$$X_{ij,t} = exp\Bigg[\beta_1 ln(cult\_dist_{ij}) + \boldsymbol{GRAVITY'_{ij}} * \boldsymbol{\beta} + \sum_{k=0}^{9} RTA_{ij,t-k} + \lambda_{i,t} + \gamma_{j,t}\Bigg] * \mu_{ij,t} \quad (4.1)$$

The left-hand side of this baseline regression denotes the value of exports from country i to country j in period t. The variable of interest, $ln(cult\_dist_{ij})$, denotes the log of bilateral cultural distance between exporter i and importer j based on the nine GLOBE dimensions and their average effect. The vector $\boldsymbol{GRAVITY_{ij}}$ includes the log of bilateral distance and the other time-invariant bilateral control variables common border, common currency, and colonial background. $RTA_{ij,t}$ is a dummy variable that takes the value of unity if an RTA is active between i and j in period t together with 3-, 6-, and 9-year lags. This allows for phasing-in effects of RTAs. $\lambda_{i,t}$ and $\gamma_{j,t}$ capture exporter-time and importer-time fixed effects, respectively. The error term is given by $\mu_{ij,t}$.

This approach most likely suffers from endogeneity because of omitted variable bias. Therefore, pair fixed effects are included in specification (4.2) to properly account for multilateral resistance between country pairs (Baier & Bergstrand, 2007). Because of perfect collinearity with the fixed effects, the standard time-invariant gravity controls can no longer be estimated. Furthermore, it is not possible to estimate the effects of cultural distance for all years in the sample. Therefore, $cult\_dist\_2004$ is dropped from specifications (4.2) to (4.4). The remaining coefficients for distance and proximity are interpreted relative to the corresponding estimate for 2004.

$$X_{ij,t} = exp\left[\sum_{T=1995}^{2001} \beta_T ln(cult\_dist\_T_{ij}) + \sum_{k=0}^{9} RTA_{ij,t-k} + \lambda_{i,t} + \gamma_{j,t} + \epsilon_{ij}\right] * \mu_{ij,t} \tag{4.2}$$

In specification (4.3), I estimate the effect of the cultural dimensions on trade values in levels instead of logs. This means it is possible to include country pairs with identical cultural believes and it allows to include intra-national trade (Yotov, 2012). As suggested by Bergstrand et al. (2015) I include a measure for globalization, *INTL_BRDR*. This dummy takes the value of unity if trade across borders occurs and is zero otherwise. Due to perfect collinearity with the pair fixed effects it is not possible to estimate the coefficients for all years within the sample, therefore the dummy for *INTL_BRDR_2004* is dropped from the estimation:

$$\begin{aligned} X_{ij,t} = exp\Bigg[&\sum_{T=1995}^{2001} \beta_T (cult\_dist\_T_{ij}) + \sum_{k=0}^{9} RTA_{ij,t-k} \\ &+ \sum_{Y=1995}^{2001} \beta_Y INTL\_BRDR\_(Y)_{ij} + \lambda_{i,t} + \gamma_{j,t} + \epsilon_{ij}\Bigg] * \mu_{ij,t} \end{aligned} \tag{4.3}$$

The final specification (4.4) makes use of the log of the proximity measure $cult\_prox_{ij}$ instead of distance, since it is unclear from theory how cultural distance should be estimated. Since there is no cultural proximity of zero, the sample size is the same as in estimation approach (4.3), as are the controls and fixed effects. This is the preferred specification, as it uses all data available and properly accounts for multilateral resistance:

$$\begin{aligned} X_{ij,t} = exp\Bigg[&\sum_{T=1995}^{2001} \beta_T ln(cult\_prox\_T_{ij}) + \sum_{k=0}^{9} RTA_{ij,t-k} \\ &+ \sum_{Y=1995}^{2001} \beta_Y INTL\_BRDR\_(Y)_{ij} + \lambda_{i,t} + \gamma_{j,t} + \epsilon_{ij}\Bigg] * \mu_{ij,t} \end{aligned} \tag{4.4}$$

4.6 Results

The following four tables present the results of the estimation specifications. Columns (1) to (9) present each cultural dimension individually, column (10) provides the effect of the average of all nine dimensions. In Tables 4.1, 4.2, and 4.4, I use the bilateral distance measure for the cultural dimensions. In Table 4.3 I make use of the proximity measure.

In panel A of each table, I analyze the impact of culture on the overall export value. In the next two panels, I apply the classification by commodity groups (Rauch, 1999): panel B reports the coefficients for homogeneous goods and panel C for differentiated goods. All specifications include importer-year and exporter-year fixed effects. Reported standard errors are clustered at the country pair level as it is common in the literature. However, in a panel gravity context, there are several other dimensions in which the errors may be correlated: at the exporter, importer, year, exporter-year, importer-year, and country pair level, respectively (Cameron et al., 2011). Therefore, I report standard errors that are clustered at these six dimensions (multi-way) for the variables of interest as well, following Egger and Tarlea (2015). This clustering influences the size of the standard errors, and therefore, the level of significance of the reported coefficients.[6] The reported R^2 is calculated by computing the square of the correlation between trade and fitted values following the method described by Tenreyro.[7] To ensure readability, I display only the coefficients for the variables of interest in this section and show the complete regression outputs in Appendix 4.A.

Table 4.1 presents the results of the baseline regression, following specification (4.1). In panel A, the coefficients of *uncertainty avoidance*, *power distance*, *future orientation*, *humane orientation*, *gender egalitarianism*, and the measure for *average distance* have the expected negative algebraic sign, the coefficients of the others are positive. However, just five out of nine (plus average) dimensions appear to affect the value of aggregate exports statistically significant. If bilateral distance with respect to *power distance* increases by 1 percent, this corresponds to an average decrease of -0.072 percent in the value of trade. Growing distance with respect to *in-group collectivism* seems to boost trade by 0.075 percent. Both coefficients share a critical value of 0.1 percent when the standard errors are clustered at country pair level and of 5 percent when they are clustered multi-way. The coefficients for *future orientation*, *humane orientation*, and *gender egalitarianism* are given by -0.035, -0.038 and -0.045, respectively. All three are significant at 5 percent when using country pair clustered errors and insignificant otherwise.

[6] If not specified otherwise, levels of significance are based on multi-way clustered errors.

[7] See `http://personal.lse.ac.uk/tenreyro/r2.do` for details

Table 4.1: Average trade effects of logged cultural distance: Panel PPML estimation

Panel A: **Aggregate trade**

Distance variable of interest:	(1) Perf. orient.	(2) Assertiveness	(3) Uncert. avoidance	(4) Power dist.	(5) In-group coll.	(6) Institutional coll.	(7) Future orient.	(8) Humane orient.	(9) Gender egal.	(10) Average
ln(Cultural distance)	0.015	0.012	-0.029	-0.072	0.075	0.013	-0.035	-0.038	-0.045	-0.035
	(0.016)	(0.023)	(0.015)	(0.019)***	(0.016)***	(0.025)	(0.018)*	(0.015)*	(0.018)*	(0.061)
	[0.027]	[0.037]	[0.021]	[0.032]*	[0.029]*	[0.041]	[0.031]	[0.022]	[0.027]	[0.112]
N	11824	11824	11808	11808	11816	11808	11840	11816	11824	11880
R^2	0.0475	0.0482	0.0491	0.0499	0.0515	0.0477	0.0483	0.0486	0.0492	0.0486

Panel B: **Homogeneous goods**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ln(Cultural distance)	0.004	-0.007	-0.055	-0.031	0.066	0.051	-0.036	-0.067	-0.066	-0.056
	(0.019)	(0.030)	(0.019)**	(0.024)	(0.020)***	(0.032)	(0.023)	(0.020)***	(0.024)**	(0.078)
	[0.029]	[0.043]	[0.027]*	[0.047]	[0.028]*	[0.053]	[0.029]	[0.034]*	[0.034]	[0.116]
N	11824	11824	11808	11808	11816	11808	11840	11816	11824	11880
R^2	0.0529	0.0533	0.0540	0.0539	0.0661	0.0523	0.0529	0.0535	0.0541	0.0543

Panel C: **Differentiated goods**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ln(Cultural distance)	0.025	0.014	-0.008	-0.096	0.089	-0.017	-0.031	-0.022	-0.045	-0.030
	(0.018)	(0.023)	(0.017)	(0.019)***	(0.018)***	(0.026)	(0.019)	(0.016)	(0.020)*	(0.062)
	[0.033]	[0.039]	[0.025]	[0.028]***	[0.037]*	[0.038]	[0.038]	[0.021]	[0.027]	[0.127]
N	11824	11824	11808	11808	11816	11808	11840	11816	11824	11880
R^2	0.0397	0.0409	0.0415	0.0428	0.0396	0.0405	0.0410	0.0411	0.0419	0.0412

LHS for estimation methods: export value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include controls for distance, common currency, colonial background, contiguity, RTAs, 3-, 6-, and 9-year lags of RTAs and importer-year and exporter-year fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Panel B provides the effects of cultural differences for exports of homogeneous goods. A 1 percent increase in distance regarding *uncertainty avoidance* decreases trade by -0.055 percent at 1 percent level of significance. Contrarily, *in-group collectivism* has a highly significant positive effect on trade with a coefficient of 0.066. The influence of *humane orientation* given by 0.067 is once again highly significant at the 0.1 percent level when clustering at the country pair level. All three dimensions remain statistically significant at critical values of 5 percent when clustering multi-way. Bilateral differences in the perception of *gender egalitarianism* decreases trade value by -0.066 percent at a critical value of 1 percent for country pair clustered standard errors, the significance is lost after clustering multi-way.

Three cultural distance measures return statistically significant when focusing the estimation on differentiated goods only. *Power distance* and *in-group collectivism* both influence trade at the 0.1 percent level of significance using country pair clustered errors, the former negatively with a coefficient of -0.096, the latter positively with a coefficient of 0.089. The effect remains highly significant when clustering multi-way for *power distance* and drops to a level of 5 percent for *in-group collectivism.* The effect of a 1 percent increase in bilateral distance regarding *gender egalitarianism* decreases average trade by -0.045 percent and is significant for a critical value of 0.05 for country pair clustered errors and insignificant for multi-way clustered errors. The other coefficients regarding cultural distance are not significantly different from zero and therefore do not have an effect on the value of exports across the different definitions of the dependent variable.

In order to put the cultural distance effects into perspective, I offer a back-of-the-envelope calculation. Germany and Italy are closely related regarding their views of *power distance* with a bilateral distance of 0.005. In 2016, Germany exported commodities with a trade value of around 67 billion US$ to Italy. Following the results from Table 4.1, if bilateral distance regarding this cultural dimension would double, for example to the distance between Germany and Zimbabwe, export value would decrease by -7.2 percent, or 4.8 billion US$. If the distance would be ten times higher, like between Germany and the Philippines, the negative effect would lead to a decrease of trade value by -72 percent or by 48.24 billion US$.[8]

However, the size of the point estimators should be treated with caution. Because pair-fixed effects are not included, the regressions most likely suffer from omitted variable bias. Table 4.1 should give an idea in which direction the dimensions influence trade. Since only *in-group collectivism* end *gender egalitarianism* influence trade positively and persistently across the three specifications, the results of this table additionally show that the distinction between different goods categories

[8]Own calculations based on COMTRADE data from 2016.

offers additional insights that is otherwise lost through aggregation.

In Table 4.2, I estimate the effect of cultural distance on trade over time using specification (4.2) with pair fixed effects together with the country-year fixed effects to properly account for multilateral resistance (Baier & Bergstrand, 2007). The coefficients are interpreted as deviations from the cultural distance effect in the base year 2004 and compared with the findings in Table 4.1. If the estimated coefficients in Table 4.1 are insignificant, the average effect of these distance measures on trade is assumed to be zero. For the aggregate goods case in panel A, five distance dimensions influence trade differently over time. An increase in bilateral distance by 1 percent regarding *performance orientation* is not significantly different in the year 1995 compared to 2004 but its influence is larger by 0.022 percent in 1998 and by 0.008 percent in 2001 relative to 2004. *Assertiveness* has a greater impact on the value of trade in 1995 and 1998 in comparison to 2004 by 0.021 percent and 0.01 percent, respectively. Both are significant at 5 percent. The effect remains constant for 2001. With respect to the dimension of *institutional collectivism*, bilateral distance has a greater effect of 0.022 percent in 1995 than in 2004 with a critical value of 0.05 and remains constant for the other periods. The effect of growing distance in *humane orientation* on trade exports varies over time as well. For the year 1995 it is 0.02 percent larger relative to 2004 and 0.018 percent larger for 2001, the former being significant at 5 percent, the latter at 1 percent. In 1998, there is no significant change. This means that the significant negative effect of this dimension from the baseline regression used to be smaller in 1995 and in 2001 compared to 2004. The influence of the *average distance* measure changes significantly over time. At the 5 percent level of significance, the effect is larger by 0.068 percent in contrast to 2004, while it increases by 0.086 percent for 1998 and by 0.029 percent for 2001. Both share critical values of 0.01. The effect of the other five dimensions seems to remain persistent relative to 2004.

The analysis in panel B once again focuses on exports of homogeneous goods only. Differences in *assertiveness* influence trade more in 2001 than in 2004 by 0.018 percent at a critical value of 0.05. The effect of *institutional collectivism* is larger by 0.049 percent in 1995 and by 0.047 percent in 1998 when compared to 2004. The former coefficient is significant at 1 percent, the latter at 5 percent. The estimated coefficients for *humane orientation* suggest that the effect of this dimension on trade is 0.035 percent larger in 1995 and 0.04 percent larger in 2001 than the corresponding effect in 2004. These effects are significant at 5 percent and 0.1 percent, respectively. Similarly to panel A this points towards the fact that the overall negative effect of *humane orientation* used to be smaller in 1995 and 2001. *Average distance* had a higher magnitude of 0.109 percent in 1998 relative to 2004. The influence of the remaining distance dimensions did not change over time.

Table 4.2: Time-varying trade effects of logged cultural distance: Panel PPML estimation (basic sample)

Panel A: **Aggregate trade**

Distance variable of interest:	(1) Perf. orient.	(2) Assertiveness	(3) Uncert. avoidance	(4) Power dist.	(5) In-group coll.	(6) Institutional coll.	(7) Future orient.	(8) Humane orient.	(9) Gender egal.	(10) Average
ln(Cultural distance) 1995	0.020	0.021	-0.011	-0.009	0.021	0.022	-0.020	0.020	0.007	0.068
	(0.010)	(0.012)	(0.010)	(0.012)	(0.013)	(0.012)	(0.011)	(0.011)	(0.012)	(0.034)*
	[0.012]	[0.009]*	[0.009]	[0.010]	[0.013]	[0.010]*	[0.014]	[0.010]*	[0.011]	[0.043]
ln(Cultural distance) 1998	0.022	0.019	0.008	-0.005	0.017	0.017	-0.006	0.006	-0.001	0.086
	(0.007)**	(0.010)	(0.009)	(0.010)	(0.010)	(0.011)	(0.009)	(0.009)	(0.010)	(0.027)**
	[0.007]**	[0.008]*	[0.008]	[0.008]	[0.009]	[0.010]	[0.012]	[0.007]	[0.008]	[0.028]**
ln(Cultural distance) 2001	0.008	0.011	0.001	-0.005	0.003	-0.003	-0.009	0.018	-0.001	0.029
	(0.005)	(0.008)	(0.006)	(0.007)	(0.006)	(0.008)	(0.007)	(0.007)**	(0.007)	(0.019)
	[0.001]***	[0.007]	[0.002]	[0.005]	[0.004]	[0.008]	[0.006]	[0.006]**	[0.005]	[0.011]**
N	11728	11724	11708	11708	11716	11708	11748	11720	11724	11780
R^2	0.0379	0.0311	0.0335	0.0330	0.0330	0.0316	0.0336	0.0335	0.0345	0.0312

Panel B: **Homogeneous goods**

Distance variable of interest:	(1) Perf. orient.	(2) Assertiveness	(3) Uncert. avoidance	(4) Power dist.	(5) In-group coll.	(6) Institutional coll.	(7) Future orient.	(8) Humane orient.	(9) Gender egal.	(10) Average
ln(Cultural distance) 1995	0.011	0.004	-0.006	-0.020	-0.007	0.049	-0.006	0.035	0.010	0.069
	(0.013)	(0.018)	(0.014)	(0.015)	(0.016)	(0.019)**	(0.016)	(0.017)*	(0.019)	(0.045)
	[0.012]	[0.014]	[0.013]	[0.011]	[0.017]	[0.016]**	[0.017]	[0.017]*	[0.018]	[0.048]
ln(Cultural distance) 1998	0.012	0.015	0.015	-0.003	0.006	0.047	0.009	0.015	0.004	0.109
	(0.011)	(0.016)	(0.013)	(0.014)	(0.015)	(0.019)*	(0.016)	(0.016)	(0.018)	(0.040)**
	[0.012]	[0.010]	[0.012]	[0.013]	[0.015]	[0.019]*	[0.014]	[0.013]	[0.019]	[0.035]**
ln(Cultural distance) 2001	-0.003	0.018	0.006	-0.009	-0.003	0.007	-0.008	0.040	-0.019	0.023
	(0.008)	(0.011)	(0.009)	(0.012)	(0.009)	(0.010)	(0.011)	(0.010)***	(0.014)	(0.030)
	[0.004]	[0.007]**	[0.006]	[0.010]	[0.004]	[0.008]	[0.007]	[0.008]***	[0.012]	[0.013]
N	11520	11516	11500	11504	11508	11500	11540	11512	11520	11572
R^2	0.0257	0.0163	0.0194	0.0089	0.0393	0.0045	0.0212	0.0106	0.0133	0.0099

Panel C: **Differentiated goods**

Distance variable of interest:	(1) Perf. orient.	(2) Assertiveness	(3) Uncert. avoidance	(4) Power dist.	(5) In-group coll.	(6) Institutional coll.	(7) Future orient.	(8) Humane orient.	(9) Gender egal.	(10) Average
ln(Cultural distance) 1995	0.029	0.035	-0.010	-0.011	0.041	0.011	-0.025	0.009	0.016	0.105
	(0.012)*	(0.012)**	(0.011)	(0.013)	(0.014)**	(0.014)	(0.012)*	(0.010)	(0.013)	(0.039)**
	[0.014]*	[0.008]***	[0.009]	[0.011]	[0.013]**	[0.013]	[0.015]	[0.007]	[0.010]	[0.056]
ln(Cultural distance) 1998	0.031	0.020	0.002	-0.011	0.027	0.001	-0.012	-0.001	0.005	0.089
	(0.008)***	(0.009)*	(0.009)	(0.011)	(0.009)**	(0.010)	(0.010)	(0.009)	(0.011)	(0.029)**
	[0.008]***	[0.010]*	[0.008]	[0.008]	[0.009]**	[0.010]	[0.012]	[0.005]	[0.006]	[0.041]*
ln(Cultural distance) 20011	0.017	0.005	-0.004	-0.005	0.010	-0.008	-0.009	0.003	0.014	0.042
	(0.006)**	(0.008)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.006)	(0.008)	(0.022)
	[0.003]***	[0.008]	[0.003]	[0.005]	[0.001]***	[0.010]	[0.007]	[0.005]	[0.005]**	[0.014]**
N	11676	11668	11652	11652	11660	11652	11692	11664	11668	11724
R^2	0.0354	0.0282	0.0313	0.0303	0.0249	0.0317	0.0305	0.0319	0.0319	0.0292

LHS for estimation methods: export value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include controls for RTAs, 3-, 6-, and 9-year lags of RTAs, importer-year, exporter-year, and country-pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

In panel C, the sample exclusively covers exports of differentiated goods. The impact of six cultural dimensions varies significantly over time. The greater influence of *assertiveness* on trade in 1995 relative to 2004 is 0.035 percent. The coefficient is highly significant, too. When comparing 1998 to 2004, this cultural distance dimension affects trade by 0.02 percent more in 1998 compared to 2004 and is statistically significant at 5 percent. The distance measure of *performance orientation* has a greater influence on trade of 0.029 percent in 1995, of 0.031 percent in 1998, and of 0.017 percent in 2001 when compared to 2004. The first coefficient is significant at 5 percent, while the other two are highly significant at 0.1 percent. Relative to 2004, the effect of *in-group collectivism* on trade is 0.041 percent larger in 1995, 0.027 percent larger in 1998, and 0.01 percent larger 2001 with critical values of 0.01 for the first two, and 0.001 for the last coefficient. This means that the positive influence of *in-group collectivism* from the baseline regression has decreased over time. The influence of *future orientation* has increased by 0.025 percent for 2004 relative to 1995 at the 5 percent level of significance. The effect of cultural distance on exports regarding *gender egalitarianism* decreases the negative impact on trade by 0.014 percent in 2001 compared to 2004. This effect is significant at a critical value of 0.05. The influence of the measure for *average distance* varies over time as well. It is larger by 0.089 percent in 1998 and by 0.042 percent in 2001 relative to 2004. The coefficients are significant at levels of 5 percent and 1 percent, respectively.

