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**Working Paper**

# Economic preferences and trade outcomes

DICE Discussion Paper, No. 321

**Provided in Cooperation with:**
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*Suggested Citation:* Korff, Alex; Steffen, Nico (2019) : Economic preferences and trade outcomes, DICE Discussion Paper, No. 321, ISBN 978-3-86304-320-9, Heinrich Heine University Düsseldorf, Düsseldorf Institute for Competition Economics (DICE), Düsseldorf

This Version is available at:
https://hdl.handle.net/10419/201593

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Düsseldorf Institute
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# DISCUSSION PAPER

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August 2019

HEINRICH HEINE
UNIVERSITÄT DÜSSELDORF

d|u|p düsseldorf university press

IMPRINT

DICE DISCUSSION PAPER

Published by

düsseldorf university press (dup) on behalf of
Heinrich-Heine-Universität Düsseldorf, Faculty of Economics,
Düsseldorf Institute for Competition Economics (DICE), Universitätsstraße 1,
40225 Düsseldorf, Germany
www.dice.hhu.de

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DICE DISCUSSION PAPER

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ISSN 2190-9938 (online) – ISBN 978-3-86304-320-9

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# Economic Preferences and Trade Outcomes

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Düsseldorf Institute for Competition Economics (DICE)

August 2019

**Abstract**

Utilizing the new Global Preference Survey (GPS) by Falk *et al.* (2018) and its data of unique scope on national preference structures in patience, risk attitude, reciprocity, trust and altruism, we are the first to explore a potential influence on international trade outcomes of this broad set of economic and social preferences in a unified setting. Adding to the evidence on preferences' importance for aggregate outcomes, we find distinct relationships between national preference leanings and marked differences in trade flows and relationships, both on the country-level and between bilateral partners. Our main results suggest that countries differing in their willingness to behave negatively reciprocal tend to trade significantly less amongst each other, while countries that are patient or risk-averse tend to shift towards exporting more differentiated goods as opposed to homogeneous goods and vice versa.

**Keywords:** Trade determinants; Non-Tariff Barriers; Economic preferences; Sociocultural variation.

**JEL Classification Numbers:** F10, F14, D01, D91, Z10.

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We thank participants at the DICE Research Workshop and the Göttinger Workshop "Internationale Wirtschaftsbeziehungen" for helpful comments. The views expressed here and any remaining errors are our own.

# 1 Introduction

This paper explores a potential influence of the preferences patience, risk attitude, reciprocity, trust and altruism and its aggregate national structures on international trade outcomes. In that context, we are the first to make use of the Global Preference Survey (GPS) by Falk *et al.* (2018, 2016) and its data of unique scope and quality. While the existence of substantial differences across individuals, groups and populations is undisputed (cf. Rieger *et al.*, 2015), meaningful cross-country or even global comparisons have been difficult. The GPS provides a larger, more extensive set featuring representative data on these decision-relevant preferences for 76 countries and 90% of world population, using a carefully designed, standardized and experimentally validated set of elicitation and survey questions. Our main results suggest that countries that differ in their willingness to behave negatively reciprocal tend to trade significantly less amongst each other, while countries that are patient or risk-averse tend to shift towards exporting more differentiated goods overall instead of homogeneous goods and vice versa.

The GPS defines and measures six dimensions of *economic preferences*. Two of them, Time preferences (patience) and risk attitude, are arguably im- or even explicit to all economic models and decision-making. The other four dimensions, trust, altruism and both positive and negative reciprocity, are addressing the social element of economic exchange. Altruism can be viewed as an independent concern for the well-being of others. Trust is evaluated in the GPS by agreement to the statement: "People have only the best intention" - a rather abstract, generalistic definition. While the positive impact of trust on development and economic performance has long been recognized by Arrow (1972) and Knack and Keefer (1997)[1], has even been linked to trade by Guiso *et al.* (2009) or Yu *et al.* (2015)[2], their group-specific measures are not immediately comparable to the GPS. For these reasons, trust does not receive the focus in this analysis - despite undeniably being the preference most prominent in the literature[3]. While positive and negative reciprocity superficially appear to be just two directions of the same notion, they are actually two distinct and rather unrelated concepts in practice, as indicated by a lack of correlation between the two measures (cf. Dohmen *et al.*, 2008, Falk *et al.*, 2018). Positive reciprocity captures an inclination to return favors or to engage in forms of *gift exchange* (cf. Akerlof, 1982), whereas negative reciprocity represents a willingness to

[1]The interplay with institutions and the causal effect of trust through facilitating cooperation and reducing transaction costs through the channels of finance, innovation, labor markets and more is nicely summarized in a survey by Algan and Cahuc (2014).

[2]Both use bilateral trust which they relate specifically to the common histories between the countries in question, e.g. the long-standing "feud" between Britain and France dating back to William's conquest, the Hundred Years' War, the Napoleonic Wars and the Second World War.

[3]Sapienza *et al.* (2013) likewise note that both questionnaires and experimental 'trust games' may capture different things at the same time, i.e. not only trust as a belief about others, but also perceptions about one's own trustworthiness and other confounding preferences. The wording used by Falk *et al.* (2018) in the questionnaire item on trust - "People have only the best intentions" - is trying to limit the room for interpretation by the respondent. But this also limits the context available to him. Other, more specific forms of trust, e.g. trust in politicians or authorities, trust in firms and more, thus need to be distinguished from the measure of the GPS.

punish others for perceived wrong-doings and to take revenge, even at the expense of additional own costs.

There is a vast theoretical and empirical literature establishing relationships between these preferences and individual outcomes such as saving, smoking (Sutter *et al.*, 2013), entrepreneurial activity (Kihlstrom and Laffont, 1979), charity (Andreoni, 1989), collective action and cooperation in general (Fehr and Gächter, 2002, Nikiforakis, 2008), as well as national development (Dohmen *et al.*, 2016), to only name a few. These relationships are also confirmed and supported by Falk *et al.* (2018) for the GPS. While the majority of variation occurs on individual and within-country levels, substantial and marked differences between countries' national average preferences exist. This heterogeneity persists into the influence factors like age, gender and cognitive ability have on the formation of preferences. At the aggregate level, using their new data set at hand, Falk et al. find and support previously observed relationships of geography, language and religion on a country's preference profile. These, in turn, are linked to various aggregate outcomes such as entrepreneurial activity, armed conflicts and even economic development, i.e. GDP. These results - and limitations of previous studies to individual outcomes - provide the impetus of linking aggregate preferences to corresponding outcomes, i.e. trade.

In doing so, our results add on one hand to the trade literature on non-tariff barriers as well as to the behavioral literature on preferences' importance for aggregate outcomes. We find distinct relationships between the national preference tendencies and the composition, volume and number of trade flows and relationships. These exist at both the unilateral - or national - and bilateral level. Hence, we propose and argue for the observed set of preferences as a potential channel - or bridge - leading from intangible cultural factors and distances towards the economic outcome of trade, combining these two main strands of literature. Non-tariff barriers like culture and history have become more important recently as globalization has slowed down well below the intensity predicted by conventional drivers such as size and transportation costs. Originating from "missing trade" (Trefler, 1995) and "dark" trade costs (Head and Mayer, 2013) and evolving over colonial history and language commonality, attention has shifted towards intangible factors like values, cultural aspects which are themselves related to preferences.

Examples for this branch of literature include Melitz and Toubal (2014) who refine and extend on the standard simple common official language effect and reveal a channel of shared ethnicity and trust in addition to facilitated communication with measures of shared native and spoken languages. This was expanded upon by Lameli *et al.* (2015), who discovers a significant trade-boosting effect between German regions sharing similar dialects, corroborating the existence of an important cultural component within language beyond communication and institutions. Felbermayr and Toubal (2010) build another proxy for cultural proximity and find a positive effect on trade between European countries. Similarly, the genetic distance measure established by Spolaore and Wacziarg (2009) is used by Fensore *et al.* (2017) who propose a negative

effect of ancestral distance on trade using trust and values among their explanations. However, Giuliano *et al.* (2013) raises doubts on the exogeneity of genetic distance in this regard, providing evidence that previously unaccounted for geographic characteristics may affect both. Frank (2018) considers distances in cultural attitudes on future orientation, gender egalitarianism and more from the GLOBE survey, a survey performed exclusively on managers, and finds significant effects on trade for some of the nine observed cultural dimensions, but ambiguous trends over time. Using data from the World Values Survey, Jaeggi *et al.* (2018) construct a *Dyadic Value Distance* measure and find effects on overall economic development.

Our own analysis expands on these results by positioning the preferences as a potential intermediary and a more direct influence than culture: Preferences affect attitudes, goals and calculations during bilateral negotiations, thus shaping trade outcomes. In addition, we add unilateral layers and mechanisms to the literature which is focused almost exclusively on bilateral impacts of these more or less (in)tangible distance measures.

While the trade literature has rarely been focusing directly on behavioral aspects, we believe that the preferences in our analysis and their relationship to trade outcomes contribute a small, but significant part to observed outcomes and trade theory. We argue that the nature and properties of contracts and arrangements, especially in trade (finance) relationships provide one major channel for our analyzed preferences to affect trade in practice. Even in its most basic, stylized form, any agreement on delivery of a good for a pre-defined payment involves elements of patience (term orientation), risk and trust - particularly in the context of international trade. Shipments of goods and realization of profits for firms involved in international transactions requires a substantial amount of time. As an example, average ocean shipping times to the U.S. usually range from 10 up to 50 days (cf. Hummels and Schaur, 2013). One - or both sides - of the transactions will have to bear or deal with the risk of a missed payment after having sent out goods or — in the case of payment-in-advance — receiving goods of inadequate quality or quantity. Frictions in information procurement and contract enforcement also become a lot more pronounced over distance and in often different jurisdictions.

Allocation and alleviation of these risks (and liquidity costs) are an essential part trade transactions, usually dealt with by forms of *trade finance*(Ahn, 2011). While the exact numbers vary by country, time and industry, the vast majority is made up by the contract forms of Open Account, Cash in Advance and bank-intermediated payments such as a Letter of Credit (Antras and Foley, 2015, Schmidt-Eisenlohr, 2013). While these methods can redistribute or diversify these risks, they do remain for either the exporter or importer - though conventional wisdom places it on the former; as do our results. Subsequently, risk attitude should matter as well. Recent work, for example by Kukharskyy (2016) or Defever *et al.* (2016), extends the standard static incomplete contracts framework by Antras (2003) with a repeated interaction setting and

applies the concept of relational contracts à la Baker *et al.* (2002) to the trade context. They show that only sufficiently patient firms are able to establish efficient trust-based supplier collaborations, even when facing weak institutions and contract enforcement. Earlier work by McLaren (1999) already highlighted a prevalence of informal contracts in some regions and points towards its potential benefits in secondary cooperation and cost-sharing. Araujo *et al.* (2016) and Aeberhardt *et al.* (2014) stress the importance of trust in a dynamic sense, i.e. a kind of pair-specific reputation, in similar settings and show that trade volumes with a specific partner are only increased subsequently over time. Similarly, Rauch and Watson (2003) and Besedeš (2008) show that many firms engage in small test orders first when they deal with new partners. These inclusions of repeated interactions and matters of enforcement also stress potential channels across which perceptions of reciprocity may influence outcomes.