The effect of cultural distance on trade varies over time but greatly depends on the dimension and goods specification. The effects of *performance orientation*, *institutional collectivism*, and *humane orientation* on the aggregate are driven by either homogeneous goods or differentiated goods. Effects of *in-group collectivism*, *future orientation*, and *gender egalitarianism* are only significant for differentiated goods and are masked in the aggregate. Except for one dimension, the significant effects relative to the base year are larger in previous years and become smaller over time. It is interesting to note that most of the coefficients that influenced trade significantly and negatively in the case of *uncertainty avoidance*, *power distance*, *future orientation*, and *gender egalitarianism* and positively in the case of *in-group collectivism* in the baseline regression return insignificant in Table 4.2. This means that their effect has remained persistent over time. It is unexpected that all significant coefficients have a positive algebraic sign. This would lead to the interpretation that cultural distance used to have a more positive impact on the value of trade in the years 1995, 1998, and 2001 relative to the base year 2004. However, this specification may be flawed as it omits country pairs with the smallest cultural distance by definition.[9]

[9] When clustering at the country pair level, the number of significant estimators changes somewhat but the overall interpretation remains the same.

In order to allow for country pairs to share identical cultural believes, I include the bilateral distance measures into the regression in levels instead of logs, following specification (4.3). Moreover, this means that country pairs with the same importer and exporter are now part of the sample, allowing to include and control for intra-national trade. The sample size increases by around 200 observations and Table 4.3 provides the results.

For nine out of the ten cultural distance dimensions including the average effect, there is a significant change regarding their impact on export value over time with respect to the base year 2004 for the aggregate goods specification in panel A. The impact of a 1 percent increase in distance on trade regarding the measure for *performance orientation* is 232 percent ($= 100 * [e^{1.2} - 1]$) larger and positive in 2001 than in 2004 at a critical value of 0.001. If differences regarding *assertiveness* increase by 1 percent, the effect on trade is positive and larger by 93 percent in 1995 and increases to 123 percent in 1998 in comparison to 2004 with a 1 percent level of significance. For 2001, the effect remains constant. Relative to 2004, the effect of cultural distance measured by *uncertainty avoidance* influences trade negatively and stronger in the years 1995 and 2001 by -71 percent and by -32 percent, respectively. The first coefficient is statistically significant at the 1 percent level, the latter at the 0.1 percent level, while there is no significant change in 1998 compared to 2004. The baseline regression suggests that on average an increase of bilateral distance regarding *power distance* has a negative effect on trade. However, in 1998 this negative effect is smaller by 210 percent relative to the corresponding effect in 2004 and is significant at a critical value of 5 percent. The positive impact of cultural distance regarding *in-group collectivism* on trade is constant for 1995 and 1998 and significantly stronger at the 5 percent threshold by 47 percent in 2001 relative to 2004. In comparison to 2004, distance regarding *institutional collectivism* used to have a positive and stronger impact on trade of 138 percent in 1995 and of 139 percent in 1998. The first coefficient is statistically significant at the 1 percent level, the second at the 5 percent level. The negative effect of *future orientation* on trade is highly significant for 2001 and used to be stronger by -42 percent with respect to 2004. Compared to 2004, the negative effect from the baseline regression of *humane orientation* on trade is not significantly different in 1995 but it decreases in 1998 by a positive impact that is 80 percent stronger. In 2001, the negative impact is then again amplified by -73 percent in 2001. Both coefficients are significant at critical values of 0.05. The measure of *average distance* shares the same level of significance with the previous dimension and used to decrease trade by -82 percent more in 2001 than in 2004. The negative effect of *gender egalitarianism* from the baseline regression seems to be persistent over time.

Table 4.3: Time-varying trade effects of cultural distance: Panel PPML estimation (basic sample+intra-nat. trade)

Panel A: **Aggregate trade**

Distance variable of interest:	(1) Perf. orient.	(2) Assertiveness	(3) Uncert. avoidance	(4) Power dist.	(5) In-group coll.	(6) Institutional coll.	(7) Future orient.	(8) Humane orient.	(9) Gender egal.	(10) Av. dist.
(Cultural distance) 1995	0.395	0.657	-1.234	1.197	-0.156	0.865	-1.303	0.854	-0.350	-0.551
	(0.761)	(0.528)	(0.423)**	(0.553)*	(0.377)	(0.479)	(0.615)*	(0.468)	(0.674)	(1.495)
	[0.754]	[0.217]**	[0.371]***	[0.617]	[0.396]	[0.307]**	[0.811]	[0.448]	[0.813]	[1.619]
(Cultural distance) 1998	-0.592	0.800	-0.487	1.132	0.195	0.873	-1.015	0.590	0.448	0.468
	(0.857)	(0.480)	(0.356)	(0.449)*	(0.329)	(0.434)*	(0.527)	(0.421)	(0.528)	(1.152)
	[1.243]	[0.237]***	[0.387]	[0.449]*	[0.257]	[0.347]*	[0.632]	[0.291]*	[0.498]	[0.829]
(Cultural distance) 2001	1.200	-0.310	-1.126	-1.029	0.385	-0.017	-0.546	-1.314	-0.533	-1.699
	(0.592)*	(0.476)	(0.292)***	(0.493)*	(0.312)	(0.451)	(0.366)	(0.401)**	(0.460)	(1.032)
	[0.220]***	[0.249]	[0.144]***	[0.647]	[0.161]*	[0.283]	[0.100]***	[0.571]*	[0.342]	[0.769]*
N	11997	11997	11997	11997	11997	11997	11997	11997	11997	11997
R^2	0.0046	0.0053	0.0041	0.0044	0.0054	0.0051	0.0047	0.0048	0.0055	0.0052

Panel B: **Homogeneous goods**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(Cultural distance) 1995	-0.810	0.004	-1.558	-0.509	-0.307	1.205	-1.811	-0.006	0.138	-2.504
	(0.836)	(0.730)	(0.517)**	(0.757)	(0.393)	(0.569)*	(0.708)*	(0.535)	(0.783)	(1.539)
	[0.718]	[0.454]	[0.499]**	[0.389]	[0.471]	[0.315]***	[0.739]*	[0.389]	[0.655]	[1.308]
(Cultural distance) 1998	0.065	-0.249	-0.456	0.974	0.375	0.576	-0.369	-0.165	2.233	0.912
	(0.661)	(0.660)	(0.360)	(0.752)	(0.317)	(0.516)	(0.454)	(0.473)	(0.593)***	(1.063)
	[0.460]	[0.543]	[0.301]	[0.521]	[0.301]	[0.364]	[0.414]	[0.355]	[0.442]***	[0.906]
(Cultural distance) 2001	1.125	0.463	-0.656	-2.661	0.133	-0.130	-0.401	-1.359	-1.003	-2.088
	(0.505)*	(0.496)	(0.340)	(0.804)***	(0.285)	(0.463)	(0.379)	(0.568)*	(0.542)	(1.006)*
	[0.278]***	[0.138]***	[0.286]*	[1.215]*	[0.183]	[0.499]	[0.277]	[0.911]	[0.812]	[1.324]
N	11785	11785	11785	11785	11785	11785	11785	11785	11785	11785
R^2	0.0018	0.0018	0.0015	0.02	0.0018	0.0018	0.0016	0.0017	0.0013	0.0016

Panel C: **Differentiated goods**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(Cultural distance) 1995	1.016	0.893	-0.670	1.079	0.200	0.721	-0.587	0.575	-0.305	0.874
	(0.870)	(0.459)	(0.326)*	(0.523)*	(0.381)	(0.470)	(0.518)	(0.439)	(0.484)	(1.395)
	[0.654]	[0.144]***	[0.297]*	[0.501]*	[0.345]	[0.347]*	[0.485]	[0.352]	[0.249]	[1.248]
(Cultural distance) 1998	-0.260	1.041	-0.299	0.636	0.278	0.735	-1.007	0.470	-0.584	0.464
	(0.964)	(0.523)*	(0.398)	(0.513)	(0.376)	(0.464)	(0.619)	(0.451)	(0.580)	(1.352)
	[1.385]	[0.300]***	[0.420]	[0.389]	[0.287]	[0.385]	[0.678]	[0.256]	[0.480]	[0.902]
(Cultural distance) 2001	1.271	-0.512	-1.299	-0.189	0.574	0.241	-0.614	-1.321	0.001	-1.118
	(0.730)	(0.542)	(0.314)***	(0.454)	(0.361)	(0.469)	(0.429)	(0.395)***	(0.509)	(1.236)
	[0.352]***	[0.161]**	[0.191]***	[0.246]	[0.212]**	[0.222]	[0.090]***	[0.500]**	[0.334]	[0.954]
N	11941	11941	11941	11941	11941	11941	11941	11941	11941	11941
R^2	0.0037	0.0047	0.0039	0.0045	0.0049	0.0048	0.0043	0.0045	0.0050	0.0049

LHS for estimation methods: export value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension)-min(cult\_dimension)}$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include controls for international trade, RTAs, 3-, 6-, and 9-year lags of RTAs, importer-year, exporter-year, and country-pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Panel B yields the estimation results focusing on homogeneous goods only. The effect of *performance orientation* across time is comparable to the aggregate goods case and implies no significant changes for 1995 and 1998 but a positive impact on trade that is 208 percent larger in 2001 compared to 2004 at a critical value of 0.001. Bilateral differences regarding *assertiveness* influence trade for homogeneous differently compared to the aggregate goods case. Here, the positive effect is still highly significant and stronger by 59 percent compared to 2004. The the driver for this relative increase is the year 2001, while the impact remains constant for the other years. The negative average influence on trade from the baseline regression of a 1 percent increase of bilateral distance regarding *uncertainty avoidance* is made stronger by -80 percent in 1995 and by -48 percent in 2001. The coefficient for 1995 is statistically significant at 1 percent, the one for 2001 at 5 percent. It remains unchanged for 1998. The distance measure seems to lose its strength over time. The effect of a 1 percent increase regarding different perception of *power distance* is negative and dramatically larger by -93 percent in 2001 than in to 2004 at a critical value of 0.05. The impact of bilateral distance regarding *institutional collectivism* on the other hand highly significantly boosts trade in 1995 and is 234 percent larger than in 2004. The effect remains constant in the other years. The coefficient of *future orientation* is negative and significant at 5 percent for the year 1995, and imply an increase of the potential negative impact of this dimension on trade by -84 percent relative to 2004. Differences regarding *gender egalitarianism* positively influence trade by 833 percent for 1998 relative to 2004 and the coefficient is significant at the critical value of 0.001. The negative effects of bilateral cultural distance on the export value of homogeneous goods from the baseline regression for *in-group collectivism* and *humane orientation* are constant over time.

Seven distance measures significantly change their influence on trade with differentiated goods in panel C over time with respect to the base year. The effect of *performance orientation* is persistent and highly significant across good specifications. Similar to panels A and B, the effect of an increase in bilateral distance on trade is positive and used to be stronger for 2001 in contrast to 2004, in this specification by 256 percent. *Assertiveness* affects trade differently over time. For 1995 and 1998 the effect on trade is positive and grows in strength in comparison to 2004 by 144 percent and by 183 percent, respectively. In 2001, the trade impact is negative and decreases by 67 percent relative to 2004. The coefficients for 1995 and 1998 are significant at critical values of 0.001, the one for 2001 at 1 percent. An increase of bilateral distance regarding *uncertainty avoidance* increases its negative effect on trade by 49 percent for 1995 and by 73 percent for 2001. The first coefficient is significant at 5 percent, the other at 0.1 percent. In contrast to the other specifications, the negative impact of this distance measure grows over time for differentiated goods. The significant positive influence on the otherwise negative average effect of *power distance* on trade for 1995 in the aggregate case is driven by exports of differentiated goods. The coefficient is significant at 5 percent and shows that the positive impact in this year is larger by 194 percent than in 2004. The same holds true for *in-group collectivism*. The average effect is negative as suggested by the baseline regression but in 2001 this negative influence was smaller by 78 percent relative to 2004. The level of significance is 1 percent. Differences with respect to the dimension *institutional collectivism* increased trade by 106 percent more in 1995 than in the following years, where there is no deviation from the effect in 2004. The coefficient is significant at a critical value of 5 percent. The effect of *future orientation* is persistent for 1995 and 1998 but highly significantly decreased by -46 percent in contrast to the base year. Differences in *humane orientation* are statistically significant at 1 percent and show a decrease on the trade value of exports for 2001 that is stronger by -73 percent when compared to 2004 and unchanged otherwise. The negative trade effects of *gender egalitarianism* remain unchanged over time.

Overall, the inclusion of countries with the same cultural values and intra-national trade changes the results in Table 4.3 significantly in contrast to Table 4.2. The trade effects of bilateral cultural distance on trade are no longer consistently positive and larger relative to 2004 but several effects used to be more negative. This is a more plausible result but still somewhat surprising when compared to the perceived general trend of bilateral distance, in which distance persistently decreases over time. The effect of the cultural distance dimensions on trade seems to significantly change over the observed time span but it does not seem to follow a clear trend. Some effects grow in size, while others decrease over time. Some show a positive and some show a negative impact on trade. Furthermore, the choice of goods specification matters for significance and magnitude. These results show that the impact on cultural distance on trade is not as clear as it may appear and needs to be approached with caution. As a robustness check, the effect of cultural distance on the value of trade is re-estimated without the scaling process. Two coefficients which were barely significant in Table 4.3 lose their significance, the results of the other 58 regressions are identical to Table 4.3 if the coefficients are multiplied by the scaling-factor 6. Tables 4.A.10 to 4.A.12 provide the results in the appendix.

Finally, Table 4.4 presents the effects of the measures of cultural proximity on trade instead of cultural distance and follows specification (4.4). As distance is commonly estimated in elasticities, the nine proximity dimensions and the average proximity measure are log-linearized. Due to the design of the measure, it still allows to include countries with the same cultural background as well as

Table 4.4: Time-varying trade effects of logged cultural proximity: Panel PPML estimation (basic sample+intra-nat. trade)

Panel A: **Aggregate trade**

Proximity variable of interest:	(1) Perf. orient.	(2) Assertiveness	(3) Uncert. avoidance	(4) Power dist.	(5) In-group coll.	(6) Institutional coll.	(7) Future orient.	(8) Humane orient.	(9) Gender egal.	(10) Av. prox.
ln(Proximity) 1995	-0.344	-0.621	1.077	-1.158	0.194	-0.774	1.167	-0.804	0.268	0.537
	(0.691)	(0.481)	(0.363)**	(0.498)*	(0.310)	(0.420)	(0.548)*	(0.415)	(0.614)	(1.348)
	[0.695]	[0.204]**	[0.315]***	[0.565]*	[0.334]	[0.268]**	[0.736]	[0.414]	[0.757]	[1.480]
ln(Proximity) 1998	0.586	-0.733	0.413	-1.071	-0.126	-0.766	0.895	-0.562	-0.457	-0.408
	(0.781)	(0.437)	(0.300)	(0.389)**	(0.269)	(0.383)*	(0.470)	(0.372)	(0.477)	(1.030)
	[1.146]	[0.215]***	[0.334]	[0.408]**	[0.215]	[0.305]*	[0.567]	[0.273]*	[0.466]	[0.770]
ln(Proximity) 2001	-1.049	0.282	0.964	0.910	-0.290	0.012	0.486	1.137	0.470	1.559
	(0.535)	(0.438)	(0.245)***	(0.432)*	(0.257)	(0.399)	(0.321)	(0.359)**	(0.411)	(0.915)
	[0.202]***	[0.232]	[0.129]***	[0.582]	[0.135]*	[0.247]	[0.093]***	[0.514]*	[0.307]	[0.683]*
N	11997	11997	11997	11997	11997	11997	11997	11997	11997	11997
R^2	0.0046	0.0053	0.0040	0.0042	0.0054	0.0051	0.0047	0.0047	0.0054	0.0052

Panel B: **Homogeneous goods**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ln(Proximity) 1995	0.774	-0.013	1.345	0.378	0.315	-1.082	1.638	-0.025	-0.176	2.317
	(0.764)	(0.675)	(0.444)**	(0.693)	(0.333)	(0.506)*	(0.628)**	(0.475)	(0.710)	(1.397)
	[0.646]	[0.425]	[0.421]**	[0.362]	[0.405]	[0.283]***	[0.661]*	[0.359]	[0.602]	[1.180]*
ln(Proximity) 1998	-0.030	0.215	0.369	-0.905	-0.293	-0.528	0.337	0.106	-2.085	-0.831
	(0.595)	(0.613)	(0.306)	(0.676)	(0.266)	(0.461)	(0.399)	(0.422)	(0.532)***	(0.956)
	[0.418]	[0.506]	[0.257]	[0.466]	[0.256]	[0.325]	[0.366]	[0.319]	[0.387]***	[0.822]
ln(Proximity) 2001	-1.002	-0.449	0.551	2.381	-0.079	0.092	0.371	1.192	0.876	1.900
	(0.452)*	(0.459)	(0.284)	(0.729)**	(0.241)	(0.415)	(0.335)	(0.514)*	(0.488)	(0.910)*
	[0.253]***	[0.122]***	[0.241]*	[1.089]*	[0.161]	[0.442]	[0.244]	[0.809]	[0.736]	[1.209]
N	11785	11785	11785	11785	11785	11785	11785	11785	11785	11785
R^2	0.0038	0.0047	0.0039	0.0044	0.0049	0.0048	0.0046	0.0045	0.0050	0.0049

Panel C: **Differentiated goods**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ln(Proximity) 1995	-0.894	-0.830	0.590	-1.013	-0.110	-0.630	0.515	-0.554	0.253	-0.749
	(0.790)	(0.418)*	(0.278)*	(0.459)*	(0.308)	(0.412)	(0.461)	(0.388)	(0.440)	(1.244)
	[0.599]	[0.136]***	[0.249]*	[0.456]*	[0.282]	[0.301]*	[0.431]	[0.330]	[0.244]	[1.121]
ln(Proximity) 1998	0.292	-0.944	0.253	-0.621	-0.194	-0.633	0.897	-0.453	0.516	-0.385
	(0.881)	(0.474)*	(0.338)	(0.443)	(0.305)	(0.409)	(0.555)	(0.398)	(0.525)	(1.209)
	[1.279]	[0.270]***	[0.363]	[0.351]	[0.239]	[0.339]	[0.606]	[0.233]	[0.443]	[0.822]
ln(Proximity) 2001	-1.104	0.476	1.116	0.169	-0.452	-0.204	0.545	1.147	0.002	1.045
	(0.664)	(0.497)	(0.265)***	(0.392)	(0.297)	(0.414)	(0.380)	(0.349)**	(0.456)	(1.098)
	[0.332]***	[0.157]**	[0.166]***	[0.211]	[0.176]*	[0.191]	[0.089]***	[0.451]*	[0.297]	[0.847]
N	11941	11941	11941	11941	11941	11941	11941	11941	11941	11941
R^2	0.0038	0.0047	0.0039	0.0044	0.0049	0.0048	0.0046	0.0045	0.0050	0.0049

LHS for estimation methods: export value. Proximity definition: $1 - \frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include controls for international trade, RTAs, 3-, 6-, and 9-year lags of RTAs, importer-year, exporter-year, and country-pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

intra-national trade. With the exception of two coefficients, which appear significant only in the proximity specification, the coefficients' level of significance is identical to Table 4.3. By definition, the effect of cultural proximity on trade works in the opposite direction as distance, therefore, the algebraic signs are reversed. Moreover, the size of the coefficients is similar as well. However, as the proximity dimensions are interpreted as elasticities, the size of the coefficients translates directly to a percentage change on trade values if proximity increases by 1 percent. Thus, the effects provided in Table 4.4 are much smaller compared to Table 4.3. For example, the effect of a 1 percent increase of proximity regarding *performance orientation* in 1998 in panel A leads to less trade compared to 2004 by -1.049 percent. When the effect is estimated in levels, the corresponding effect is a decrease of -232 percent. Since there is no theory foundation (yet) on how cultural distance should be measured, both measures are potentially correct. Nonetheless, I argue that the results provided in Table 4.4 are more plausible compared to Table 4.3 as they indicate that the effect of cultural proximity on trade does not change much across the observed time span or remains persistent.