Using the GPS' significant between-country variation and its unique scope, we can examine the preferences' effects on trade outcomes more closely within a gravity framework. This is both relevant - for trade is the aggregate outcome of human negotiation - and practical - as both are observed on the national level. Using a typical gravity framework, the preferences can be considered as both bilateral non-tariff trade costs and as a unilateral component of a country's inclination and barriers to trade, the multilateral resistance term. The bilateral distance is constructed as the difference between a nation pair's preferences, while the unilateral impact is analyzed in a second stage on country-specific fixed effects used in the gravity analysis. Trade is observed both on the intensive (volumes) and extensive (number of traded goods categories) margin, with a wide variety of economic and cultural indicators used as controls.

Previewing our results, higher risk aversion and patience increase exports of differentiated goods, whilst lowering those of non-differentiated goods. This suggests that term and risk transformation processes are affecting negotiations and interactions with outside partners. That is, exporters specialize over their time horizons and willingness to incur risks, gaining comparative advantage in the corresponding products.

Bilaterally, distances in negative reciprocity adversely impact trade. This effect is robust across all goods categories and specifications. It likely stems from mismatches in contractual expectations and the uncertainties and risks associated with a negatively reciprocal partner and his willingness to punish if perceiving himself slighted. Distances in patience decrease trade volume in differentiated goods, but have no impact on non-differentiated goods. They do, however, raise the extensive goods margin and impact volume positively within an OECD subset. These results support arguments of term transformation, but suggest limitations to this channel, such as a required minimum patience and other certain preconditions. In general, the extensive goods margin produces results that contrast the intensive one: distances in positive reciprocity and risk have negative effects on the number of traded goods categories, whereas that of a distance in patience becomes positive. Negative reciprocity has no effect here. Overall, our effects hint at specific, previously less focused

on motivations for trade. The economic preferences present incentives and factors to judgement in contract negotiations, repeated interactions, specialization, and diversification strategies beyond the simple intangible idea of cultural distance and proximity.

The rest of the paper is structured as follows: after introducing the data and empirical strategy in section 2, we discuss potential channels through which the preference set may affect trade outcomes and some predictions. Results are presented in section 4, followed by a set of robustness checks. We end with some concluding remarks.

# 2 Data & Empirical Strategy

Mapping and isolating the potential impact of preferences on trade requires a comprehensive, three-part data set consisting of the GPS' preference data, the corresponding trade data and a set of cultural and institutional controls. The following subsections will be dedicated to describing the data used and the baseline models.

## 2.1 Data

**Preference Data** The main variables of interest are the GPS' results detailing a six-dimensional preference structure for 76 countries: patience, risktaking, positive and negative reciprocity, trust and altruism. Patience is therein understood as a broader measure of term orientation or time discount considerations, whereas risk assesses the average risk premium of a given population. Positive reciprocity is the willingness to reward cooperative behaviour and, consequently, negative reciprocity the willingness to conduct costly punishment of non-cooperative or deviant behaviour. Altruim is defined as the willingness to contribute to good causes or give to others, while trust is defined - more broadly - as the belief in other people's good intentions. All preferences are considered to be persistent, underlying convictions or notions, related to upbringing, education, norms and other societal trends.

The GPS was conducted alongside the 2012 Gallup World Poll, utilising the infrastructure and scope of that survey to gain both coverage and size. The Gallup World Poll interviewed representative samples of at least 1,000 persons per covered country and uses tried weighting techniques for these samples to match a nation's population. The GPS' data covers all important global economies with the possible exception of Africa, as shown in Figure 1. Around ninety percent of world population and GDP lie within the sample borders. Africa's coverage is less dense than for the other continents, but both Sub-Saharan and North African are included, which permits their use without disregarding the structural differences imposed by the Sahara desert (see Falk *et al.*, 2018). This scope permits conclusions beyond the traditionally available data

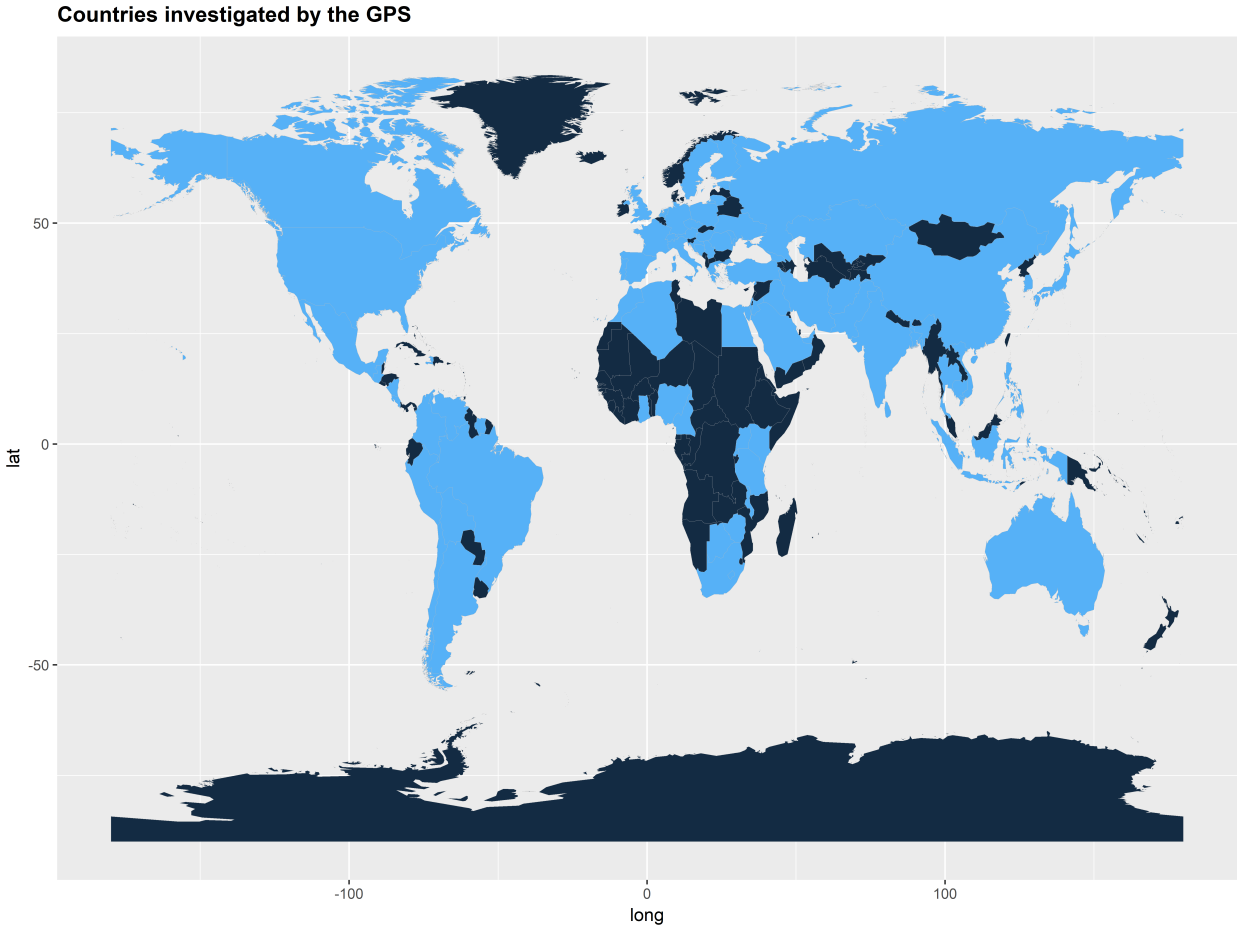


Figure 1: A World map detailing the countries covered by the GPS in blue.

from more developed countries only. This size and the World Poll's methodology elevate the GPS above previously available measures.

Additionally, the survey items - except for negative reciprocity and trust - are experimentally validated (see Falk *et al.*, 2018), in that incentivized experiments were conducted to evaluate the fit between survey answers and revealed preferences in the experiment. This factor differentiates the GPS from other, typically questionnaire-only surveys of similar intent by contextualizing the preferences as economic. The focus is shifted from abstract cultural measures and perceptions to a role in decision-making. Via that channel, they shape desired outcomes and goals - e.g. patience and risk - as well as defining behaviour in interactions - e.g. reciprocity and trust - , the GPS preferences inform negotiations. That includes the establishment and management of international trade relations.

As for the preferences themselves, they are provided in a normalized distribution, calculated in a three-step procedure. First, individual-level data on the experimental and survey data is combined using weights obtained by OLS regression on behavior observed in the experimental validation study conducted beforehand (see Falk *et al.*, 2016). Secondly, these measures are standardized with regard to the full sample of around 80,000 individuals from all 76 countries. Hence, each preference is, by design, of mean zero and standard deviation one on individual levels. Third - and lastly -, individual-level data of each country is aggregated to the national average using Gallup World Poll sampling weights. As a result, the national averages are representative of a respective country's population and similarly have means close to zero. Their standard deviations lie between 0.27 and .37, with explicit minima and maxima diverging from symmetry (see Table 1 and Figure 2). All preferences are positively skewed, except for positive reciprocity which exerts negative skew.

| Statistic | N | Mean | St. Dev. | Min | Pctl(25) | Pctl(75) | Max |
|---|---|---|---|---|---|---|---|
| patience | 76 | −0.003 | 0.370 | −0.613 | −0.258 | 0.132 | 1.071 |
| risktaking | 76 | 0.013 | 0.302 | −0.792 | −0.157 | 0.163 | 0.971 |
| posrecip | 76 | −0.034 | 0.342 | −1.038 | −0.242 | 0.187 | 0.570 |
| negrecip | 76 | 0.013 | 0.275 | −0.489 | −0.168 | 0.183 | 0.739 |
| altruism | 76 | −0.038 | 0.343 | −0.940 | −0.240 | 0.154 | 0.906 |
| trust | 76 | −0.022 | 0.278 | −0.706 | −0.177 | 0.153 | 0.609 |

Table 1: Descriptive statistics of the GPS' six variables. Each of them is normalized on the individual level, then aggregated to national averages using Gallup World Poll weights. Hence, their means are close to but not exactly zero. Standard deviations range from 0.275 to 0.37, as substantial variation occurs between individuals and within nations. Minima and maxima highlight an asymmetry in preference distributions.