4.7 Concluding remarks

In this chapter, the changing effect of bilateral cultural differences on the value of exports was analyzed over time using the nine cultural dimensions introduced by GLOBE (House et al., 2013) together with state-of-the-art empirical methods. The answer is not as clear as it might be on first sight: Neither diminishes the impact of cultural distance on trade values persistently in the face of increased globalization, nor has it consistently been strengthened. From the results above, there is no clear trend apparent for the importance of cultural distance for bilateral trade in the face of globalization. Depending on the cultural dimensions, the effects differ over the observed time span. Its effect has remained persistent for some dimensions, while it has increased or decreased for others over time. This shows that the choice of definition for the term *culture* is very important. Moreover, the aggregation of commodity groups introduced by Rauch (1999) affects the results and offers new insights. Several significant effects on the aggregate goods case are either driven by differentiated or homogeneous goods. This information would otherwise have been lost. It has been shown that it makes a big difference, whether or not intra-national trade is included into the regression, highlighting the importance to do so (Yotov (2012), Bergstrand et al. (2015)). Finally, it does not change the level of significance of the estimation results, whether culture is measured by bilateral distance in levels or proximity in logs. However, the interpretation of the coefficients depends on the specification and leads to different inferences.

For further research the scope of the analysis should be increased to capture the steady increase of the globalization process in the 2000s. So far, this can be done on the aggregate level but not on the product level for all countries within the sample. The previous analysis showed how important it is to make use of a data set like TradeProd that allows to distinguish different commodity groups and that includes intra-national trade as well.

4.A Additional tables

The following appendix shows the complete estimation tables, except for the fixed effects dummies. All specifications include importer-year and exporter-year fixed effects. Tables 4.A.1 to 4.A.3 show the results for the baseline regression without pair fixed effects but with additional time-invariant control variables for geographical bilateral distance, common currency, common border, and colonial background. In all the following regressions, country pair fixed effects are included. Tables 4.A.4 and 4.A.5 show results for the PPML approach without intra-national trade. Tables 4.A.7 to 4.A.15 include intra-national trade as well as the dummy variable for international border crossings of trade. Tables 4.A.7 to 4.A.9 show the complete results of the regressions estimating cultural distance effects on trade in levels, Tables 4.A.13 to 4.A.15 use the proximity measure instead of distance. Tables 4.A.10 to 4.A.12 yield the results for the robustness regressions without the scaling process of cultural distance.

Table 4.A.1: Average trade effects of logged cultural distance (aggregate trade): Panel PPML estimation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Average
RTA	0.535***	0.530***	0.536***	0.515***	0.456***	0.524***	0.541***	0.522***	0.526***	0.537***
	(0.077)	(0.078)	(0.076)	(0.075)	(0.077)	(0.076)	(0.077)	(0.074)	(0.077)	(0.076)
RTA_LAG3	0.157***	0.159***	0.151***	0.137***	0.144***	0.158***	0.159***	0.151***	0.149***	0.156***
	(0.034)	(0.034)	(0.034)	(0.029)	(0.040)	(0.033)	(0.034)	(0.032)	(0.033)	(0.034)
RTA_LAG6	0.100**	0.102**	0.098**	0.100**	0.118**	0.101**	0.103**	0.099**	0.101**	0.102**
	(0.036)	(0.036)	(0.035)	(0.035)	(0.041)	(0.036)	(0.036)	(0.036)	(0.036)	(0.036)
RTA_LAG9	0.001	0.005	0.005	-0.001	0.004	0.001	0.004	-0.001	0.001	0.002
	(0.025)	(0.025)	(0.025)	(0.024)	(0.030)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
ln_DIST	-0.624***	-0.625***	-0.620***	-0.633***	-0.646***	-0.636***	-0.624***	-0.624***	-0.621***	-0.620***
	(0.037)	(0.037)	(0.037)	(0.038)	(0.037)	(0.036)	(0.037)	(0.036)	(0.037)	(0.037)
CNTG	0.500***	0.491***	0.490***	0.487***	0.487***	0.483***	0.484***	0.499***	0.504***	0.489***
	(0.070)	(0.070)	(0.071)	(0.067)	(0.073)	(0.070)	(0.070)	(0.071)	(0.070)	(0.071)
comcur	-0.063	-0.061	-0.034	-0.094	-0.064	-0.077	-0.059	-0.075	-0.039	-0.056
	(0.082)	(0.083)	(0.084)	(0.080)	(0.080)	(0.084)	(0.083)	(0.083)	(0.081)	(0.083)
CLNY	0.030	0.036	0.044	0.059	0.017	0.040	0.047	0.059	0.038	0.038
	(0.095)	(0.095)	(0.094)	(0.096)	(0.098)	(0.096)	(0.092)	(0.092)	(0.094)	(0.094)
ln(Cultural distance)	0.015	0.012	-0.029	-0.072	0.075	0.013	-0.035	-0.038	-0.045	-0.035
	(0.016)	(0.023)	(0.015)	(0.019)***	(0.016)***	(0.025)	(0.018)*	(0.015)*	(0.018)*	(0.061)
	[0.027]	[0.037]	[0.021]	[0.032]*	[0.029]*	[0.041]	[0.031]	[0.022]	[0.027]	[0.112]
N	11824	11824	11808	11808	11816	11808	11840	11816	11824	11880
R^2	0.0475	0.0482	0.0491	0.0499	0.0515	0.0477	0.0483	0.0486	0.0492	0.0486

LHS for estimation methods: export value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year and exporter-year fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.2: Average trade effects of logged cultural distance (homogeneous goods): Panel PPML estimation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Average
RTA	0.349***	0.350***	0.339***	0.354***	0.317***	0.331***	0.356***	0.331***	0.341***	0.349***
	(0.088)	(0.087)	(0.087)	(0.088)	(0.090)	(0.088)	(0.089)	(0.086)	(0.088)	(0.087)
RTA_LAG3	0.072	0.076	0.064	0.061	0.063	0.077	0.075	0.073	0.073	0.072
	(0.041)	(0.040)	(0.040)	(0.037)	(0.049)	(0.040)	(0.041)	(0.039)	(0.042)	(0.040)
RTA_LAG6	0.040	0.041	0.041	0.042	0.025	0.038	0.047	0.031	0.039	0.042
	(0.059)	(0.058)	(0.058)	(0.058)	(0.069)	(0.059)	(0.058)	(0.057)	(0.059)	(0.058)
RTA_LAG9	0.060	0.067	0.060	0.052	0.072	0.059	0.059	0.059	0.067	0.060
	(0.035)	(0.035)	(0.035)	(0.034)	(0.040)	(0.035)	(0.035)	(0.034)	(0.035)	(0.035)
ln_DIST	-0.810***	-0.806***	-0.805***	-0.811***	-0.823***	-0.833***	-0.809***	-0.812***	-0.802***	-0.805***
	(0.047)	(0.047)	(0.048)	(0.048)	(0.048)	(0.045)	(0.048)	(0.045)	(0.048)	(0.048)
CNTG	0.408***	0.413***	0.405***	0.400***	0.407***	0.379***	0.395***	0.407***	0.427***	0.398***
	(0.070)	(0.071)	(0.071)	(0.070)	(0.072)	(0.071)	(0.071)	(0.071)	(0.070)	(0.071)
comcur	0.055	0.064	0.077	0.057	0.056	0.040	0.050	0.040	0.075	0.062
	(0.113)	(0.112)	(0.117)	(0.112)	(0.111)	(0.115)	(0.114)	(0.113)	(0.112)	(0.113)
CLNY	0.022	0.026	0.038	0.037	0.008	0.094	0.038	0.076	0.036	0.030
	(0.122)	(0.121)	(0.120)	(0.123)	(0.125)	(0.115)	(0.119)	(0.117)	(0.120)	(0.121)
ln(Cultural distance)	0.004	-0.007	-0.055	-0.031	0.066	0.051	-0.036	-0.067	-0.066	-0.056
	(0.019)	(0.030)	(0.019)**	(0.024)	(0.020)***	(0.032)	(0.023)	(0.020)***	(0.024)**	(0.078)
	[0.029]	[0.043]	[0.027]*	[0.047]	[0.028]*	[0.053]	[0.029]	[0.034]*	[0.034]	[0.116]
N	11824	11824	11808	11808	11816	11808	11840	11816	11824	11880
R^2	0.0529	0.0533	0.0540	0.0539	0.0661	0.0523	0.0529	0.0535	0.0541	0.0543

LHS for estimation methods: export value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension)-min(cult\_dimension)}$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year and exporter-year fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.3: Average trade effects of logged cultural distance (differentiated goods): Panel PPML estimation

Distance variable of interest:	(1) Perf. orient.	(2) Assertiveness	(3) Uncert. avoidance	(4) Power dist.	(5) In-group coll.	(6) Institutional coll.	(7) Future orient.	(8) Humane orient.	(9) Gender egal.	(10) Average
RTA	0.651***	0.641***	0.648***	0.597***	0.533***	0.638***	0.654***	0.639***	0.639***	0.651***
	(0.081)	(0.083)	(0.081)	(0.081)	(0.079)	(0.081)	(0.081)	(0.079)	(0.082)	(0.081)
RTA_LAG3	0.174***	0.171***	0.169***	0.151***	0.145***	0.168***	0.172***	0.163***	0.156***	0.170***
	(0.034)	(0.033)	(0.033)	(0.030)	(0.039)	(0.033)	(0.033)	(0.032)	(0.032)	(0.033)
RTA_LAG6	0.129***	0.132***	0.129***	0.129***	0.163***	0.134***	0.132***	0.134***	0.133***	0.132***
	(0.039)	(0.039)	(0.039)	(0.038)	(0.044)	(0.040)	(0.039)	(0.040)	(0.039)	(0.039)
RTA_LAG9	-0.035	-0.034	-0.030	-0.033	-0.046	-0.035	-0.031	-0.038	-0.041	-0.035
	(0.029)	(0.028)	(0.029)	(0.027)	(0.034)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
ln_DIST	-0.553***	-0.559***	-0.555***	-0.572***	-0.589***	-0.559***	-0.554***	-0.555***	-0.553***	-0.551***
	(0.039)	(0.040)	(0.040)	(0.040)	(0.039)	(0.039)	(0.039)	(0.039)	(0.040)	(0.040)
CNTG	0.532***	0.512***	0.516***	0.515***	0.504***	0.529***	0.513***	0.524***	0.530***	0.516***
	(0.079)	(0.080)	(0.081)	(0.075)	(0.084)	(0.081)	(0.080)	(0.081)	(0.080)	(0.081)
comcur	-0.141	-0.141	-0.114	-0.200*	-0.139	-0.158	-0.132	-0.148	-0.111	-0.133
	(0.085)	(0.087)	(0.086)	(0.083)	(0.083)	(0.086)	(0.086)	(0.086)	(0.084)	(0.086)
CLNY	0.047	0.055	0.056	0.084	0.030	0.011	0.063	0.065	0.055	0.056
	(0.099)	(0.098)	(0.098)	(0.098)	(0.102)	(0.104)	(0.096)	(0.097)	(0.097)	(0.098)
ln(Cultural distance)	0.025	0.014	-0.008	-0.096	0.089	-0.017	-0.031	-0.022	-0.045	-0.030
	(0.018)	(0.023)	(0.017)	(0.019)***	(0.018)***	(0.026)	(0.019)	(0.016)	(0.020)*	(0.062)
	[0.033]	[0.039]	[0.025]	[0.028]***	[0.037]*	[0.038]	[0.038]	[0.021]	[0.027]	[0.127]
N	11824	11824	11808	11808	11816	11808	11840	11816	11824	11880
R^2	0.0397	0.0409	0.0415	0.0428	0.0396	0.0405	0.0410	0.0411	0.0419	0.0412

LHS for estimation methods: export value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year and exporter-year fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.4: Time varying trade effects of logged cultural distance (aggregate trade): Panel PPML estimation (basic sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Average
RTA	-0.240***	-0.233***	-0.240***	-0.216***	-0.244***	-0.240***	-0.239***	-0.230***	-0.237***	-0.239***
	(0.059)	(0.059)	(0.059)	(0.057)	(0.060)	(0.059)	(0.059)	(0.059)	(0.060)	(0.060)
RTA_LAG3	0.053**	0.056**	0.064***	0.055**	0.029	0.057**	0.054**	0.052**	0.055**	0.057**
	(0.019)	(0.019)	(0.018)	(0.018)	(0.022)	(0.019)	(0.019)	(0.019)	(0.019)	(0.020)
RTA_LAG6	-0.043*	-0.039*	-0.040*	-0.039*	-0.055*	-0.038*	-0.041*	-0.038*	-0.041*	-0.052**
	(0.019)	(0.018)	(0.019)	(0.018)	(0.022)	(0.018)	(0.019)	(0.019)	(0.019)	(0.019)
RTA_LAG9	-0.008	-0.004	-0.004	-0.001	-0.022	-0.006	-0.005	-0.017	-0.005	-0.013
	(0.020)	(0.020)	(0.020)	(0.021)	(0.023)	(0.020)	(0.020)	(0.021)	(0.021)	(0.021)
ln(cult_dist) 1995	0.020	0.021	-0.011	-0.009	0.021	0.022	-0.020	0.020	0.007	0.068
	(0.010)	(0.012)	(0.010)	(0.012)	(0.013)	(0.012)	(0.011)	(0.011)	(0.012)	(0.034)*
	[0.012]	[0.009]*	[0.009]	[0.010]	[0.013]	[0.010]*	[0.014]	[0.010]*	[0.011]	[0.043]
ln(cult_dist) 1998	0.022	0.019	0.008	-0.005	0.017	0.017	-0.006	0.006	-0.001	0.086
	(0.007)**	(0.010)	(0.009)	(0.010)	(0.010)	(0.011)	(0.009)	(0.009)	(0.010)	(0.027)**
	[0.007]**	[0.008]*	[0.008]	[0.008]	[0.009]	[0.010]	[0.012]	[0.007]	[0.008]	[0.028]**
ln(cult_dist) 2001	0.008	0.011	0.001	-0.005	0.003	-0.003	-0.009	0.018	-0.001	0.029
	(0.005)	(0.008)	(0.006)	(0.007)	(0.006)	(0.008)	(0.007)	(0.007)**	(0.007)	(0.019)
	[0.001]***	[0.007]	[0.002]	[0.005]	[0.004]	[0.008]	[0.006]	[0.006]**	[0.005]	[0.011]**
N	11728	11724	11708	11708	11716	11708	11748	11720	11724	11780
R^2	0.0379	0.0311	0.0335	0.0330	0.0330	0.0316	0.0336	0.0335	0.0345	0.0312

LHS for estimation methods: export value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year, exporter-year, and country pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.5: Time-varying trade effect of logged cultural distance (homogeneous goods): Panel PPML estimation (basic sample)

Distance variable of interest:	(1) Perf. orient.	(2) Assertiveness	(3) Uncert. avoidance	(4) Power dist.	(5) In-group coll.	(6) Institutional coll.	(7) Future orient.	(8) Humane orient.	(9) Gender egal.	(10) Average
RTA	-0.132*	-0.127	-0.131	-0.095	-0.148*	-0.131*	-0.129	-0.116	-0.124	-0.130
	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)	(0.066)	(0.068)	(0.066)	(0.067)	(0.067)
RTA_LAG3	0.039	0.040	0.047	0.043	0.011	0.044	0.041	0.041	0.046	0.046
	(0.025)	(0.024)	(0.024)	(0.025)	(0.029)	(0.024)	(0.025)	(0.024)	(0.025)	(0.025)
RTA_LAG6	0.007	0.013	0.012	0.017	-0.025	0.015	0.014	0.014	0.016	-0.005
	(0.030)	(0.030)	(0.030)	(0.030)	(0.032)	(0.029)	(0.030)	(0.028)	(0.030)	(0.030)
RTA_LAG9	0.031	0.034	0.031	0.033	0.023	0.035	0.031	0.015	0.039	0.027
	(0.030)	(0.030)	(0.031)	(0.031)	(0.032)	(0.030)	(0.030)	(0.030)	(0.031)	(0.032)
ln_cult_dist_1995	0.011	0.004	-0.006	-0.020	-0.007	0.049	-0.006	0.035	0.010	0.069
	(0.013)	(0.018)	(0.014)	(0.015)	(0.016)	(0.019)**	(0.016)	(0.017)*	(0.019)	(0.045)
	[0.012]	[0.014]	[0.013]	[0.011]	[0.017]	[0.016]**	[0.017]	[0.017]*	[0.018]	[0.048]
ln_cult_dist_1998	0.012	0.015	0.015	-0.003	0.006	0.047	0.009	0.015	0.004	0.109
	(0.011)	(0.016)	(0.013)	(0.014)	(0.015)	(0.019)*	(0.016)	(0.016)	(0.018)	(0.040)**
	[0.012]	[0.010]	[0.012]	[0.013]	[0.015]	[0.019]*	[0.014]	[0.013]	[0.019]	[0.035]**
ln_cult_dist_2001	-0.003	0.018	0.006	-0.009	-0.003	0.007	-0.008	0.040	-0.019	0.023
	(0.008)	(0.011)	(0.009)	(0.012)	(0.009)	(0.010)	(0.011)	(0.010)***	(0.014)	(0.030)
	[0.004]	[0.007]**	[0.006]	[0.010]	[0.004]	[0.008]	[0.007]	[0.008]***	[0.012]	[0.013]
N	11520	11516	11500	11504	11508	11500	11540	11512	11520	11572
R^2	0.0257	0.0163	0.0194	0.0089	0.0393	0.0045	0.0212	0.0106	0.0133	0.0099

LHS for estimation methods: export value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year, exporter-year, and country pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.6: Time-varying trade effects of logged cultural distance (differentiated goods): Panel PPML estimation (basic sample)

Distance variable of interest:	(1) Perf. orient.	(2) Assertiveness	(3) Uncert. avoidance	(4) Power dist.	(5) In-group coll.	(6) Institutional coll.	(7) Future orient.	(8) Humane orient.	(9) Gender egal.	(10) Average
RTA	-0.263***	-0.254***	-0.263***	-0.261***	-0.264***	-0.264***	-0.261***	-0.260***	-0.260***	-0.261***
	(0.059)	(0.060)	(0.059)	(0.061)	(0.064)	(0.060)	(0.058)	(0.061)	(0.060)	(0.061)
RTA_LAG3	0.045*	0.048*	0.055**	0.049*	0.022	0.050*	0.046*	0.042*	0.043*	0.042
	(0.021)	(0.021)	(0.020)	(0.020)	(0.023)	(0.021)	(0.021)	(0.021)	(0.021)	(0.022)
RTA_LAG6	-0.075***	-0.071***	-0.074***	-0.071***	-0.077**	-0.072***	-0.074***	-0.071***	-0.072***	-0.083***
	(0.019)	(0.019)	(0.020)	(0.019)	(0.025)	(0.019)	(0.019)	(0.021)	(0.020)	(0.020)
RTA_LAG9	-0.026	-0.023	-0.018	-0.016	-0.045	-0.024	-0.022	-0.026	-0.026	-0.034
	(0.022)	(0.022)	(0.022)	(0.023)	(0.025)	(0.023)	(0.022)	(0.023)	(0.023)	(0.024)
ln(cult_dist) 1995	0.029	0.035	-0.010	-0.011	0.041	0.011	-0.025	0.009	0.016	0.105
	(0.012)*	(0.012)**	(0.011)	(0.013)	(0.014)**	(0.014)	(0.012)*	(0.010)	(0.013)	(0.039)**
	[0.014]*	[0.008]***	[0.009]	[0.011]	[0.013]**	[0.013]	[0.015]	[0.007]	[0.010]	[0.056]
ln(cult_dist) 1998	0.031	0.020	0.002	-0.011	0.027	0.001	-0.012	-0.001	0.005	0.089
	(0.008)***	(0.009)*	(0.009)	(0.011)	(0.009)**	(0.010)	(0.010)	(0.009)	(0.011)	(0.029)**
	[0.008]***	[0.010]*	[0.008]	[0.008]	[0.009]**	[0.010]	[0.012]	[0.005]	[0.006]	[0.041]*
ln(cult_dist) 20011	0.017	0.005	-0.004	-0.005	0.010	-0.008	-0.009	0.003	0.014	0.042
	(0.006)**	(0.008)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.006)	(0.008)	(0.022)
	[0.003]***	[0.008]	[0.003]	[0.005]	[0.001]***	[0.010]	[0.007]	[0.005]	[0.005]**	[0.014]**
N	11676	11668	11652	11652	11660	11652	11692	11664	11668	11724
R^2	0.0354	0.0282	0.0313	0.0303	0.0249	0.0317	0.0305	0.0319	0.0319	0.0292

LHS for estimation methods: export value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year, exporter-year, and country pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.7: Time-varying trade effects of cultural distance (aggregate trade): Panel PPML estimation (basic sample+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	-0.163**	-0.156*	-0.179**	-0.129*	-0.162**	-0.168**	-0.153*	-0.131*	-0.151*	-0.152*
	(0.063)	(0.063)	(0.064)	(0.062)	(0.062)	(0.062)	(0.063)	(0.061)	(0.062)	(0.062)
RTA_LAG3	0.053	0.043	0.050	0.041	0.056	0.039	0.035	0.037	0.045	0.051
	(0.037)	(0.038)	(0.038)	(0.039)	(0.043)	(0.039)	(0.036)	(0.037)	(0.039)	(0.044)
RTA_LAG6	-0.048	-0.050	-0.048	-0.059	-0.024	-0.058	-0.036	-0.052	-0.039	-0.059
	(0.047)	(0.047)	(0.045)	(0.046)	(0.048)	(0.048)	(0.047)	(0.045)	(0.048)	(0.048)
RTA_LAG9	0.154*	0.150*	0.161**	0.160*	0.130*	0.147*	0.141*	0.159*	0.151*	0.168**
	(0.064)	(0.065)	(0.061)	(0.065)	(0.065)	(0.064)	(0.066)	(0.065)	(0.066)	(0.064)
(Cult_dist) 1995	0.395	0.657	-1.234	1.197	-0.156	0.865	-1.303	0.854	-0.350	-0.551
	(0.761)	(0.528)	(0.423)**	(0.553)*	(0.377)	(0.479)	(0.615)*	(0.468)	(0.674)	(1.495)
	[0.754]	[0.217]**	[0.371]***	[0.617]	[0.396]	[0.307]**	[0.811]	[0.448]	[0.813]	[1.619]
(Cult_dist) 1998	-0.592	0.800	-0.487	1.132	0.195	0.873	-1.015	0.590	0.448	0.468
	(0.857)	(0.480)	(0.356)	(0.449)*	(0.329)	(0.434)*	(0.527)	(0.421)	(0.528)	(1.152)
	[1.243]	[0.237]***	[0.387]	[0.449]*	[0.257]	[0.347]*	[0.632]	[0.291]*	[0.498]	[0.829]
(Cult_dist) 2001	1.200	-0.310	-1.126	-1.029	0.385	-0.017	-0.546	-1.314	-0.533	-1.699
	(0.592)*	(0.476)	(0.292)***	(0.493)*	(0.312)	(0.451)	(0.366)	(0.401)**	(0.460)	(1.032)
	[0.220]***	[0.249]	[0.144]***	[0.647]	[0.161]*	[0.283]	[0.100]***	[0.571]*	[0.342]	[0.769]*
INTL_BRDR_1995	-0.300***	-0.328***	-0.148*	-0.355***	-0.259**	-0.359***	-0.186**	-0.343***	-0.258***	-0.235
	(0.062)	(0.050)	(0.065)	(0.061)	(0.079)	(0.061)	(0.064)	(0.065)	(0.064)	(0.138)
INTL_BRDR_1998	-0.244***	-0.332***	-0.223***	-0.345***	-0.303***	-0.351***	-0.200***	-0.317***	-0.300***	-0.311**
	(0.061)	(0.054)	(0.061)	(0.057)	(0.074)	(0.062)	(0.056)	(0.056)	(0.061)	(0.112)
INTL_BRDR_2001	-0.293***	-0.210***	-0.107*	-0.164**	-0.288***	-0.230***	-0.191***	-0.129**	-0.199***	-0.091
	(0.053)	(0.048)	(0.050)	(0.052)	(0.070)	(0.056)	(0.052)	(0.044)	(0.054)	(0.104)
N	11997	11997	11997	11997	11997	11997	11997	11997	11997	11997
R^2	0.0046	0.0053	0.0041	0.0044	0.0054	0.0051	0.0047	0.0048	0.0055	0.0052

LHS for estimation methods: export value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year, exporter-year, and country pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.8: Time-varying trade effects of cultural distance (homogeneous goods): Panel PPML estimation (basic sample+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. dist.
RTA	-0.054	-0.047	-0.066	-0.017	-0.061	-0.059	-0.041	-0.044	-0.053	-0.060
	(0.072)	(0.072)	(0.073)	(0.071)	(0.072)	(0.070)	(0.072)	(0.072)	(0.070)	(0.072)
RTA_LAG3	0.113*	0.114*	0.127*	0.118*	0.146**	0.101*	0.104*	0.109*	0.128*	0.149**
	(0.049)	(0.051)	(0.053)	(0.049)	(0.056)	(0.050)	(0.047)	(0.051)	(0.050)	(0.058)
RTA_LAG6	0.029	0.042	0.030	0.012	0.025	0.019	0.035	0.033	0.014	0.004
	(0.047)	(0.047)	(0.046)	(0.043)	(0.047)	(0.047)	(0.047)	(0.046)	(0.044)	(0.049)
RTA_LAG9	0.196**	0.186**	0.202**	0.213**	0.185*	0.192**	0.188**	0.196**	0.197**	0.217**
	(0.071)	(0.071)	(0.068)	(0.071)	(0.079)	(0.072)	(0.072)	(0.072)	(0.071)	(0.074)
ln_cult_dist_1995	-0.810	0.004	-1.558	-0.509	-0.307	1.205	-1.811	-0.006	0.138	-2.504
	(0.836)	(0.730)	(0.517)**	(0.757)	(0.393)	(0.569)*	(0.708)*	(0.535)	(0.783)	(1.539)
	[0.718]	[0.454]	[0.499]**	[0.389]	[0.471]	[0.315]***	[0.739]*	[0.389]	[0.655]	[1.308]
ln_cult_dist_1998	0.065	-0.249	-0.456	0.974	0.375	0.576	-0.369	-0.165	2.233	0.912
	(0.661)	(0.660)	(0.360)	(0.752)	(0.317)	(0.516)	(0.454)	(0.473)	(0.593)***	(1.063)
	[0.460]	[0.543]	[0.301]	[0.521]	[0.301]	[0.364]	[0.414]	[0.355]	[0.442]***	[0.906]
ln_cult_dist_2001	1.125	0.463	-0.656	-2.661	0.133	-0.130	-0.401	-1.359	-1.003	-2.088
	(0.505)*	(0.496)	(0.340)	(0.804)***	(0.285)	(0.463)	(0.379)	(0.568)*	(0.542)	(1.006)*
	[0.278]***	[0.138]***	[0.286]*	[1.215]*	[0.183]	[0.499]	[0.277]	[0.911]	[0.812]	[1.324]
INTL_BRDR_1995	-0.171	-0.211*	-0.045	-0.180	-0.168	-0.316**	-0.082	-0.213	-0.220	-0.010
	[0.093]	[0.102]	[0.110]	[0.100]	[0.086]	[0.107]	[0.091]	[0.138]	[0.131]	[0.085]
INTL_BRDR_1998	-0.126	-0.105	-0.073	-0.177*	-0.175*	-0.172*	-0.096	-0.111	-0.255**	-0.192
	[0.081]	[0.095]	[0.102]	[0.078]	[0.078]	[0.087]	[0.088]	[0.077]	[0.092]	[0.101]
INTL_BRDR_2001	-0.373***	-0.350***	-0.248*	-0.145	-0.338***	-0.309***	-0.291***	-0.224***	-0.257***	-0.151
	[0.089]	[0.081]	[0.104]	[0.079]	[0.080]	[0.069]	[0.088]	[0.065]	[0.077]	[0.102]
N	11785	11785	11785	11785	11785	11785	11785	11785	11785	11785
R^2	0.0018	0.0018	0.0015	0.02	0.0018	0.0018	0.0016	0.0017	0.0013	0.0016

LHS for estimation methods: export value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year, exporter-year, and country pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.9: Time-varying trade effects of cultural distance (differentiated goods): Panel PPML estimation (basic sample+intra-nat. trade)

Distance variable of interest:	(1) Perf. orient.	(2) Assertiveness	(3) Uncert. avoidance	(4) Power dist.	(5) In-group coll.	(6) Institutional coll.	(7) Future orient.	(8) Humane orient.	(9) Gender egal.	(10) Av. dist.
RTA	-0.129	-0.128	-0.142*	-0.122	-0.127	-0.136	-0.124	-0.115	-0.128	-0.115
	(0.071)	(0.071)	(0.072)	(0.071)	(0.070)	(0.071)	(0.071)	(0.070)	(0.070)	(0.070)
RTA_LAG3	0.042	0.025	0.031	0.023	0.028	0.022	0.026	0.021	0.025	0.020
	(0.035)	(0.035)	(0.035)	(0.036)	(0.036)	(0.035)	(0.036)	(0.034)	(0.035)	(0.035)
RTA_LAG6	-0.081	-0.088	-0.083	-0.078	-0.052	-0.079	-0.068	-0.092	-0.065	-0.083
	(0.052)	(0.054)	(0.049)	(0.052)	(0.054)	(0.054)	(0.052)	(0.049)	(0.053)	(0.055)
RTA_LAG9	0.140*	0.132	0.140*	0.129	0.105	0.120	0.118	0.147*	0.125	0.138*
	(0.071)	(0.071)	(0.066)	(0.070)	(0.069)	(0.069)	(0.073)	(0.070)	(0.072)	(0.068)
(Cult_dist) 1995	1.016	0.893	-0.670	1.079	0.200	0.721	-0.587	0.575	-0.305	0.874
	(0.870)	(0.459)	(0.326)*	(0.523)*	(0.381)	(0.470)	(0.518)	(0.439)	(0.484)	(1.395)
	[0.654]	[0.144]***	[0.297]*	[0.501]*	[0.345]	[0.347]*	[0.485]	[0.352]	[0.249]	[1.248]
(Cult_dist) 1998	-0.260	1.041	-0.299	0.636	0.278	0.735	-1.007	0.470	-0.584	0.464
	(0.964)	(0.523)*	(0.398)	(0.513)	(0.376)	(0.464)	(0.619)	(0.451)	(0.580)	(1.352)
	[1.385]	[0.300]***	[0.420]	[0.389]	[0.287]	[0.385]	[0.678]	[0.256]	[0.480]	[0.902]
(Cult_dist) 2001	1.271	-0.512	-1.299	-0.189	0.574	0.241	-0.614	-1.321	0.001	-1.118
	(0.730)	(0.542)	(0.314)***	(0.454)	(0.361)	(0.469)	(0.429)	(0.395)***	(0.509)	(1.236)
	[0.352]***	[0.161]**	[0.191]***	[0.246]	[0.212]**	[0.222]	[0.090]***	[0.500]**	[0.334]	[0.954]
INTL_BRDR_1995	-0.310***	-0.329***	-0.191**	-0.328***	-0.292***	-0.328***	-0.222***	-0.307***	-0.245***	-0.332*
	(0.063)	(0.051)	(0.060)	(0.061)	(0.080)	(0.065)	(0.060)	(0.060)	(0.056)	(0.134)
INTL_BRDR_1998	-0.275***	-0.363***	-0.257***	-0.328***	-0.329***	-0.352***	-0.216***	-0.323***	-0.256***	-0.325**
	(0.062)	(0.058)	(0.063)	(0.060)	(0.078)	(0.065)	(0.058)	(0.056)	(0.062)	(0.125)
INTL_BRDR_2001	-0.247***	-0.151**	-0.043	-0.175**	-0.271***	-0.208**	-0.143*	-0.080	-0.186**	-0.096
	(0.059)	(0.056)	(0.051)	(0.053)	(0.079)	(0.063)	(0.058)	(0.045)	(0.060)	(0.121)
N	11941	11941	11941	11941	11941	11941	11941	11941	11941	11941
R^2	0.0037	0.0047	0.0039	0.0045	0.0049	0.0048	0.0043	0.0045	0.0050	0.0049

LHS for estimation methods: export value. Distance definition: $\frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year, exporter-year, and country pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.10: Time-varying trade effects of unscaled cultural distance (aggregate trade): Panel PPML estimation (basic sample+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Average
RTA	-0.163**	-0.156*	-0.179**	-0.129*	-0.162**	-0.168**	-0.153*	-0.131*	-0.151*	-0.152*
	(0.063)	(0.063)	(0.064)	(0.062)	(0.062)	(0.062)	(0.063)	(0.061)	(0.062)	(0.062)
RTA_LAG3	0.053	0.043	0.050	0.041	0.056	0.039	0.035	0.037	0.045	0.051
	(0.037)	(0.038)	(0.038)	(0.039)	(0.043)	(0.039)	(0.036)	(0.037)	(0.039)	(0.044)
RTA_LAG6	-0.048	-0.050	-0.048	-0.059	-0.024	-0.058	-0.036	-0.052	-0.039	-0.059
	(0.047)	(0.047)	(0.045)	(0.046)	(0.048)	(0.048)	(0.047)	(0.045)	(0.048)	(0.048)
RTA_LAG9	0.154*	0.150*	0.161**	0.160*	0.130*	0.147*	0.141*	0.159*	0.151*	0.168**
	(0.064)	(0.065)	(0.061)	(0.065)	(0.065)	(0.064)	(0.066)	(0.065)	(0.066)	(0.064)
(Cult_dist) 1995	0.066	0.109	-0.206	0.199	-0.026	0.144	-0.217	0.142	-0.058	-0.092
	(0.127)	(0.088)	(0.070)**	(0.092)*	(0.063)	(0.080)	(0.103)*	(0.078)	(0.112)	(0.249)
	[0.129]	[0.035]**	[0.063]**	[0.103]	[0.067]	[0.052]**	[0.136]	[0.075]	[0.138]	[0.271]
(Cult_dist) 1998	-0.099	0.133	-0.081	0.189	0.032	0.145	-0.169	0.098	0.075	0.078
	(0.143)	(0.080)	(0.059)	(0.075)*	(0.055)	(0.072)*	(0.088)	(0.070)	(0.088)	(0.192)
	[0.207]	[0.050]**	[0.069]	[0.076]*	[0.047]	[0.061]*	[0.107]	[0.051]	[0.089]	[0.147]
(Cult_dist) 2001	0.200	-0.052	-0.188	-0.172	0.064	-0.003	-0.091	-0.219	-0.089	-0.283
	(0.099)*	(0.079)	(0.049)***	(0.082)*	(0.052)	(0.075)	(0.061)	(0.067)**	(0.077)	(0.172)
	[0.044]***	[0.046]	[0.037]***	[0.108]	[0.033]	[0.052]	[0.021]***	[0.097]*	[0.060]	[0.135]*
INTL_BRDR_1995	-0.300***	-0.328***	-0.148*	-0.355***	-0.259**	-0.359***	-0.186**	-0.343***	-0.258***	-0.235
	(0.062)	(0.050)	(0.065)	(0.061)	(0.079)	(0.061)	(0.064)	(0.065)	(0.064)	(0.138)
INTL_BRDR_1998	-0.244***	-0.332***	-0.223***	-0.345***	-0.303***	-0.351***	-0.200***	-0.317***	-0.300***	-0.311**
	(0.061)	(0.054)	(0.061)	(0.057)	(0.074)	(0.062)	(0.056)	(0.056)	(0.061)	(0.112)
INTL_BRDR_2001	-0.293***	-0.210***	-0.107*	-0.164**	-0.288***	-0.230***	-0.191***	-0.129**	-0.199***	-0.091
	(0.053)	(0.048)	(0.050)	(0.052)	(0.070)	(0.056)	(0.052)	(0.044)	(0.054)	(0.104)
N	11997	11997	11997	11997	11997	11997	11997	11997	11997	11997
R^2	0.0046	0.0053	0.0041	0.0044	0.0054	0.0051	0.0047	0.0048	0.0055	0.0052

LHS for estimation methods: export value. Distance definition: $|(cultural\_dimension_i - cultural\_dimension_j)|$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year, exporter-year, and country pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.11: Time-varying trade effects of unscaled cultural distance (homogeneous goods): Panel PPML estimation (basic sample+intra-nat. trade)

Distance variable of interest:	(1) Perf. orient.	(2) Assertiveness	(3) Uncert. avoidance	(4) Power dist.	(5) In-group coll.	(6) Institutional coll.	(7) Future orient.	(8) Humane orient.	(9) Gender egal.	(10) Average
RTA	-0.054 (0.072)	-0.047 (0.072)	-0.066 (0.073)	-0.017 (0.071)	-0.061 (0.072)	-0.059 (0.070)	-0.041 (0.072)	-0.044 (0.072)	-0.053 (0.070)	-0.060 (0.072)
RTA_LAG3	0.113* (0.049)	0.114* (0.051)	0.127* (0.053)	0.118* (0.049)	0.146** (0.056)	0.101* (0.050)	0.104* (0.047)	0.109* (0.051)	0.128* (0.050)	0.149** (0.058)
RTA_LAG6	0.029 (0.047)	0.042 (0.047)	0.030 (0.046)	0.012 (0.043)	0.025 (0.047)	0.019 (0.047)	0.035 (0.047)	0.033 (0.046)	0.014 (0.044)	0.004 (0.049)
RTA_LAG9	0.196** (0.071)	0.186** (0.071)	0.202** (0.068)	0.213** (0.071)	0.185* (0.079)	0.192** (0.072)	0.188** (0.072)	0.196** (0.072)	0.197** (0.071)	0.217** (0.074)
(Cult_dist) 1995	-0.135 (0.139) [0.120]	0.001 (0.122) [0.079]	-0.260 (0.086)** [0.088]***	-0.085 (0.126) [0.069]	-0.051 (0.065) [0.082]	0.201 (0.095)* [0.056]***	-0.302 (0.118)* [0.125]*	-0.001 (0.089) [0.069]	0.023 (0.130) [0.112]	-0.417 (0.256) [0.221]
(Cult_dist) 1998	0.011 (0.110) [0.078]	-0.041 (0.110) [0.090]	-0.076 (0.060) [0.051]	0.162 (0.125) [0.085]	0.063 (0.053) [0.053]	0.096 (0.086) [0.062]	-0.061 (0.076) [0.069]	-0.028 (0.079) [0.063]	0.372 (0.099)*** [0.081]***	0.152 (0.177) [0.154]
(Cult_dist) 2001	0.187 (0.084)* [0.052]***	0.077 (0.083) [0.032]*	-0.109 (0.057) [0.054]*	-0.444 (0.134)*** [0.203]*	0.022 (0.048) [0.036]	-0.022 (0.077) [0.084]	-0.067 (0.063) [0.051]	-0.226 (0.095)* [0.153]	-0.167 (0.090) [0.137]	-0.348 (0.168)* [0.222]
INTL_BRDR_1995	-0.171* (0.074)	-0.211** (0.072)	-0.045 (0.084)	-0.180* (0.081)	-0.168* (0.084)	-0.316*** (0.072)	-0.082 (0.079)	-0.213* (0.084)	-0.220* (0.090)	-0.010 (0.137)
INTL_BRDR_1998	-0.126 (0.073)	-0.105 (0.075)	-0.073 (0.078)	-0.177* (0.076)	-0.175* (0.077)	-0.172* (0.074)	-0.096 (0.072)	-0.111 (0.070)	-0.255** (0.078)	-0.192 (0.110)
INTL_BRDR_2001	-0.373*** (0.054)	-0.350*** (0.057)	-0.248*** (0.065)	-0.145* (0.068)	-0.338*** (0.058)	-0.309*** (0.058)	-0.291*** (0.055)	-0.224*** (0.057)	-0.257*** (0.062)	-0.151 (0.090)
N	11785	11785	11785	11785	11785	11785	11785	11785	11785	11785
R^2	0.0018	0.0018	0.0015	0.0012	0.0018	0.0018	0.0016	0.0017	0.0013	0.0016