**Culture, Politics and Institutions** Preferences might be correlated with other cultural variables. They could also interact with institutional settings, as has been found for trust and rule of law (Yu *et al.*, 2015),

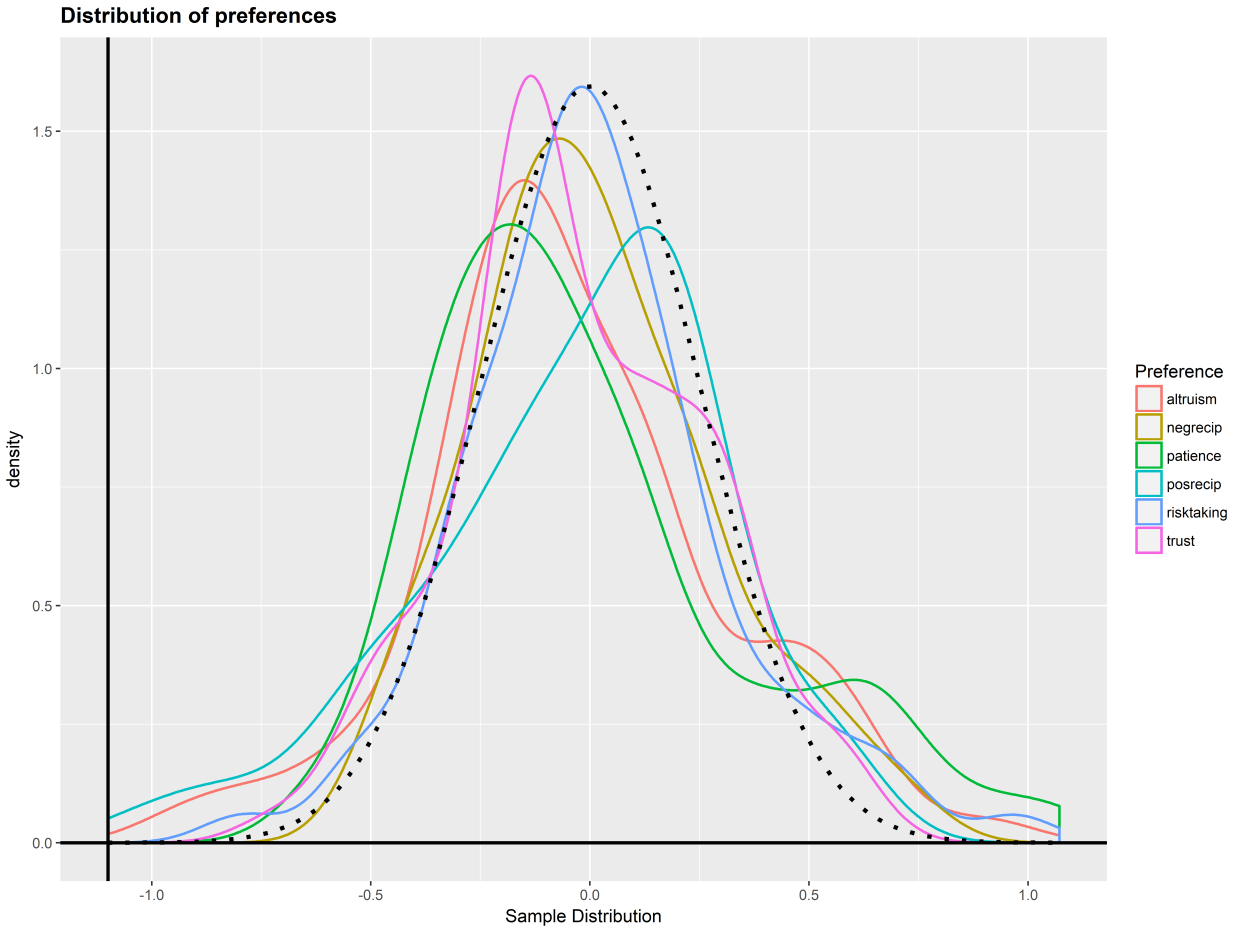


Figure 2: Distribution of national preferences. The density functions of all preferences are plotted against a normal distribution with mean zero and a standard deviation of 0.25 (dotted black line). All distributions exhibit positive skew, except for the negatively skewed positive reciprocity. They are also substantially less dispersed than the normal distribution, as the comparison shows. Risk attitude diverges least from the plotted normal distribution, though it is still not normally distributed.

or the overall economic situation. To account for these potential biases, a broad range of cultural, historic, political or economic indicators supplements the preference data. This includes population, GDP and other national characteristics from the CEPII (Head and Mayer, 2014, Head *et al.*, 2010) as well as information on geography and colonial history (Mayer and Zignago, 2011). Additional data on country terrain is drawn from Nunn and Puga (2012), who measure the ruggedness - i.e. differences in altitude - within a country, a potential measure for physical trade barriers[4]. Information on regional trade agreements is extracted from Egger and Larch (2008).

Data on linguistic similarities is integrated using data from Melitz and Toubal (2014), who provide and compare multiple measurements for the resulting ease of communication. In the same vein, information regarding cultural, religious and genetic distance from Spolaore and Wacziarg (2016, 2018) is used to account for the more general effects of alien- or likeness. The Dyadic Values Distance measure created by Jaeggi *et al.* (2018) and drawn from the World Values Survey is included for contrast and comparison; as are the Hofstede dimensions (see Hofstede *et al.*, 2010).