LHS for estimation methods: export value. Distance definition:$|(cultural\_dimension_i - cultural\_dimension_j)|$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year, exporter-year, and country pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.12: Time-varying trade effects of unscaled cultural distance (differentiated goods): Panel PPML estimation (basic sample+intra-nat. trade)

Distance variable of interest:	(1) Perf. orient.	(2) Assertiveness	(3) Uncert. avoidance	(4) Power dist.	(5) In-group coll.	(6) Institutional coll.	(7) Future orient.	(8) Humane orient.	(9) Gender egal.	(10) Average
RTA	-0.129	-0.128	-0.142*	-0.122	-0.127	-0.136	-0.124	-0.115	-0.128	-0.115
	(0.071)	(0.071)	(0.072)	(0.071)	(0.070)	(0.071)	(0.071)	(0.070)	(0.070)	(0.070)
RTA_LAG3	0.042	0.025	0.031	0.023	0.028	0.022	0.026	0.021	0.025	0.020
	(0.035)	(0.035)	(0.035)	(0.036)	(0.036)	(0.035)	(0.036)	(0.034)	(0.035)	(0.035)
RTA_LAG6	-0.081	-0.088	-0.083	-0.078	-0.052	-0.079	-0.068	-0.092	-0.065	-0.083
	(0.052)	(0.054)	(0.049)	(0.052)	(0.054)	(0.054)	(0.052)	(0.049)	(0.053)	(0.055)
RTA_LAG9	0.140*	0.132	0.140*	0.129	0.105	0.120	0.118	0.147*	0.125	0.138*
	(0.071)	(0.071)	(0.066)	(0.070)	(0.069)	(0.069)	(0.073)	(0.070)	(0.072)	(0.068)
(Cult_dist) 1995	0.169	0.149	-0.112	0.180	0.033	0.120	-0.098	0.096	-0.051	0.146
	(0.145)	(0.077)	(0.054)*	(0.087)*	(0.063)	(0.078)	(0.086)	(0.073)	(0.081)	(0.232)
	[0.113]	[0.029]***	[0.047]*	[0.083]*	[0.058]	[0.058]*	[0.083]	[0.060]	[0.048]	[0.205]
(Cult_dist) 1998	-0.043	0.173	-0.050	0.106	0.046	0.122	-0.168	0.078	-0.097	0.077
	(0.161)	(0.087)*	(0.066)	(0.086)	(0.063)	(0.077)	(0.103)	(0.075)	(0.097)	(0.225)
	[0.231]	[0.063]**	[0.074]	[0.067]	[0.052]	[0.065]	[0.114]	[0.048]	[0.083]	[0.153]
(Cult_dist) 2001	0.212	-0.085	-0.216	-0.031	0.096	0.040	-0.102	-0.220	0.000	-0.186
	(0.122)	(0.090)	(0.052)***	(0.076)	(0.060)	(0.078)	(0.072)	(0.066)***	(0.085)	(0.206)
	[0.063]***	[0.042]*	[0.037]***	[0.049]	[0.042]*	[0.044]	[0.024]***	[0.084]**	[0.057]	[0.162]
INTL_BRDR_1995	-0.310***	-0.329***	-0.191**	-0.328***	-0.292***	-0.328***	-0.222***	-0.307***	-0.245***	-0.332*
	(0.063)	(0.051)	(0.060)	(0.061)	(0.080)	(0.065)	(0.060)	(0.060)	(0.056)	(0.134)
INTL_BRDR_1998	-0.275***	-0.363***	-0.257***	-0.328***	-0.329***	-0.352***	-0.216***	-0.323***	-0.256***	-0.325**
	(0.062)	(0.058)	(0.063)	(0.060)	(0.078)	(0.065)	(0.058)	(0.056)	(0.062)	(0.125)
INTL_BRDR_2001	-0.247***	-0.151**	-0.043	-0.175**	-0.271***	-0.208**	-0.143*	-0.080	-0.186**	-0.096
	(0.059)	(0.056)	(0.051)	(0.053)	(0.079)	(0.063)	(0.058)	(0.045)	(0.060)	(0.121)
N	11941	11941	11941	11941	11941	11941	11941	11941	11941	11941
R^2	0.0037	0.0047	0.0039	0.0045	0.0049	0.0048	0.0046	0.0045	0.0053	0.0049

LHS for estimation methods: export value. Distance definition: $|(cultural\_dimension_i - cultural\_dimension_j)|$. Columns (1) to (9) show, which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year, exporter-year, and country pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.13: Time-varying trade effects of logged cultural proximity (aggregate trade): Panel PPML estimation (basic sample+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
RTA	-0.164**	-0.156*	-0.178**	-0.125*	-0.164**	-0.168**	-0.153*	-0.128*	-0.151*	-0.152*
	(0.063)	(0.063)	(0.064)	(0.062)	(0.062)	(0.062)	(0.063)	(0.061)	(0.062)	(0.062)
RTA_LAG3	0.053	0.043	0.050	0.041	0.057	0.039	0.034	0.037	0.045	0.050
	(0.037)	(0.038)	(0.038)	(0.039)	(0.042)	(0.039)	(0.036)	(0.037)	(0.039)	(0.044)
RTA_LAG6	-0.048	-0.050	-0.048	-0.058	-0.024	-0.058	-0.036	-0.051	-0.040	-0.059
	(0.047)	(0.047)	(0.045)	(0.045)	(0.047)	(0.048)	(0.047)	(0.045)	(0.048)	(0.048)
RTA_LAG9	0.154*	0.150*	0.161**	0.159*	0.132*	0.147*	0.141*	0.158*	0.151*	0.168**
	(0.065)	(0.065)	(0.061)	(0.066)	(0.066)	(0.064)	(0.066)	(0.065)	(0.066)	(0.064)
ln(Cult_prox) 1995	-0.344	-0.621	1.077	-1.158	0.194	-0.774	1.167	-0.804	0.268	0.537
	(0.691)	(0.481)	(0.363)**	(0.498)*	(0.310)	(0.420)	(0.548)*	(0.415)	(0.614)	(1.348)
	[0.695]	[0.204]**	[0.315]***	[0.565]*	[0.334]	[0.268]**	[0.736]	[0.414]	[0.757]	[1.480]
ln(Cult_prox) 1998	0.586	-0.733	0.413	-1.071	-0.126	-0.766	0.895	-0.562	-0.457	-0.408
	(0.781)	(0.437)	(0.300)	(0.389)**	(0.269)	(0.383)*	(0.470)	(0.372)	(0.477)	(1.030)
	[1.146]	[0.215]***	[0.334]	[0.408]**	[0.215]	[0.305]*	[0.567]	[0.273]*	[0.466]	[0.770]
ln(Cult_prox) 2001	-1.049	0.282	0.964	0.910	-0.290	0.012	0.486	1.137	0.470	1.559
	(0.535)	(0.438)	(0.245)***	(0.432)*	(0.257)	(0.399)	(0.321)	(0.359)**	(0.411)	(0.915)
	[0.202]***	[0.232]	[0.129]***	[0.582]	[0.135]*	[0.247]	[0.093]***	[0.514]*	[0.307]	[0.683]*
INTL_BRDR_1995	-0.299***	-0.328***	-0.153*	-0.356***	-0.250***	-0.356***	-0.190**	-0.342***	-0.262***	-0.234
	(0.061)	(0.049)	(0.063)	(0.060)	(0.076)	(0.059)	(0.062)	(0.063)	(0.063)	(0.132)
INTL_BRDR_1998	-0.243***	-0.330***	-0.227***	-0.344***	-0.295***	-0.347***	-0.205***	-0.318***	-0.302***	-0.307**
	(0.060)	(0.054)	(0.059)	(0.056)	(0.070)	(0.061)	(0.054)	(0.055)	(0.060)	(0.107)
INTL_BRDR_2001	-0.288***	-0.210***	-0.114*	-0.168***	-0.279***	-0.231***	-0.193***	-0.137**	-0.201***	-0.096
	(0.052)	(0.047)	(0.048)	(0.050)	(0.067)	(0.055)	(0.051)	(0.043)	(0.053)	(0.098)
N	11997	11997	11997	11997	11997	11997	11997	11997	11997	11997
R^2	0.0046	0.0053	0.0040	0.0042	0.0054	0.0051 0.0047	0.0047	0.0054	0.0052	

LHS for estimation methods: export value. Proximity definition: $1 - \frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year, exporter-year, and country-pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.14: Time-varying trade effects of logged cultural proximity (homogeneous goods): Panel PPML estimation (basic sample+intra-nat. trade)

Proximity variable of interest:	(1) Perf. orient.	(2) Assertiveness	(3) Uncert. avoidance	(4) Power dist.	(5) In-group coll.	(6) Institutional coll.	(7) Future orient.	(8) Humane orient.	(9) Gender egal.	(10) Av. prox.
RTA	-0.055	-0.046	-0.065	-0.016	-0.062	-0.060	-0.040	-0.042	-0.054	-0.060
	(0.072)	(0.072)	(0.073)	(0.071)	(0.072)	(0.070)	(0.072)	(0.072)	(0.070)	(0.072)
RTA_LAG3	0.113*	0.114*	0.127*	0.116*	0.148**	0.101*	0.104*	0.109*	0.128*	0.149**
	(0.049)	(0.051)	(0.052)	(0.049)	(0.056)	(0.050)	(0.047)	(0.051)	(0.050)	(0.057)
RTA_LAG6	0.029	0.042	0.030	0.016	0.024	0.019	0.035	0.034	0.013	0.004
	(0.047)	(0.047)	(0.046)	(0.042)	(0.047)	(0.047)	(0.047)	(0.045)	(0.044)	(0.049)
RTA_LAG9	0.196**	0.185**	0.202**	0.210**	0.187*	0.192**	0.188**	0.195**	0.197**	0.217**
	(0.071)	(0.071)	(0.068)	(0.071)	(0.079)	(0.072)	(0.072)	(0.072)	(0.071)	(0.074)
ln(cult_prox)_1995	0.774	-0.013	1.345**	0.378	0.315	-1.082*	1.638**	-0.025	-0.176	2.317
	(0.764)	(0.675)	(0.444)**	(0.693)	(0.333)	(0.506)*	(0.628)**	(0.475)	(0.710)	(1.397)
	[0.646]	[0.425]	[0.421]**	[0.362]	[0.405]	[0.283]***	[0.661]*	[0.359]	[0.602]	[1.180]*
ln(cult_prox)_1998	-0.030	0.215	0.369	-0.905	-0.293	-0.528	0.337	0.106	-2.085***	-0.831
	(0.595)	(0.613)	(0.306)	(0.676)	(0.266)	(0.461)	(0.399)	(0.422)	(0.532)***	(0.956)
	[0.418]	[0.506]	[0.257]	[0.466]	[0.256]	[0.325]	[0.366]	[0.319]	[0.387]***	[0.822]
ln(cult_prox)_2001	-1.002*	-0.449	0.551	2.381**	-0.079	0.092	0.371	1.192*	0.876	1.900*
	(0.452)*	(0.459)	(0.284)	(0.729)**	(0.241)	(0.415)	(0.335)	(0.514)*	(0.488)	(0.910)*
	[0.253]***	[0.122]***	[0.241]*	[1.089]*	[0.161]	[0.442]	[0.244]	[0.809]	[0.736]	[1.209]
INTL_BRDR_1995	-0.171*	-0.211**	-0.054	-0.187*	-0.162*	-0.313***	-0.088	-0.215**	-0.223*	-0.016
	(0.073)	(0.071)	(0.081)	(0.080)	(0.082)	(0.071)	(0.077)	(0.082)	(0.089)	(0.131)
INTL_BRDR_1998	-0.124	-0.107	-0.079	-0.175*	-0.168*	-0.171*	-0.097	-0.114	-0.253***	-0.188
	(0.072)	(0.074)	(0.076)	(0.074)	(0.075)	(0.073)	(0.070)	(0.069)	(0.076)	(0.105)
INTL_BRDR_2001	-0.369***	-0.351***	-0.253***	-0.154*	-0.332***	-0.312***	-0.291***	-0.231***	-0.262***	-0.159
	(0.053)	(0.057)	(0.062)	(0.066)	(0.056)	(0.057)	(0.054)	(0.056)	(0.060)	(0.086)
N	11785	11785	11785	11785	11785	11785	11785	11785	11785	11785
R^2	0.0038	0.0047	0.0039	0.0044	0.0049	0.0048 0.0046	0.0045	0.0050	0.0049	

LHS for estimation methods: export value. Proximity definition: $1 - \frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year, exporter-year, and country-pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Table 4.A.15: Time-varying trade effects of logged cultural proximity (differentiated goods): Panel PPML estimation (basic sample+intra-nat. trade)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proximity variable of interest:	Perf. orient.	Assertiveness	Uncert. avoidance	Power dist.	In-group coll.	Institutional coll.	Future orient.	Humane orient.	Gender egal.	Av. prox.
RTA	-0.130	-0.128	-0.141	-0.121	-0.129	-0.136	-0.124	-0.113	-0.127	-0.115
	(0.071)	(0.071)	(0.072)	(0.071)	(0.070)	(0.071)	(0.071)	(0.070)	(0.070)	(0.070)
RTA_LAG3	0.042	0.025	0.031	0.024	0.029	0.022	0.026	0.021	0.025	0.021
	(0.035)	(0.035)	(0.035)	(0.036)	(0.036)	(0.035)	(0.036)	(0.034)	(0.035)	(0.035)
RTA_LAG6	-0.082	-0.089	-0.082	-0.078	-0.052	-0.079	-0.068	-0.091	-0.065	-0.082
	(0.052)	(0.054)	(0.049)	(0.052)	(0.054)	(0.054)	(0.052)	(0.049)	(0.053)	(0.055)
RTA_LAG9	0.139	0.132	0.139*	0.129	0.106	0.120	0.118	0.146*	0.125	0.138*
	(0.072)	(0.071)	(0.066)	(0.070)	(0.069)	(0.069)	(0.073)	(0.070)	(0.072)	(0.068)
ln(cult_prox)_1995	-0.894	-0.830	0.590	-1.013	-0.110	-0.630	0.515	-0.554	0.253	-0.749
	(0.790)	(0.418)*	(0.278)*	(0.459)*	(0.308)	(0.412)	(0.461)	(0.388)	(0.440)	(1.244)
	[0.599]	[0.136]***	[0.249]*	[0.456]*	[0.282]	[0.301]*	[0.431]	[0.330]	[0.244]	[1.121]
ln(cult_prox)_1998	0.292	-0.944	0.253	-0.621	-0.194	-0.633	0.897	-0.453	0.516	-0.385
	(0.881)	(0.474)*	(0.338)	(0.443)	(0.305)	(0.409)	(0.555)	(0.398)	(0.525)	(1.209)
	[1.279]	[0.270]***	[0.363]	[0.351]	[0.239]	[0.339]	[0.606]	[0.233]	[0.443]	[0.822]
ln(cult_prox)_2001	-1.104	0.476	1.116	0.169	-0.452	-0.204	0.545	1.147	0.002	1.045
	(0.664)	(0.497)	(0.265)***	(0.392)	(0.297)	(0.414)	(0.380)	(0.349)**	(0.456)	(1.098)
	[0.332]***	[0.157]**	[0.166]***	[0.211]	[0.176]*	[0.191]	[0.089]***	[0.451]*	[0.297]	[0.847]
INTL_BRDR_1995	-0.306***	-0.328***	-0.194***	-0.327***	-0.281***	-0.325***	-0.225***	-0.308***	-0.247***	-0.325*
	(0.061)	(0.050)	(0.059)	(0.059)	(0.076)	(0.063)	(0.058)	(0.059)	(0.056)	(0.127)
INTL_BRDR_1998	-0.273***	-0.360***	-0.260***	-0.329***	-0.320***	-0.348***	-0.220***	-0.324***	-0.259***	-0.320**
	(0.061)	(0.057)	(0.061)	(0.058)	(0.074)	(0.063)	(0.056)	(0.055)	(0.061)	(0.118)
INTL_BRDR_2001	-0.242***	-0.151**	-0.052	-0.175***	-0.261***	-0.206***	-0.145**	-0.088*	-0.186**	-0.098
	(0.058)	(0.056)	(0.050)	(0.052)	(0.076)	(0.062)	(0.056)	(0.044)	(0.059)	(0.114)
N	11941	11941	11941	11941	11941	11941	11941	11941	11941	11941
R^2	0.0038	0.0047	0.0039	0.0044	0.0049	0.0048 0.0046	0.0045	0.0050	0.0049	

LHS for estimation methods: export value. Proximity definition: $1 - \frac{|(cultural\_dimension_i - cultural\_dimension_j)|}{max(cult\_dimension) - min(cult\_dimension)}$. Columns (1) to (9) show which of the nine different cultural distance measures is used in each given specification, see table 3.2. Estimation (10) uses the average of all 9 dimensions. All estimations include importer-year, exporter-year, and country-pair fixed effects. Standard errors in parentheses are clustered at country pair level and multi-way clustered, respectively. *** p<0.001,** p<0.01, * p<0.05

Chapter 5

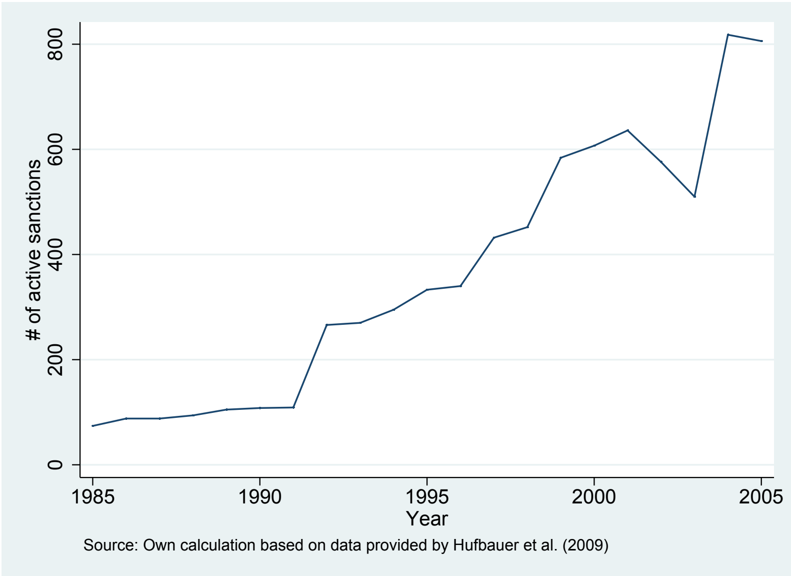
The Effects of Economic Sanctions on Trade: New Evidence from a Panel PPML Gravity Approach

5.1 Introduction

Economic sanctions and embargoes as an alternative to brute force are popular instruments of diplomatic behavior against ill-behaving states since the beginning of the 20$^{\text{th}}$ century, and they continue to be popular today. After the annexation of the Crimea by the Russian Federation in March 2014, the European Union (EU), the United States of America (USA), and several other states were quick to implement sanctions against Russia. Russia, in turn, reacted by implementing multilateral trade sanctions on its own, specifically, a total ban on food imports from the EU, North America, Norway and Australia. These sanctions have been renewed and are still active today. Another prominent example is the case of economic sanctions of the UN against North Korea, which have been increased in number and severity numerous times as a reaction to North Korea's continuous tests of nuclear missiles. Most recently, the USA plan to reinstate their sanctions against Iran in August 2018.