For political and institutional influences, the Polity scores (2018), Freedom House indices (2018), and Worldwide Governance Indicators (Kaufmann *et al.*, 2009) are used. These assess democratic or autocratic leanings and civil liberties as well as issues of politic representation, respectively. Thus, the measures can be used as proxies for legal rights and personal freedom, which might both impact negotiation behavior and outcomes.

**Trade Data** The trade data used in the analysis is obtained from UN Comtrade for 2012, the year in which the GPS had been conducted, at the 3-digit industry level (SITC, Rev. 4). Flows are measured using import data, which is considered more accurate due to customs and tariff requirements of the receiving country. All 240 goods categories are observed for 68 countries of the GPS. The disaggregated data is used to divide trade flows into listed, reference priced and differentiated goods according to Rauch (1999), as these groups might respond differently.

A subset of ten nations available in the GPS - Afghanistan, Botswana, Cameroon, Haiti, Iran, Iraq, Kenya, Morocco, Philippines and Venezuela -, have not yet reported for 2012. Their flows are calculated using export data from their 66 partner countries[5]. Additionally, Bosnia-Herzegovina and Serbia are dropped due to the risk of confounding with Yugoslavia for several cultural variables, while Afghanistan is dropped due to a general lack in controls.

[4]However, these measures were excluded from the final results to consolidate variables used in the second stage on account of the low number of observations. Since their exclusion does not alter results significantly, this seemed an acceptable compromise. Nonetheless, their potential influence had to be controlled for.

[5]See Appendix A for further detail regarding potential bias inherent in the use of reported data from both trade flows. Note also that trade between these countries is missing entirely, causing potentially non-negligible bias.

Given these corrections, the final dataset contains 73 countries from all continents, yielding 5256 exporter-importer pairs and 1,261,440 bilateral good-specific trade flows. Of these, 35.8 percent are non-zero, whereas the average value of a bilateral good-specific trade flow amounts to 8.9 million US-Dollar. The average country trades with 67 out of 72 potential partners and in 86 out of 240 goods categories.

## 2.2 The Model

The analysis is built upon the Gravity framework by Anderson and van Wincoop (2003) and its expansions by Head and Mayer (2014), Yotov *et al.* (2016) and Santos Silva et al. (2006, 2014). Therein, international trade $x_{ij}$, between exporter $i = 1, ..., I$ and importer $j = 1, ..., J$, is modeled as:

$$x_{ij} = \underbrace{\frac{Y_i}{\Omega_i}}_{S_i} \underbrace{\frac{X_j}{\Phi_j}}_{M_j} \phi_{ij} \tag{1}$$

$Y_i$ and $X_j$ are the total values of exporter production and importer expenditure, respectively, and $\phi_{ij}$ describes the bilateral trade costs between $i$ and $j$, which are assumed to be symmetric. $\Omega_i$ and $\Phi_j$ represent the multilateral resistance terms, a representation of the average trade barriers faced by exporters. These terms can be defined as:

$$\Omega_i = \sum_l \frac{\phi_{il} X_l}{\Phi_l} \quad \text{and} \quad \Phi_j = \sum_l \frac{\phi_{lj} Y_l}{\Omega_l} \tag{2}$$

$\Omega_i$ is the expression of an exporter $i$'s average cost of exporting to any other country, and $\Phi_j$ correspondingly the average cost of importing into country $j$.[6] An alternative designation is that of outward and inward multilateral resistance term, respectively (see Donaubauer *et al.*, 2018). With the Gravity framework's three cost parameters, $\phi_{ij}$, $\Omega_i$ and $\Phi_i$, the potential effects of GPS preferences can be studied. Differences between them might impact bilateral trade costs through negotiations, similar in design to cultural distance. Such divergence would then lower trade, though the opposite effect is conceivable as well. However, the preference leanings of a population - i.e. their outlook - might also impact the openness to trade.

**Intensive Margin** Both multilateral resistance terms are typically modelled as fixed effects, $S_i$ and $M_j$ (see Equation 1), due to computational and information restrictions. This method also accounts for unobserved heterogeneity in trade determinants. A country's preferences would be swallowed up by the fixed effects given their assumed persistence. However, these fixed effects and its components can be analyzed in a two-step approach using a Gravity specification first and OLS on the estimated fixed effects (cf. Donaubauer

[6] More precisely, the average trade barrier of one exporter (importer) is constructed as the sum of bilateral trade costs weighted by the expenditure (consumption) share of each flow and the respective partner's own average import (export) costs. In its pure form, this could only be solved iteratively or given a complete set of trade costs.

*et al.*, 2018, Head and Mayer, 2014) second. In accordance with the wider literature, that specification is estimated using Pseudo Poisson Maximum Likelihood (PPML), which is both consistent in the presence of heteroskedasticity and allows the inclusion of zero trade flows (Santos Silva and Tenreyro, 2006). The first step estimator is defined as:

$$x_{ij} = exp\left(|\boldsymbol{z_i} - \boldsymbol{z_j}|\,\boldsymbol{\beta} + S_i + M_j + \boldsymbol{\phi'_{ij}}\boldsymbol{\gamma}\right) + \epsilon_{ij}, \tag{3}$$

where $S_i$ and $M_j$ are the exporter and importer fixed effects - or average trade barriers - and $\boldsymbol{\phi_{ij}}$ is a vector of bilateral (dyadic) trade cost variables. $x_{ij}$ is the volume of exports from country $i$ to country $j$, the intensive margin of trade. $|\boldsymbol{z_i} - \boldsymbol{z_j}|$ is a measure for preference distances between a country pair. Each of the six preferences - patience, risk, positive and negative reciprocity, trust and altruism - is included separately. As the GPS variables are normalized, the normal difference would be impossible to estimate, necessitating the absolute one. This approach is also reasonable as the direction of the preference distance should be secondary compared to the distance itself.