Figure 5.1 illustrates the number of sanctions active in a given year over the period from 1984 until 2005. It shows that the number of active economic sanctions has remained rather steady until 1990. After 1990, their usage has grown drastically, from under 100 to over 600 in just 15 years.[1]

Figure 5.1: Number of sanctions per year



The basic idea behind sanctions as a political instrument can be summarized by a quote of US-President Wilson from 1919: '*A nation that is boycotted is a nation that is in sight of surrender. Apply this economic, peaceful, silent, deadly remedy and there will be no need for force. It does not cost a life outside the nation boycotted, but it brings a pressure upon the nation which, in my judgment, no modern nation could resist*'.

Given the prevalence of sanctions, it is a straightforward question to ask whether they are an effective tool to enforce the goal(s) of sender countries. From an anecdotal perspective, the success rate does not seem to be overwhelming. Cuba has not abandoned its socialist regime due to pressure from the USA, Russia has not taken any steps to undo the annexation of the Crimea, and North Korea keeps testing missiles, to name just some examples. Especially North Korea has been subjected to drastic sanctions from many countries across the globe for numerous years. Hufbauer et al. (2009) show that only about one in three sanctions yields the desired political outcome.

[1] If unions like the EU or the Arab League are part of a sanction, the sanction is attributed to each member country individually.

With President Wilson's quote in mind, how is it possible for a country to resist these sanctions? Two explanations come to mind. First, it is possible that economic sanctions simply do not yield the desired punishing effect by not reducing existing trade between the sender and the targeted country. Secondly, countries that are affected by sanctions, either as a sender or a target, might switch their trade partners with little costs and therefore circumvent the expected trade reduction, which potentially offsets the negative effects of the sanctions mechanism.

In this chapter I add to the sanctions literature by empirically evaluating these potential explanations. In a first step, I quantify the partial trade effect of sanctions and potential counter-sanctions on international trade by estimating a gravity equation. My preferred specification is a pseudo poisson maximum likelihood (PPML) panel estimation which includes zeros and intra-national trade flows and a comprehensive set of fixed effects. Furthermore, I use standard OLS and first difference (FD) regressions. I argue that the implementation of sanctions can be treated similarly to the formation of a regional trade agreement between two countries, but with the opposite intention, of course. Instead of abolishing tariffs and streamlining standards to facilitate trade, it is possible to interpret a sanction like the introduction of an infinitely high tariff that prevents countries from trading specific goods or from trading all together. Therefore, sanctions enter the trade costs function. Moreover, I test the policy variables for endogeneity. The results show that the implementation of sanctions has a robust significant negative impact on bilateral trade between countries within the sample of around 9 percent when using OLS and PPML but no significant effect when using FD.

Next, I differentiate sanctions by severity types. I find that moderate sanctions are the drivers of the negative overall impact, not extensive sanctions. Limited sanctions and extensive sanctions do not influence trade significantly. I repeat this analysis for yearly data instead of using three-year intervals. The results show that the effects of sanctions become a lot more volatile and their significance depends on the choice of standard errors. To shed some light on the effectiveness of sanctions, I check for trade diversion. The results vary with the estimation method. Using OLS I find evidence for trade diversion but the result is not robust to the first differencing approach.

My data set covers the years from 1987 to 2005, making use of the Threat and Imposition of Economic Sanctions data base (TIES), the Direction of Trade Statistics data base (DOTS) and CEPII. To the best of my knowledge, nobody so far has used a data set of this magnitude to answer the questions above and has properly accounted for endogeneity, multilateral resistance, and theory consistency at the same time.

The remainder of the paper is structured as follows. The next section reviews the literature related to economic sanctions and trade. Section 5.3 introduces the sources and explains the composition of the data set. Section 5.4 provides an overview regarding the empirical specifications. Then, I present empirical results and discussions in section 5.4 and section 5.5 concludes.

5.2 Literature review

Several researchers have tried their hands at explaining the consequences of economic sanctions on trade from various angles, both theoretically and empirically. I here review some of the recent empirical results based on the gravity framework.[2]

Many researchers focus on empirical effects of sanctions imposed by a *single* country, hereafter called "sender". Most chose the USA, since they are the most prominent user of economic sanctions as means of foreign policy. Hufbauer and Oegg (2003) quantify the damage of US sanctions on US trade and differentiate by severity of sanction types. The estimated negative effect of implementing an extensive sanctions in 1995 is a decrease of US exports to a sanctioned country by 99 percent and by 95 percent for 1999, while the effect of moderate and limited sanctions for the same periods is insignificant or even slightly positive. In addition, Caruso (2003) finds a large negative impact of extensive unilateral US sanctions against 49 target countries: on average, sanctions lead to a drop in US exports of 87 percent over the period from 1960 until 2000. Additionally, he offers some evidence for positive effects of trade diversion for limited and moderate sanctions by comparing US trade with countries targeted unilaterally by US sanctions to G-7 countries' trade with the same countries. Yang et al. (2004) group countries together by certain characteristics, e.g., being a former part of the Soviet Union. They cover the period from 1980 to 1998, taking 5-year intervals, and estimating each interval separately. Their results are mixed for the effects of unilateral

[2] There are several authors who focus on effects of economic sanctions as well, but use different frameworks for their analysis: Dreger et al. (2015) focus on the depreciation of the Ruble after the Western sanctions took affect after the annexation of the Crimea and the Russian counter-sanctions that followed after 2014. Using daily exchange rate data from January 2014 to March 2015, they find that the depreciation was mainly caused by the decrease of oil prices and not so much due to economic sanctions of the West. Crozet and Hinz (2016) concentrate on the costs of imposing and maintaining sanctions on Russia for the sender countries utilizing monthly country-level trade data, from December 2013 to June 2015. Using French firm-level export data, they show that after the implementation of sanctions both, the extensive and intensive margin of exports have been strongly reduced.

US sanctions and their findings greatly vary with the definition of their country samples. The authors use the EU and Japan to quantify a trade diversion effect due to US sanctions but do not find evidence to support this claim.

Other authors, like Haidar (2017), explore the effects of sanctions on a single target. He focuses on sanctions targeting Iranian exporters between 2006 and 2011 and finds firm level evidence for trade diversion. According to his results, two-thirds of Iranian export value has been diverted from sanctioning to non-sanctioning countries.

The empirical results of the research mentioned above are likely to suffer from severe endogeneity bias. This is mainly due because the authors did not properly control for the multilateral resistance terms using fixed effects (see Anderson and Van Wincoop (2003)).

To shed more light on reasons for potential success or failure of economic sanctions, Early (2009) runs a probit estimation covering the years from 1950 to 1990. He finds that close allies of a sanctioning country are most likely to increase trade with the target country, therefore helping to reduce the impact of the sanction. Using multinomial logit and data on US sanctions, Early (2011) concludes that the decision of third countries to help sanctioned countries is not driven by political but by commercial interests.

Yang et al. (2009) compare the effects of imposing sanctions on trade between the US and countries that are targeted by US sanctions with trade between the EU and those target countries between 1980 to 2003. They report that unilateral US sanctions have a negative effect on the trade value of the EU with those target countries as well. As a potential reason, the authors suggest that extensive sanctions imposed by the US may have a negative impact on a target country's total economic activity and trade.

Other authors have looked at the threat of sanctions and the optimal duration of sanctions. Afesorgbor (2018) provide some evidence that the mere threat of sanctions actually boosts trade between target and sender, while imposed sanctions decrease trade. In contrast to this, Kohl and Reesink (2016) find no evidence that the threat of sanctions has any significant effect on the value of trade. Dizaji and van Bergeijk (2013) focus on the optimal duration of economic sanctions. For this, they develop a theoretical model and test it empirically via vector autoregression models by using the boycott of Iranian oil as a case study. Their key finding is that the success probability of sanctions is higher in the short run and decreases in the long run, as the economic costs reach their peak after the first two years and decrease afterwards due to economic adjustment.

Hufbauer et al. (2009) give detailed information of the goals and the success or failure of economic sanctions for the 20^{th} century. The authors find that only every third sanction is a success. Furthermore, they suggest that policy makers should use so called "smart sanctions", which target only specific sectors, instead of total embargoes because the success rate is higher.

5.3 Data

The information of the duration of sanctions and which countries are involved as senders and targets stems from the TIES data base by Morgan et al. (2014). It contains specific records of cases of economic sanctions, including both, their threats and impositions from 1945 until 2005. The authors differentiate between 10 types of sanctions by severity. I group these sanction types into three categories, following Hufbauer and Oegg (2003), namely extensive, moderate, and limited sanctions. Extensive sanctions contain total economic embargoes and blockades, e.g., those against Cuba. Partial economic embargoes, specific import and export restrictions, and suspension of trade agreements are combined within moderate sanctions. Finally, limited sanctions refer to travel bans, termination of foreign aid, and asset freezes.

If a country has multiple sanction types in place, I only count the most severe. Sanctions that were merely threatened but never actually imposed are not included within my sample; neither is information whether sanctions ended because the goal of the sending countries was reached, or whether they were abolished because of other political reasons. Most prior empirical research of economic sanctions make use of the data set by Hufbauer et al. (2009). However, TIES offers a significant increase in the number of sanction cases.

Information of free-on-board (fob) export value on the country level is provided by the direction of trade statistics data base (DOTS) from the International Monetary Fund. To ensure theory consistent estimators of bilateral trade policy (Dai et al., 2014) and to capture the effects of globalization on international trade (Bergstrand et al., 2015), not only international but intra-national trade is included as well. Moreover, this allows to identify and estimate the effects of non-discriminatory trade policy (Heid et al., 2015). I compute intra-national trade values by taking the difference of each country's gross domestic product provided by CEPII (Head et al. (2010), Head and Mayer (2014)) and the sum of its total fob exports per year using the DOTS data.[3]

Gravity controls for distance, common language, colonial ties, contiguity, and trade agreements come from CEPII (Head et al. (2010), Head and Mayer (2014)).

Following Olivero and Yotov (2012), I use three year intervals to allow trade flows to adjust to changes in trade costs. Furthermore, I want to reduce anticipation effects of potential sanctions in the future. In conclusion, the data set covers the years 1987, 1990, 1993, 1996, 1999, 2002, and 2005 and the sample size consists of around 132,497 observations of (non-singleton) country pairs. This bilateral panel data set exceeds the data sets that have been used in the literature in time and country coverage.

Table 5.1 provides summary statistics for the sanctions data set. Within the sample there is a total of 2,355 active trade agreements. 362 country pairs have a common colonial background, 4,096 share their primary language, and 492 countries are neighbors. Aggregate trade value varies from zero to over 300 billion USD. The closest country pair in the sample is Hongkong and Macau with a geographical distance of 60 kilometers, while the largest distance covered is from Taiwan to Paraguay.

The average time span of a sanction is around 8 years, but the duration varies greatly. Some only last several months, while others last up to 47 years. An example for the latter are India's sanctions against South Africa during the Apartheid.

More than 780 country pairs are affected by sanctions at least in one year over the observed period from 1987 to 2005. If sanctions are grouped due to their severity, there is a total of 24 severe, 683 moderate, and 79 limited sanctions.

[3]This shirt-sleeved approach is necessary because, so far, there is no information on aggregate intra-national trade available that covers all countries within the sample. Bergstrand et al. (2015) and Yotov (2012) use this method as well.

Table 5.1: Summary statistics of sanctions data set

Total number of RTAs			2,355	
Total number of pairs with colonial background			362	
Total number of pairs with common border			492	
Total number of pairs with common language			4,096	
Total number of sanctions			786	
Total number of limited sanctions			79	
Total number of moderate sanctions			683	
Total number of extensive sanctions			24	
	Min	Max	Mean	Std. Dev.
Total trade (in mln USD)	0.00	302,195.4	256.16	2806.27
Distance (in km)	60.77	19,781.39	7,515.55	4,520.1
Duration of a sanction (in years)	< 1	47	8.25	9.42

5.4 Estimation strategy

The first specification of the gravity equation which is estimated using fixed effects OLS (FE) is given below:

$$ln(X_{ij,t}) = \beta_1 SANC_{ij,t} + \sum_{k=0}^{3} \beta_{t-k} RTA_{ij,t-k} + \rho INTL\_BRDR_{ij,t} + \mu_{i,t} + \lambda_{j,t} + \vartheta_{ij} + \epsilon_{ij,t}. \quad (5.1)$$

Here, $X_{ij,t}$ denotes the value of exports of sender i to target j in year t. The sanction-dummy $SANC_{ij,t}$ takes the value of 1 if country j is the target of an active sanction by country i in year t, and zero otherwise.

In order to differentiate the effects of different severity types of sanctions I classify them by groups (Hufbauer & Oegg, 2003). Furthermore, I include a dummy that captures active RTAs, $RTA_{ij,t}$, together with 3-, 6- and 9-year lags. This is done to allow for time-varying or non-linear effects of RTAs. $INTL\_BRDR_{ij,t}$ is a dummy that captures globalization effects such as technology and innovation (Bergstrand et al., 2015). It takes the value of 1 if international trade occurs, and zero otherwise. Because of perfect collinearity with the other fixed effects, the border dummy for the most recent year in the sample is dropped from the estimation.

It is possible, that shocks hit only the importer or the exporter in a given year, such as potential changes in legislature after an election within a country that could either be a boost or a hindrance to trade. To account for these multilateral resistance terms, specification (5.1) includes exporter-year and importer-year fixed effects denoted by $\mu_{i,t}$ and $\lambda_{j,t}$, respectively. Unobserved pair-specific characteristics affect trade flows, too (Baier & Bergstrand, 2007). To account for this, the pair fixed effect ϑ_{ij} is included.

Because of perfect collinearity, ϑ_{ij} captures all time-invariant country pair specific influences on trade, both, observable and unobservable. The drawback is that it is not possible to quantify, e.g., the effect of common language on the value of trade. The trade effects of time-varying variables, like sanctions, can still be identified.

An alternative way to control for unobserved pair-specific heterogeneity is differing the data (FD), which is done in specification (5.2). It yields a difference-in-differences estimator that measures the changes on trade value if and when a country pair implements sanctions (and stops them again). The drawback is that observations are lost, if trade flows are not observed in one of the years.

$$\Delta ln(X_{ij,t}) = \beta_1 SANC_{ij,t}\Delta + \sum_{k=0}^{3} \beta_{t-k}\Delta RTA_{ij,t-k} + \rho\Delta INTL\_BRDR_{ij,t} + \mu_{i,t} + \lambda_{j,t} + \Delta\epsilon_{ij,t}. \quad (5.2)$$

In the presence of heteroscedasticity, however, all three specifications above are potentially biased and inconsistent due to the logarithmic form of the gravity model. The PPML approach proposed by Santos Silva and Tenreyro (2006) performs well under these circumstances, since it makes use of the multiplicative form of the gravity model. Another major advantage of the PPML method is that it allows to incorporate country pairs with zero trade flows without any manipulation of the data. Zero trade flows mostly occur for small countries. Since these countries are often the targets of sanctions, it could potentially bias the results if they are left out. This is why specification (5.3) given below is the preferred specification.

$$X_{ij,t} = exp\Bigg[\beta_1 SANC_{ij,t} + \sum_{k=0}^{3} \beta_{t-k} RTA_{ij,t-k} + \rho INTL\_BRDR_{ij,t} + \mu_{i,t} + \lambda_{j,t} + \vartheta_{ij}\Bigg] * \epsilon_{ij,t} \quad (5.3)$$

The explanatory variables are the same as in specification (5.1), as are the fixed effects.

5.5 Results

This section presents the results of the empirical estimations. In the first subsection, I show and discuss partial trade destruction effects. In the second subsection, I aim to capture trade diversion effects.

5.5.1 Trade destruction

Table 5.2 presents the estimation results of the different gravity specifications (5.1) to (5.3). For the sake of readability, only the explanatory variable of interest is shown.[4] All specifications include sender-year and target-year fixed effects. Additional controls include RTAs together with 3-, 6-, and 9-year lags and an indicator for the occurrence of international trade. In addition, specifications (5.1) and (5.3) include trade pair fixed effects. Standard errors are robust and clustered at the country-pair level, as it is common in the literature. However, in a panel gravity context, there are several other dimensions in which the errors may be correlated: at the sender, target, year, sender-year, target-year, and country-pair level, respectively (Cameron et al., 2011). Therefore, I report standard errors that are clustered at these six dimensions (multi-way) for the variables of interest as well, following Egger and Tarlea (2015). This clustering influences the size of the standard errors, and therefore, the level of significance of the reported coefficients.[5] I

[4]For tables with the full list of covariates, please see Appendix 5.A

[5]If not specified otherwise, levels of significance are based on country-pair clustered errors.

report the within-R^2 for the FE and FD regressions and follow the method described by Tenreyro for the PPML R^2 by computing the square of the correlation between trade and fitted values.[6]

Table 5.2: Trade effects of economic sanctions

	(1)	(2)	(3)	(4)
Estimation method:	FE	FD	PPML with FE sample	PPML with full sample
Sanctions	-0.074	0.003	-0.085	-0.086
	(0.033)**	(0.034)	(0.039)**	(0.038)**
	[0.037]**	[0.035]	[0.050]*	[0.050]*
	{0.060}	{0.047}	{0.062}	{0.064}
N	93828	70826	93828	132497
within R^2	0.0019	0.0003	0.0007	0.0007
Gravity controls	yes	yes	yes	yes
Pair fixed effects	yes	no	yes	yes

LHS variable columns (1) & (2): ln(export value), columns (3) & (4): export value. All estimations include sender-year and target-year fixed effects. Gravity controls include dummies for RTAs, RTA lags, and international trade. Standard errors in parentheses are robust, clustered at country pair level, and multi-way clustered, respectively.
* $p<0.1$, ** $p<0.05$, *** $p<0.01$

The result of the FE estimation in column (1) shows that sanctions have a negative effect on the value of trade, on average of -7.1 percent ($= 100[e^{-0.074} - 1]$). The coefficient is significant at the 5 percent level.

Column (2) shows the result for the FD approach instead of pair fixed effects. Since the first period is lost due to the estimation process, the sample size is smaller. The implementation of sanctions now seems to have no significant effect on trade.

In the last two columns the results of the preferred estimation method using PPML are presented. To show the difference between the FE and PPML estimators, column (3) shows the estimation results using the same sample size as the FE of column (1), covering only positive trade flows. At the 10 percent level of significance, the coefficient predicts an average decrease of -8.1 percent on the value of bilateral trade if sanctions are implemented. Finally, the last column makes use of the full sample including zero trade flows. The negative effect of sanctions on trade is -8.2 percent. This -8.2 percent decrease translates to a reduction of

[6] See her homepage for details, `http://personal.lse.ac.uk/tenreyro/LGW.html`

exports from the EU to Russia of about 12.9 billion USD due to active sanctions for 2016. The results of the preferred PPML estimation approaches in column (4) appear to be robust and are close to the FE result from column (1), even though the sample size differs by over 38,000 observations.

Table 5.3: Test for exogeneity of policy variables: PPML estimation

	(1)	(2)
Estimation method: PPML		
RTA	0.337	0.347
	(0.034)***	(0.034)***
	[0.046]***	[0.048]***
	{0.052}***	{0.066}***
RTA lead	-0.035	
	(0.021)*	
	[0.032]	
	{0.080}	
Sanctions	-0.088	-0.080
	(0.038)**	(0.042)*
	[0.051]*	[0.052]*
	{0.069}	{0.069}
Sanctions lead		0.037
		(0.032)
		[0.041]
		{0.060}
N	132497	132497
R^2	0.0007	0.0007
Gravity controls	yes	yes

LHS for estimation methods: export value. Gravity controls include dummies for international trade. All estimations include importer-year, exporter-year, and country pair fixed effects. The lead is three years. Standard errors in parentheses are robust, clustered at country pair level, and multi-way clustered, respectively.
* $p<0.10$, ** $p<0.05$, *** $p<0.01$

A big issue when estimating trade policy is the endogeneity of its implementation. It is not a far stretch to believe that countries are potentially reluctant to implement extensive sanctions against important trading partners but may be less so in implementing limited or moderate ones. A similar line of reasoning may hold true for RTAs. Country pair fixed effects or using the first difference should take care of this issue. To test whether strict exogeneity of the trade policy variables can be assumed, future leads are included within the preferred estimation specification (5.3) following Wooldridge (2010). Table 5.3 shows the results. Both, the future lead for RTAs as well as the future lead for sanctions are returned close to zero and insignificant when standard errors are clustered at country pairs or multi-way, allowing for the interpretation that future formation of trade agreements or future implementation of sanctions have no influence on the value of trade in the current period. These findings support the claim that there is no anticipation effect.

Table 5.4 offers new insights into the composition of the sanctions effect from Table 5.2. Here, I differentiate between the three types of sanctions, limited, moderate, and extensive, respectively. Each type is estimated individually in the columns (1) to (3) and they are estimated together in column (4). The estimation methods are the same as in Table 5.2. As additional controls all estimations include RTA dummies, 3-, 6-, and 9-year lags and dummies for international trade. In addition, all specifications include sender-year and target-year fixed effects. Except for the FD approach all estimations include country-pair fixed effects as well.

Panel A provides results for the FE specification (5.1). The coefficient for limited sanctions is negative but does not significantly effect trade which makes economic sense, as limited sanctions do not target trade but individuals via travel bans and financial asset freezes. The coefficient for moderate sanctions predicts a decline of -8.2 percent on average for the value of trade, which is significant at the 5 percent level. The effect of extensive sanctions seems to be positive and insignificant. This result does not change, whether sanctions are included individually or together.

A different picture can be seen estimating it with FD in panel B. Like in Table 5.2, the FD approach leads to insignificant results for all three variables of interest, if they are estimated individually. Limited sanctions are negative, moderate sanctions are close to zero, and the coefficient for extensive sanctions is positive. However, if all three sanction types are estimated together, the coefficient for moderate sanctions returns with -0.005 and slightly significant at the 10 percent level.

The preferred PPML specification is first estimated in panel C.1 using the FE sample with positive trade flows to make it comparable with the regression from panel A. The introduction of moderate sanctions dampens trade by -8.1 percent. The effect of limited sanctions coefficient is again negative but insignificant. The coefficient for extensive sanctions is now negative and fairly large, but remains insignificant. The results remain the same, if all three sanctions dummies are included together.

Panel C.2 of the table utilizes the full sample and predicts that moderate sanctions

Table 5.4: Trade effects of economics sanctions by severity

	(1)	(2)	(3)	(4)
Panel A Estimation method: FE				
Limited sanctions	-0.057			-0.057
	(0.146)			(0.145)
	[0.156]			(0.156)
	{0.140}			{0.141}
Moderate sanctions		-0.086		-0.086
		(0.034)**		(0.034)**
		[0.037]*		[0.037]**
		{0.058}		{0.060}
Extensive sanctions			0.312	0.312
			(0.336)	(0.336)
			[0.359]	[0.359]
			{0.182}	{0.183}
N	93828	93828	93828	93828
R^2	0.0019	0.0019	0.0019	0.0019
Panel B Estimation method: FD				
Limited sanctions	-0.043			-0.043
	(0.139)			(0.139)
	[0.143]			(0.143)
	{0.075}			{0.075}
Moderate sanctions		0.005		-0.005
		(0.035)		(0.035)**
		[0.035]		[0.035]*
		{0.047}		{0.047}
Extensive sanctions			0.074	-0.074
			(0.296)	(0.296)
			[0.310]	[0.310]
			{0.220}	{0.220}
N	70826	70826	70826	70826
R^2	0.0003	0.0003	0.0003	0.0003
Panel C.1 Estimation method: PPML (with FE sample)				
Limited sanctions	-0.011			-0.020
	(0.057)			(0.055)
	[0.057]			(0.053)
	{0.039}			{0.039}
Moderate sanctions		-0.084		-0.084
		(0.038)**		(0.038)**
		[0.050]*		[0.0510*
		{0.061}		{0.063}
Extensive sanctions			-0.458	-0.452
			(0.316)	(0.315)
			[0.388]	[0.387]
			{0.501}	{0.500}
N	93828	93828	93828	93828
R^2	0.0007	0.0007	0.0007	0.0007
Panel C.2 Estimation method: PPML (with full sample)				
Limited sanctions	-0.021			-0.030
	(0.056)			(0.057)
	[0.063]			(0.058)
	{0.032}			{0.037}
Moderate sanctions		-0.086		-0.086
		(0.038)**		(0.038)**
		[0.051]*		[0.051]*
		{0.063}		{0.074}
Extensive sanctions			-0.212	-0.212
			(0.309)	(0.399)
			[0.400]	[0.399]
			{0.181}	{0.186}
N	132497	132497	132497	132497
within R^2	0.0007	0.0007	0.0007	0.0007
Gravity controls	yes	yes	yes	yes

LHS for panel (A) & (B): ln(export value), for panel (C.1) & (C.2): export value
Gravity controls include RTA, RTA lags, and a dummy for international trade.
All estimation methods include sender-year and target-year fixed effects, methods
1, 3, & 4 include pair fixed effects. Standard errors in parentheses are robust, clustered
at country pair level, and multi-way clustered, respectively. * p<0.10, ** p<0.05, *** p<0.01

reduce trade by -8.2 percent. In contrast to the previous PPML, the negative effect of limited sanctions increases, while the coefficient of extensive sanctions decreases. However, both remain insignificant.

The overall negative effect of sanctions seems to be driven solely by moderate sanctions within the sample. Apart from the FD approach, the coefficient remains fairly robust across all specifications. Furthermore, it makes no difference for the effects of different sanction types on trade, whether they are included individually or together in the regression.

On the first glance, it is puzzling that extensive sanctions play no significant role on the value of trade across all specifications. This counter-intuitive result may stem from the fact that these sanctions are mostly between countries that did not trade a lot with each other to begin with, like Syria and Israel. Moreover, the number of extensive sanctions in the overall sample is very small and there is not a lot of variation within the observed time period.

These findings are quite different from previous results from the literature, where the main driver of the negative impact on trade stems from extensive sanctions. This change in results may be due to moving away from single sender or target countries and the resulting increase of the sample size and/or due to omitted variable bias in previous empirical studies.

It is possible that some sanctions began and ended between two three-year intervals. To capture those, I use yearly data instead of intervals in Table 5.5. This increases the number of observations from around 133,000 to nearly 380,000. In the first column, the general sanctions dummy is used. In columns (2) to (4) I distinguish once again by severity type and in column (5) I use the three types together as explanatory variables. All estimations include sender-year, target-year, and pair fixed effects. As additional controls, dummies for RTAs and international trade are added.

In the first specification, sanctions have a negative impact on the value of exports by around -5.3 percent. This effect is only significant when using heteroscedasticity-robust standard errors.

The average effect of limited sanctions presented in column 2 is given by a coefficient of -0.116 and is significant at 5 percent with robust standard errors. This effect remains statistically significant at 10 percent when clustering at country pair level and multi-way. An implementation of moderate sanctions decreases the trade value by -5.4 percent. This result is highly significant with robust standard errors and insignificant otherwise.

Table 5.5: Trade effects of economic sanctions by severity: PPML estimation (annual data)

	(1)	(2)	(3)	(4)	(5)
Estimation method: PPML					
Sanctions	-0.055				
	(0.020)***				
	[0.037]				
	{0.042}				
Lim. sanctions		-0.116			-0.132
		(0.049)**			(0.054)**
		[0.062]*			[0.068]*
		{0.060}*			{0.064}**
Mod. sanctions			-0.054		-0.054
			(0.021)***		(0.021)***
			[0.038]		[0.038]
			{0.042}		{0.050}
Ext. sanctions				-0.216	-0.218
				(0.154)	(0.156)
				[0.314]	[0.314]
				{0.131}*	{0.128}*
N	379425	379425	379425	379425	379425
R^2	0.0008	0.0008	0.0008	0.0008	0.0008
Gravity controls	yes	yes	yes	yes	yes

LHS variable: export value. Gravity controls include dummies for RTAs, RTA lags, and for international trade. All estimations include importer-year, exporter-year, and country country pair fixed effects. Standard errors in parentheses are robust, clustered at country pair level, and multi-way clustered, respectively. * p<0.1, ** p<0.05, *** p<0.01

In the fourth column it can be shown that extensive sanctions decrease trade by around 19 percent but are they only statistically significant from zero at 10 percent when choosing multi-way clustering.

In column (5), the three severity types are once again estimated together. Like in Table 5.4, the results do not change and remain very robust.

The yearly effects of sanctions from Table 5.5 are a lot more volatile than the previous ones and their significance strongly depends on the choice of standard errors. The only persistent negative effect of sanctions stems from the implementation of limited sanctions. This seems counter-intuitive at first but it is possible that moderate and extensive sanctions can somewhat be anticipated, while travel bans and asset freezes may happen unexpectedly.

Another potential reason for the overall decrease in significance is that the data set grew in size nearly three times when using yearly data instead of intervals but the number of sanctions did not even double. This may reduce the overall impact of sanctions in this sample.

5.5.2 Trade diversion

In this subsection, I check for evidence of trade diversion after the imposition of a sanction within the sample. In analogy to Magee (2008) who focuses on trade diversion induced by RTAs, I capture trade diversion by means of a dummy variable. The dummy is equal to unity if either of the two countries is affected by an active sanction in year t, either as sender or as target. The dummy is zero, if i is the sender and j is the target of a sanction at time t and it is zero, if neither country is directly affected by a sanction. This means that trade diversion is defined in such a way that it only takes a positive value if active sanctions influence one of both trade partners. Hence, the variable is not bilateral in nature but monadic. If trade diversion takes place I expect to find a positive coefficient that can offset the negative effect of a sanction. This would translate into a switch in trade away from a partner that is involved in sanctions toward one or more that are not.

In order to check for trade diversion, it is no longer possible to make use of the preferred PPML specification (5.3) because the trade diversion dummy would be subsumed by either the sender-time or target-time fixed effect. I use FE and FD for the estimation. The respective equations are given below:

$$ln(X_{ij,t}) = \beta_1 SANC_{ij,t} + \beta_2 TD_{it} + \beta_3 TD_{jt} + \sum_{k=0}^{3} \beta_{t-k} RTA_{ij,t-k} \\ + \rho INTL\_BRDR_{ij,t} + \gamma MLRT_{ijt} + \vartheta_{ij} + \delta_i + \delta_j + \kappa_t + \epsilon_{ij,t} \quad (5.4)$$

and

$$\Delta ln(X_{ij,t}) = \beta_1 \Delta SANC_{ij,t} + \beta_2 \Delta TD_{it} + \beta_3 \Delta TD_{jt} + \sum_{k=0}^{3} \beta_{t-k} RTA_{ij,t-k} \\ + \rho \Delta INTL\_BRDR_{ij,t} + \gamma \Delta MLRT_{ijt} + \kappa_t + \epsilon_{ij,t} \quad (5.5)$$

Since both, sender and targets of sanctions, can potentially divert their trade I include measures for both, TD_{it} and TD_{jt}, respectively. The explanatory variables are the same as in specification (5.1) but, instead of the country year fixed effects, year fixed effects κ_t, sender fixed effects δ_i, and target fixed effects δ_j, are included. Differencing again takes care of all time invariant fixed effects, therefore only the year fixed effect, κ_t, remains in the second equation.

To correct for the omission of country year fixed effects and, therefore, the omission of measures of prices, I follow the methodology of Baier and Bergstrand (2009) and use their measure to model country i's multilateral resistance to export and country j's multilateral resistance to import. $MRDIST_{ij,t}$ yields the multilateral resistance for bilateral distance between country pair ij at year t:

$$MRDIST_{ij,t} = \left[\left(\sum_{k=1}^{N} \theta_{k,t} DIST_{ik} \right) + \left(\sum_{m=1}^{N} \theta_{m,t} lnDIST_{mj} \right) \\ - \left(\sum_{k=1}^{N} \sum_{m=1}^{N} \theta_{k,t} \theta_{m,t} lnDIST_{km} \right) \right], \quad (5.6)$$

with $\theta_{l,t} = \frac{GDP_{l,t}}{\sum_l^N GDP_{l,t}}, \ l \in k, m.$

The coefficients for the multilateral resistance terms for border crossings of trade, RTAs, contiguity, and common language over time are defined similarly.

Table 5.6: Trade-diversion effects of economic sanctions

	(1)	(2)
Estimation method:	FE	FD
Sanction	0.078	-0.065
	(0.033)**	(0.037)*
	[0.038]**	[0.039]*
	{0.122}	{0.216}
Trade diversion of target	0.003	-0.004
	(0.002)*	(0.002)*
	[0.002]*	[0.002]*
	{0.007}	{0.005}
Trade diversion of sender	0.006	-0.001
	(0.001)***	(0.002)
	[0.002]***	[0.002]
	{0.006}	{0.005}
N	93869	70867
within R^2	0.0052	0.0005
Gravity controls	yes	yes
Pair fixed effects	yes	no
Year fixed effects	yes	yes
Sender, target fixed effects	yes	no

LHS variable: ln(export value). Gravity controls include dummies for RTAs, RTA lags, international trade, and controls for multilateral resistance following Baier and Bergstrand (2009). Standard errors in parentheses are robust, clustered at country pair level, and multi-way clustered, respectively.
* $p<0.10$, ** $p<0.05$, *** $p<0.01$

The findings of both estimations are combined in Table 5.6, which once again only reports the variables of interest. The result for the FE regression in column (1) would imply that sanctions seem to have a positive impact on exports to sanctioned countries. Trade diversion seems to take place within the sample. In the presence of a sanction, trade to other countries rises on average by 0.6 percent for the sending country. Target countries seem to be able to divert 0.3 percent of their trade successfully. The coefficients are significant at the 1 percent level and 10 percent level, respectively.

The coefficients for trade diversion are positive and somewhat significant, but the point estimates are fairly small. A potential explanation is that countries that are influenced by sanctions, either as senders or as targets, split their lost trade across multiple new partners. If each of these new partners absorbs only a fraction of the total loss due to a sanction, then the changes could vanish in the aggregated value of exports.

The positive effect of trade diversion for the sending countries is twice the size of the one for target countries. This makes sense, because sending countries know about the implementation of sanctions and are able to think about potential new partners beforehand. The positive coefficient could also be a possible explanation, why some countries are very quick to implement sanctions. If the implementation of sanctions does not hurt the value of overall trade of a sending country, policy makers may not care too much whether the goal of the sanction is actually possible.

The positive effect of sanctions is puzzling and counter-intuitive. It is possible that the explanatory variables do not control for multilateral resistance as well as country-year fixed effects. Moreover, the presence of heteroscedasticity potentially affects both estimators. This may bias the results.

Using FD, the negative direct effect of sanctions re-emerges. Moreover, exports to targeted countries seem to fall. This lends support to the hypothesis that other countries reduce exports to a targeted country as well, without formally imposing a sanction (Early, 2009). Exports of sender countries to other countries do not seem to be affected. This could mean that senders only impose sanctions on targets that are not too important for their exports.

The FD-approach performs better with respect to the credibility of the sanctions dummy. The coefficient returns with -6.5 and is close to the estimated results in Tables 5.2 and 5.4. A possible interpretation for the negative coefficient for target trade diversion could be that countries that do not actively impose sanctions show solidarity with the sender and, as a consequence, additionally divert trade away from the target. However, this approach most likely suffers from the same potential endogeneity problems as the FE.

In conclusion, the results are very volatile and depend strongly on the choice of the estimation method. Furthermore, since multilateral resistance is not controlled for by country-year fixed effects, it is possible that the results suffer from omitted variable bias. Finally, the preferred PPML method can not be applied as a robustness test with a data set of this magnitude (yet). Therefore, the results have to be treated with caution.

5.6 Concluding Remarks

The goal of this chapter was to quantify partial trade effect of sanctions on exports using a modern estimation technique and to test its robustness against several econometric specifications commonly used in the literature. In contrast to previous research, the sample size is increased and it includes multiple senders and targets of sanctions. Furthermore, it sheds some light on the question if trade sanctions are potentially offset by the occurrence of trade diversion. For this, information containing bilateral international and intra-national trade values has been merged with gravity controls and with data regarding the imposition- and end-year as well as the severity of occurring economic sanctions between country pairs.

The evidence presented in the previous section shows that, indeed, trade sanctions have a significant and robust negative impact on the value of trade of around -8 percent when using FE and PPML across three-year intervals. If sanctions are grouped according to severity, it can be seen that the size of the negative impact is mostly due to moderate sanctions, which specifically target single sectors. The implementation of limited sanctions does not seem influence trade at all within the sample. The same holds true for extensive sanctions, which are the main drivers in related literature.

When applying yearly data, the coefficient of limited sanctions remains statistically significant and predicts a decrease of trade due to sanctions of around -11 percent. The significance of other specifications depends on the choice of standard errors. It is possible that there is an anticipation effect for moderate and extensive sanctions, but not for limited sanctions. Another possible reason is that the yearly data set includes too few active sanctions relative to the overall sample to significantly influence trade.

The evidence for trade diversion is volatile within the sample and depends on the estimation method. If using FE, sanction-sending countries are able to divert trade away from sanctioned partners, increasing average trade value on average by around 0.06 percent. Target countries experience a positive impact of trade diversion on average trade by 0.04 percent. In addition, the coefficients predict that sanctions have a positive effect on trade.

With the FD-approach, the sanctions dummy is negative and there is no evidence for trade diversion regarding countries that are senders of economic sanctions. However, there appears to be a negative effect of trade diversion for targets of sanctions.

For future research it would be interesting to include year-sanction interactions into the estimations to see if different types of sanctions behave differently over time in order to find the optimal duration of a sanction.

New insights regarding the effect of trade diversion could come from applying a two-step estimation strategy that could allow to estimate trade diversion using PPML. Moreover, it would be interesting to analyze the effects of sanctions on sectoral trade, because sanctions typically focus on particular sectors. This would require more detailed information about sanctions, which is not available at the moment.

5.A Additional tables

In the following, all estimation tables are presented with all explanatory variables, except for the fixed effects dummies. *INT_BRDR* captures the effect of globalization by being 1 if trade across state borders takes place and zero otherwise. *CLNY* represents the colony dummy, *LANG* common language between country pairs, *DIST* bilateral distance, and *CNTG* contiguity. To account for multilateral resistance, all explanatory variables in Table 5.A.8 except for sanction and trade diversion are transformed following Baier and Bergstrand (2009) and are given by *mrdis*, *mrborder*, *mrrta*, *mrcntg*, *mrlang*, and *mrclny*.