The gravity equations are applied to both the total bilateral trade volumes and separate volumes for differentiated and non-differentiated goods. This split accounts for the fact that negotiations - through which preferences are most likely to impact trade outcomes - would play a more important role for differentiated goods than for listed or reference-priced commodities. The more goods diverge from a global standard, the more details need to be covered in the bilateral negotiations and the less can be relied on that standard to assure an effective contract. This split is achieved using the Rauch (1999) classifications for three-digit SITC 4 commodity classes, yielding 240 separate potential bilateral flows per country pair, which are then aggregated into two export volumes for each of the groups.

In the second step, the estimated exporter and importer fixed effects are each regressed on their respective preference measures $\boldsymbol{z_i}$ and country-specific variables $\boldsymbol{C_i}$ such as GDP per capita, population and internal distance:

$$S_i = \alpha_0 + \alpha_1\overline{\phi_i} + \boldsymbol{C_i}'\boldsymbol{\delta} + \boldsymbol{z_i}'\boldsymbol{\eta} + v_i \;\; and \;\; M_i = \alpha_0 + \alpha_1\overline{\phi_i} + \boldsymbol{C_i}'\boldsymbol{\delta} + \boldsymbol{z_i}'\boldsymbol{\eta} + v_i, \tag{4}$$

where $\overline{\phi_i}$ is the weighted average over the dyadic characteristics of each country $\overline{\phi_i} = \sum_j \boldsymbol{\phi'_{ij}}\hat{\boldsymbol{\gamma}}$.[7]

[7]The estimated coefficients for $\phi$ are chosen as weights, given their implicit information on a variable's significance. This approach also corresponds to Donaubauer *et al.* (2018)

**Extensive Margin** So far, the impact of preferences has been modeled as one of repeated interactions within existing commercial relationships, that is: the intensive margin, the volume of non-zero trade flows. Yet negotiations and other communication also take place during the inception of trade, that is: the change from a zero flow to a non-zero one - the extensive margin. While it is impossible to gain a measure for that exact moment in time when a first contract for a country pair and specific good is formed, an average over these events can be approximated via measures for the number of traded goods categories. This limitation conveniently matches the GPS' own of being representative only on the country-level. Contextually, it allows insight into how the composition of trade - i.e. whether a bilateral relationship is diversified over several goods classes or restricted to only a few - is affected by preferences or their bilateral distances.

For these purposes - and to retain coherence with the intensive margin estimates -, the extensive margin is defined as a count variable of bilateral non-zero trade flows on the three-digit SITC industry level $c$: $T_{ij} = \sum_c t_{cij}$ , with: $t_{cij} = 1$ , if: $X_{cij} > 0$.[8] $T_{ij}$ thus has a lower bound of zero and an upper bound of 240, the amount of three-digit industry classifications. As with its intensive margin counterpart, the extensive goods margin is estimated on the aggregate level and for differentiated and non-differentiated goods classes separately. In all cases, PPML is used in specifications otherwise identical to those for the intensive margin: [9]

$$T_{ij} = exp\left(|\boldsymbol{z_i} - \boldsymbol{z_j}|\,\boldsymbol{\beta} + S_i + M_j + \boldsymbol{\phi'_{ij}}\boldsymbol{\gamma}\right) + \epsilon_{ij} \tag{5}$$

# 3 Hypotheses

The analysis by Falk *et al.* (2018) and others before has shown that differences in preferences can not only lead to substantial variance in personal decisions, but also in aggregate outcomes of major importance such as a country's GDP. In this paper, we want to analyze trade as both a potential conductor and even magnifier on the way from individual decisions to economic outcomes and development. Trade (and trading firms) make up a large share of world's production and consumption and its interrelation with growth is widely acknowledged (Bernhofen and Brown, 2005, Donaldson, 2015, Frankel and Romer, 1999).

The preferences measured in the GPS are reflective of factors informing players' calculations in nego-

[8] Using the industry-specific binomial variables $t_{cij}$, a logit estimation of the bilateral decision to trade in one specific goods class becomes possible. That model can be defined as:

$$t_{cij} = exp\left(|\boldsymbol{z_i} - \boldsymbol{z_j}|\,\boldsymbol{\beta} + S_i + M_j + \boldsymbol{\phi'_{ij}}\boldsymbol{\gamma} + \boldsymbol{\theta_c}\right) + \epsilon_{ij}$$

, and is estimated for robustness purposes (see Table 15). As this binary model suffers from incidental parameter bias, its results are not sufficiently reliable to serve as a primary result.

[9] Note that the count variable definition used in the *breadth of trade* extensive margin estimates is closer to an actual Poisson model than the volume speficiation.

tiations and related settings. Even though not all effects postulated here may be substantial enough to manifest at the overall aggregate level, we believe that they do play an important part in influencing trade business decisions in particular. As mentioned above, compared to local transactions, international trade bears a significantly higher level of uncertainty, risk and time. Therefore, the structure and features of a contract are central and its design and the final decision on a contract crucially relate to our observed set of preferences.