Table 5.A.1: Trade effects of economic sanctions

	(1)	(2)	(3)	(4)
Estimation method:	FE	FD	PPML with FE sample	PPML with full sample
Sanctions	-0.074	0.003	-0.085	-0.086
	(0.033)**	(0.034)	(0.039)**	(0.038)**
	[0.037]**	[0.035]	[0.050]*	[0.050]*
	{0.060}	{0.047}	{0.062}	{0.064}
RTA	0.212***	0.052	0.253***	0.270***
	(0.036)	(0.035)	(0.053)	(0.053)
RTA_LAG3	0.038	0.030	0.132***	0.133***
	(0.034)	(0.032)	(0.027)	(0.027)
RTA_LAG6	0.203***	0.164***	0.029	0.030
	(0.037)	(0.035)	(0.022)	(0.022)
RTA_LAG9	0.130***	0.018	-0.027	-0.033
	(0.038)	(0.038	(0.028)	(0.028)
INTL_BRDR_1987	-0.424***	-0.727***	-0.398***	-0.411***
	(0.125)	(0.140)	(0.043)	(0.045)
INTL_BRDR_1990	-0.437***	-0.647***	-0.400***	-0.409***
	(0.106)	(0.117)	(0.043)	(0.044)
INTL_BRDR_1993	-0.400***	-0.554***	-0.479***	-0.491***
	(0.092)	(0.099)	(0.035)	(0.036)
INTL_BRDR_1996	-0.281***	-0.367***	-0.330***	-0.332***
	(0.081)	(0.086)	(0.030)	(0.030)
INTL_BRDR_1999	-0.262***	-0.311***	-0.219***	-0.222***
	(0.068)	(0.071)	(0.028)	(0.028)
INTL_BRDR_2002	-0.155***	-0.189***	-0.158***	-0.160***
	(0.049)	(0.049)	(0.016)	(0.016)
N	93828	70826	93828	132497
within R^2	0.0019	0.0003	0.0007	0.0007
Pair fixed effects	yes	no	yes	yes
Sender-year, target-year fixed effects	yes	yes	yes	yes

LHS variable columns (1) & (2): ln(export value), columns (3) & (4): export value
Standard errors in parentheses are robust, clustered at country pair level, and multi-way clustered, respectively. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table 5.A.2: Test for exogeneity of policy variables: PPML estimation

	(1)	(2)
Estimation method: PPML		
RTA	0.337***	0.347***
	(0.034)***	(0.034)***
	[0.046]***	[0.048]***
	{0.052}***	{0.066}***
RTA lead	-0.035	
	(0.021)*	
	[0.032]	
	{0.080}	
INTL_BRDR_1987	-0.452***	-0.472***
	(0.041)	(0.032)
INTL_BRDR_1990	-0.409***	-0.431***
	(0.043)	(0.031)
INTL_BRDR_1993	-0.472***	-0.494***
	(0.037)	(0.026)
INTL_BRDR_1996	-0.325***	-0.350***
	(0.037)	(0.026)
INTL_BRDR_1999	-0.227***	-0.226***
	(0.029)	(0.029)
INTL_BRDR_2002	-0.159***	-0.158***
	(0.015)	(0.015)
Sanctions	-0.088*	-0.080
	(0.038)**	(0.042)*
	[0.051]*	[0.052]*
	{0.069}	{0.069}
Sanctions lead		0.037
		(0.032)
		[0.041]
		{0.060}
N	132497	132497
R^2	0.0007	0.0007

LHS for estimation methods: export value. All estimations include importer-year, exporter-year, and country pair fixed effects. The lead is three years. Standard errors in parentheses are robust, clustered at country pair level, and multi-way clustered, respectively. * p<0.10, ** p<0.05, *** p<0.01

Table 5.A.3: Trade effects of economic sanctions by severity: FE estimation

	(1) lim. sanctions	(2) mod. sanctions	(3) ext. sanctions
RTA	0.213***	0.212***	0.213***
	(0.036)	(0.036)	(0.036)
RTA_LAG3	0.038	0.038	0.038
	(0.034)	(0.034)	(0.034)
RTA_LAG6	0.204***	0.203***	0.204***
	(0.037)	(0.037)	(0.037)
RTA_LAG9	0.131***	0.130***	0.131***
	(0.038)	(0.038)	(0.038)
INTL_BRDR_1987	-0.424***	-0.424***	-0.424***
	(0.125)	(0.125)	(0.125)
INTL_BRDR_1990	-0.436***	-0.436***	-0.436***
	(0.106)	(0.106)	(0.106)
INTL_BRDR_1993	-0.399***	-0.399***	-0.399***
	(0.092)	(0.092)	(0.092)
INTL_BRDR_1996	-0.281***	-0.281***	-0.281***
	(0.081)	(0.081)	(0.081)
INTL_BRDR_1999	-0.261***	-0.261***	-0.261***
	(0.068)	(0.068)	(0.068)
INTL_BRDR_2002	-0.155***	-0.155***	-0.154***
	(0.049)	(0.049)	(0.049)
Sanction type	-0.057	-0.086	0.310
	(0.146)	(0.034)**	(0.336)
	[0.156]	[0.037]**	[0.359]
	{0.140}	{0.058}	{0.182}
N	93828	93828	93828
within R^2	0.0019	0.0019	0.0019

LHS for estimation methods: export value. All estimations include importer-year, exporter-year, and country pair fixed effects. Standard errors in parentheses are robust, clustered at country pair level, and multi-way clustered, respectively.
* p<0.10, ** p<0.05, *** p<0.01

Table 5.A.4: Trade effects of economic sanctions by severity: FD estimation

	(1) lim. sanctions	(2) mod. sanctions	(3) ext. sanctions
D.RTA	0.053	0.053	0.053
	(0.035)	(0.035)	(0.035)
D.RTA_LAG3	0.030	0.030	0.030
	(0.032)	(0.032)	(0.032)
D.RTA_LAG6	0.164***	0.164***	0.164***
	(0.035)	(0.035)	(0.035)
D.RTA_LAG9	0.018	0.018	0.018
	(0.038)	(0.038)	(0.038)
D.INTL_BRDR_1987	-0.728***	-0.728***	-0.728***
	(0.140)	(0.140)	(0.140)
D.INTL_BRDR_1990	-0.649***	-0.648***	-0.648***
	(0.117)	(0.117)	(0.117)
D.INTL_BRDR_1993	-0.557***	-0.557***	-0.557***
	(0.099)	(0.099)	(0.099)
D.INTL_BRDR_1996	-0.372***	-0.372***	-0.372***
	(0.086)	(0.086)	(0.086)
D.INTL_BRDR_1999	-0.310***	-0.310***	-0.310***
	(0.071)	(0.071)	(0.071)
D.INTL_BRDR_2002	-0.189***	-0.189***	-0.189***
	(0.049)	(0.049)	(0.049)
D.sanction type	-0.043	0.005	0.074
	(0.139)	(0.035)	(0.296)
	[0.143]	[0.035]	[0.310]
	{0.075}	{0.047}	{0.220}
N	70826	70826	70826
within R^2	0.0003	0.0003	0.0003

LHS for estimation methods: export value. All estimations include importer-year and exporter-year fixed effects. Standard errors in parentheses are robust, clustered at country pair level, and multi-way clustered, respectively. p<0.10, ** p<0.05, *** p<0.01

Table 5.A.5: Trade effects of economic sanctions by severity: PPML estimation (FE sample)

	(1) lim. sanctions	(2) mod. sanctions	(3) ext. sanctions
RTA	0.251***	0.253***	0.251***
	(0.051)	(0.053)	(0.051)
RTA_LAG3	0.137***	0.132***	0.137***
	(0.027)	(0.027)	(0.027)
RTA_LAG6	0.027	0.029	0.028
	(0.024)	(0.022)	(0.024)
RTA_LAG9	-0.022	-0.027	-0.022
	(0.029)	(0.028)	(0.029)
INTL_BRDR_1987	-0.377***	-0.398***	-0.377***
	(0.049)	(0.043)	(0.049)
INTL_BRDR_1990	-0.380***	-0.400***	-0.379***
	(0.047)	(0.043)	(0.047)
INTL_BRDR_1993	-0.465***	-0.479***	-0.465***
	(0.038)	(0.035)	(0.038)
INTL_BRDR_1996	-0.322***	-0.330***	-0.322***
	(0.033)	(0.030)	(0.033)
INTL_BRDR_1999	-0.215***	-0.219***	-0.215***
	(0.030)	(0.028)	(0.030)
INTL_BRDR_2002	-0.154***	-0.158***	-0.154***
	(0.017)	(0.016)	(0.017)
Sanction type	-0.011	-0.084	-0.458
	(0.057)	(0.038)**	(0.316)
	[0.057]	[0.050]*	[0.388]
	{0.039}	{0.061}	{0.501}
N	93828	93828	93828
R^2	0.0007	0.0007	0.0007

LHS for estimation methods: export value. All estimations include importer-year, exporter-year, and country pair fixed effects. Standard errors in parentheses are robust, clustered at country pair level, and multi-way clustered, respectively.
* p<0.10, ** p<0.05, *** p<0.01

Table 5.A.6: Trade effects of economic sanctions by severity: PPML estimation (full sample)

	(1) lim. sanctions	(2) mod. sanctions	(3) ext. sanctions
RTA	0.267***	0.270***	0.267***
	(0.051)	(0.053)	(0.051)
RTA_LAG3	0.139***	0.133***	0.139***
	(0.027)	(0.027)	(0.027)
RTA_LAG6	0.029	0.030	0.029
	(0.024)	(0.022)	(0.024)
RTA_LAG9	-0.028	-0.033	-0.028
	(0.029)	(0.028)	(0.029)
INTL_BRDR_1987	-0.389***	-0.411***	-0.389***
	(0.050)	(0.045)	(0.050)
INTL_BRDR_1990	-0.388***	-0.409***	-0.388***
	(0.049)	(0.044)	(0.049)
INTL_BRDR_1993	-0.478***	-0.491***	-0.478***
	(0.039)	(0.036)	(0.039)
INTL_BRDR_1996	-0.324***	-0.332***	-0.324***
	(0.033)	(0.030)	(0.033)
INTL_BRDR_1999	-0.217***	-0.222***	-0.218***
	(0.030)	(0.028)	(0.030)
INTL_BRDR_2002	-0.156***	-0.160***	-0.156***
	(0.017)	(0.016)	(0.017)
Sanction type	-0.021	-0.086	-0.212
	(0.056)	(0.038)**	(0.309)
	[0.063]	[0.051]*	[0.400]
	{0.063}	{0.051}	{0.400}
N	132497	132497	132497
R^2	0.0007	0.0007	0.0007

LHS for estimation methods: export value. All estimations include importer-year, exporter-year, and country pair fixed effects. Standard errors in parentheses are robust, clustered at country pair level, and multi-way clustered, respectively.
* p<0.10, ** p<0.05, *** p<0.01

Table 5.A.7: Trade effects of economic sanctions by severity: PPML estimation (annual data)

	(1) Sanctions	(2) Lim. sanctions	(3) Mod. sanctions	(4) Ext. sanctions
RTA	0.330***	0.330***	0.330***	0.330***
	(0.043)	(0.042)	(0.043)	(0.042)
INTL_BRDR_1987	-0.470***	-0.459***	-0.470***	-0.459***
	(0.034)	(0.038)	(0.034)	(0.038)
INTL_BRDR_1988	-0.446***	-0.436***	-0.446***	-0.436***
	(0.035)	(0.038)	(0.035)	(0.038)
INTL_BRDR_1989	-0.430***	-0.418***	-0.430***	-0.418***
	(0.036)	(0.037)	(0.036)	(0.037)
INTL_BRDR_1990	-0.428***	-0.416***	-0.427***	-0.416***
	(0.033)	(0.035)	(0.033)	(0.035)
INTL_BRDR_1991	-0.447***	-0.436***	-0.447***	-0.436***
	(0.031)	(0.032)	(0.031)	(0.032)
INTL_BRDR_1992	-0.484***	-0.475***	-0.484***	-0.475***
	(0.029)	(0.031)	(0.029)	(0.031)
INTL_BRDR_1993	-0.492***	-0.484***	-0.491***	-0.484***
	(0.029)	(0.031)	(0.029)	(0.031)
INTL_BRDR_1994	-0.434***	-0.426***	-0.434***	-0.426***
	(0.028)	(0.031)	(0.028)	(0.031)
INTL_BRDR_1995	-0.364***	-0.357***	-0.364***	-0.357***
	(0.029)	(0.031)	(0.029)	(0.031)
INTL_BRDR_1996	-0.344***	-0.340***	-0.344***	-0.340***
	(0.030)	(0.032)	(0.030)	(0.032)
INTL_BRDR_1997	-0.285***	-0.280***	-0.285***	-0.280***
	(0.033)	(0.034)	(0.033)	(0.034)
INTL_BRDR_1998	-0.280***	-0.276***	-0.280***	-0.276***
	(0.035)	(0.036)	(0.035)	(0.036)
INTL_BRDR_1999	-0.225***	-0.222***	-0.225***	-0.223***
	(0.028)	(0.030)	(0.028)	(0.030)
INTL_BRDR_2000	-0.093***	-0.089***	-0.093***	-0.090***
	(0.023)	(0.024)	(0.023)	(0.024)
INTL_BRDR_2001	-0.132***	-0.130***	-0.132***	-0.130***
	(0.020)	(0.021)	(0.020)	(0.021)
INTL_BRDR_2002	-0.157***	-0.155***	-0.157***	-0.155***
	(0.015)	(0.016)	(0.015)	(0.016)
INTL_BRDR_2003	-0.144***	-0.142***	-0.144***	-0.143***
	(0.011)	(0.011)	(0.011)	(0.011)
INTL_BRDR_2004	-0.066***	-0.064***	-0.066***	-0.064***
	(0.006)	(0.006)	(0.006)	(0.006)
Sanction type	-0.055	-0.116	-0.054	-0.216
	(0.020)***	(0.049)**	(0.021)***	(0.157)
	[0.037]	[0.062]*	[0.038]	[0.314]
	{0.042}	{0.060}*	{0.042}	{0.131}*
N	379425	379425	379425	379425
R^2	0.0008	0.0008	0.0008	0.0008

LHS for estimation methods: export value. All estimations include importer-year, exporter-year, and country pair fixed effects. Standard errors in parentheses are robust, clustered at country pair level, and multi-way clustered, respectively.
* p<0.10, ** p<0.05, *** p<0.01

Table 5.A.8: Trade-diversion effects of economic sanctions

	(1)	(2)
Estimation method:	FE	FD
Sanction	0.078	-0.065
	(0.033)**	(0.037)*
	[0.038]**	[0.039]*
	{0.122}	{0.216}
Trade diversion of target	0.003	-0.004
	(0.002)*	(0.002)*
	[0.002]*	[0.002]*
	{0.007}	{0.005}
Trade diversion of sender	0.006	-0.001
	(0.001)***	(0.002)
	[0.002]***	[0.002]
	{0.006}	{0.005}
mrdis	52.525***	-34.226**
	(14.419)	(16.027)
mrborder	-598.846***	225.881*
	(123.027)	(135.274)
mrrta	67.920***	-15.583
	(11.441)	(13.928)
mrcntg	1197.672***	233.236**
	(96.464)	(107.961)
mrlang	-94.444**	-75.458*
	(42.925)	(45.499)
mrclny	-58.161	151.770*
	(77.259)	(77.694)
INTL_BRDR_1987	-0.540***	-0.767***
	(0.063)	(0.138)
INTL_BRDR_1990	-0.447***	-0.642***
	(0.056)	(0.110)
INTL_BRDR_1993	-0.506***	-0.562***
	(0.052)	(0.092)
INTL_BRDR_1996	-0.345***	-0.359***
	(0.046)	(0.072)
INTL_BRDR_1999	-0.255***	-0.276***
	(0.037)	(0.053)
INTL_BRDR_2002	-0.164***	-0.177***
	(0.031)	(0.034)
RTA	0.174***	0.031
	(0.034)	(0.032)
RTA_LAG3	0.013	-0.007
	(0.029)	(0.028)
RTA_LAG6	0.093***	0.086***
	(0.030)	(0.030)
RTA_LAG9	0.048	0.090***
	(0.031)	(0.034)
N	93869	70867
R^2	0.883	0.028
Pair fixed effects	yes	no
Year fixed effects	yes	yes
Sender, target fixed effects	yes	no

LHS variable: ln(export value). Controls for multilateral resistance follow Baier and Bergstrand (2009). Standard errors in parentheses are robust, clustered at country pair level, and multi-way clustered, respectively. * p<0.10, ** p<0.05, *** p<0.01

Chapter 6

Conclusion

In this doctoral thesis, I set out to empirically analyze the impact of different trade barriers on the value of bilateral trade by means of a structural gravity approach. This chapter summarizes and discusses the main findings.

In contrast to anecdotal evidence, the world does not seem to have become significantly "flatter" in the last five decades, despite a persistent drop of transport costs and tariffs. The level of openness is only about 30 percent of what it could be, if there were no impediments to trade (Head & Mayer, 2013). The intention of this thesis was to offer new insights regarding this globalization gap by empirically analyzing barriers to trade.

Chapter 2 served to give a background of the evolution of the empirical method utilized in the empirical analyses that followed, the gravity equation. The chapter outlined the first adaption of the gravity equation in the field of international economics by Tinbergen (1962) and its theoretical and econometric evolution to show how and why it became one of the most successful frameworks in international economics.

Anderson and van Wincoop (2004) as well as Head and Mayer (2013) show that a large portion of barriers to trade is not directly observable. According to Grossman (1998), one of the most important unobservable barriers to trade arises due to cultural differences. Many researchers have introduced different proxies like language and trust to quantify the effect of culture on trade (with mixed results). Chapter 3 added to this branch of literature and offered new insights by introducing the GLOBE research study by House et al. (2013) as a new proxy for cultural values.

For each of the nine GLOBE dimensions I computed a measure for cultural distance and cultural proximity and estimated the effect of each dimension on trade using the product classification by Rauch (1999). In my cross-section analysis I used various econometric specifications ranging from traditional OLS to the state-of-the-art PPML together with intra-national trade (Yotov, 2012) and a measure for globalization (Bergstrand et al., 2015). My results show that cultural differences (or proximity) significantly impact trade but the size and direction of the effect varies across the cultural dimensions. Some dimensions have no significant effect on trade, others seem to have a negative impact on trade while others positively influence the trade value. This may serve as further evidence on the difficult task of generalizing the effects of cultural differences on trade. The differentiation by commodity groups offered new insights as well: Several cultural effects are only significant for homogeneous or differentiated goods and are not significantly different from zero in the aggregate goods case. Beyond that, this essay has illustrated the importance of proper econometric specifications, as the results dramatically depend on the econometric methods.

Chapter 4 built on the previous analysis by, once again, using the GLOBE data set. The research question was if and how the impact of cultural differences on trade changes over time by making use of a panel regression. Additionally, this approach allowed to address one of the main issues from the previous chapter, namely that cross-sections potentially suffer from unobserved heterogeneity bias (Baier & Bergstrand, 2007). The preferred specification was a state-of-the-art PPML specification with a comprehensive set of fixed effects including country-pair fixed effects (Baier & Bergstrand, 2007), intra-national trade flows (Yotov, 2012), and a globalization measure (Bergstrand et al., 2015).

The results display that the impact of several cultural dimensions on trade changes over time but the effect of the cultural dimensions does not follow a clear trend that can be readily attributed to an increased exposure to globalization. Some effects grow in size, while others decrease over time. Some show a positive and some a negative impact on trade. Like in the previous chapter, the significance and magnitude of the effect of several cultural dimensions is different when comparing homogeneous and differentiated goods. Since the sample only covers a small part of the globalization trend and does not cover more recent years, the results may change if the sample size is increased. Unfortunately, recent intra-national trade data on the industry level is not (yet) available for all countries of the sample.

The aim of chapter 5 was to quantify the impact of economic sanctions on bilateral trade. Most previous literature in this area use mis-specified gravity equations and/or smaller data sets. I estimated the effects using the well-specified PPML approach from the previous chapters together with the TIES data set by Morgan et al. (2014) from 1987 to 2005. I divided sanctions into groups according to their severity and find that moderate sanctions, instead of limited or extensive sanctions, are the drivers of the significant reduction of the value of bilateral trade. I additionally searched for evidence that would indicate if sanctioning or sanctioned countries are able to divert their trade to other partners but I do not find robust evidence for this behavior. Potentially, the aggregation of trade data masks the diversion effect. For further research in this area, it would be interesting to disaggregate the value of trade to the industry level in order to analyze the impact of specifically targeted sectors. Potentially, this would allow to identify significant trade diversion. Moreover, it could be beneficial to increase the scope of the data set to include the most recent decade in which several sanctions ended, for example the ones of the UN against Iran in 2015[1]. Furthermore, new sanctions were implemented, like the ones of the EU, the USA, and Canada against Russia in 2014. Unfortunately, TIES does not cover this decade (yet).

In my analyses I focused on identifying partial effects of selected trade barriers. For further research the structure of the gravity model and the provided results could be exploited to identify theory-consistent general equilibrium effects of these barriers to trade.

From the perspective of a trade economist, a completely globalized world would be an ideal situation. The globalization process has lead to more efficient markets, lower prices, and higher quality due to increased competition. It stabilized security due to growing financial involvement between countries, that potentially keeps them from escalating conflicts. Furthermore, it has lead to higher living standards across the globe, especially in developing countries. The goal should therefore be to decrease the globalization gap by removing trade barriers. As it has been stated in the beginning of the thesis, barriers to trade are persistent and seem to be oblivious to the recent improvements in means of transport and technology. My contributions in the previous chapters showed that unobservable, deep rooted cultural values that differ across countries (continue to) distort trade despite the trend of growing globalization. Since cultural values are not prone to change easily, the world will never be truly "flat". However, the results showed that there is a silver lining as well: cultural differences do not necessarily have a negative impact on trade. Depending on the dimension, they can be beneficial to the value of trade.

In contrast to the deeply rooted trade barriers, which can not (and maybe should not) be abolished easily, it would be simple to reduce other types of barriers: Sanctions could be stopped immediately, which would stop the ongoing disruption

[1]If only for a short duration of time thanks to the most recent changes in US foreign policy (2018).

of trade flows. As sanctions only reach the desired goal in 1/3 of all cases, maybe it is time to think of other political tools that do not influence trade.

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