As a simple guiding structure, we consider a Home firm looking for a supplier [10]. Its outside option is to immediately buy from a local supplier $H$ with guaranteed quality and quantity $x_H$, thus allowing a safe final payout $y_H$ and profit $\pi_H$:

$$\pi_H = y_H - c_H x_H \tag{6}$$

International profits take the following form:

$$\pi_T = -c_T x_T + \delta[p y_T + (1-p) d y_T] \tag{7}$$

We assume that dealing with an international partner yields a higher potential payout, may it be through lower buying prices, i.e. $c_T < c_H$, better quality or access to a unique variety of a good or input, i.e. $x_T > x_H$, but also $y_T > y_H$. At the same time, this higher payout comes with a delayed realization (valued at discount factor $\delta$) and the risk of default with probability $(1-p)$. The ordered goods may never arrive, or, vice versa, the firm may default on the payment. One may extend this setting with the possibility of a partial payout of share $d$, applying to situations of deliveries of insufficient quantity or quality, but also to a potential enforcement and recoupment with some probability. The decision on which potential relationships and contracts hold a positive expected value and how eventual repeated interactions play out may then crucially hinge on the set of preferences observed in the GPS.

**Patience** Patience, which we can simply depict as the discount factor for delayed and future payouts in our contract setting, measures the willingness to forego short-term profits for higher gains in the long-run. Since trade can be understood as a method to achieve efficiency gains by constructing international supply and distribution networks, higher patience should positively impact overall trade intensity and volume. I.e., due to longer delivery times, an often longer search and set-up time, more time needed to enforce contracts and payments if necessary, more patient agents should naturally be more likely to engage in trade than impatient agents, c.p. When we consider potential increasing long-run benefits of successful repeated interactions,

[10] Analogously, the same channels can be transformed to different settings, e.g. a Home producer looking to export to a Foreign distributor, or to the viewpoint of the Foreign firm.

these would also be more valued by patient agents and thus tend to increase the prevalence of said long-run relationships and also of successful initial completions in the interest of enabling further cooperation.

**Risk-aversion** Likewise, less risk-aversion should facilitate the buildup of trade relations because of the specific trade-inherent risks mentioned above. Also, when comparing the setting up of trade facilities and networks to a basic risky investment consideration, any simple investment model would predict more investments, and here: more trade, for less risk-averse agents. However, looking at a broader and more complex picture, a motive of risk minimization may have opposite effects as well through the strategy of diversification. In the long run, more risk-averse firms may still find it optimal to trade more compared to its local domestic production and to trade with multiple different countries and areas as a means to insure against national or regional shocks. This holds true for both importers, e.g. needing constant access to required inputs, as well as for exporters, wanting to ensure a steady turnover and flow of income.

**Trust & altruism** As stated above, any trade relationship is vulnerable to a basic time-inconsistency problem due to its non-immediate nature. In this setting and given our measure of *trust*, we can interpret it as an initial perceived risk that the trading partner might not follow through with the agreed payment and/or delivery of goods. Of course, in reality even perfect trust in the trading partner would not rid a trade deal of any risk whatsoever. One would still need to consider exogenous factors such as transport, currency risks and more.

In addition, trust and as well *altruism*, both imply a positive attitude towards negotiating partners and humans in general. This increase in positive beliefs and goodwill should reduce the barriers to reach an agreement and heighten those for breaking or ending one. Altruism is measured as a willingness to donate and to give to good causes here. At an even more general level, we can think of altruism as caring about others' payoffs independently of one's own payoff. We can apply this to the above contract setting in a basic manner by simply incorporating some part of the trading counterpart's payoff into an agent's own utility. It is straightforward to see that this would push some contract opportunities at the margin to a positive decision that would have been deemed, for example, slightly too risky otherwise. While this might arguably not be too prevalent in real-world everyday business decisions, agents and countries with higher levels of altruism should therefore also tend to trade more. However, in contrast to risk attitude and patience, it is unclear how these national preferences relate to trade outcomes when the partner in question leans towards the other extreme. That mismatch could then be harmful for trade - thus necessitating an approach estimating the impact of differences in preference leanings.

**Positive reciprocity** Positive and negative reciprocity can also be viewed as stabilizing factors in commercial agreements. The general importance of reciprocal behavior, especially in non-enforceable contracts, has been established by Fehr *et al.* (1997) and others. Akin to a standard gift exchange (cf. Akerlof, 1982), we may view actions such as reliable and timely payments and the production of high-quality goods as a form of "gifts". In a more general context, positive reciprocity has been shown to increase cooperation by also inducing selfish types to cooperate (Gächter and Herrmann, 2009). Cable and Shane (1997) propose a key role of positively reciprocal cooperation for entrepreneurs in acquiring capital and developing alliances with bigger companies. Positive reciprocity should therefore tend to generally foster trade relationships. Additionally, a successful and positive trade deal in a first period can be further rewarded on both sides through subsequent dealings in following periods. While positive reciprocity extends beyond measures of trust, it captures an approach to negotiations that could build bilateral trust. Agents of a country with higher levels of positive reciprocity would invest more - and act more gratefully - into a relationship with a partner who has shown to be trustworthy and reliable, or shown similar levels in positive reciprocity.

**Negative reciprocity** Meanwhile, the effect of negative reciprocity is less straightforward. On one hand, higher levels imply a willingness to punish deviation from contracts and agreements - even beyond a level where it would be monetarily rational to do so -, thus raising the cost of a breach of contract once it has been established. While this might partially deter some initial agreements in the first place, the prospect of a more credible strong punishment could help to prevent deviation and therefore foster the build-up of longer-term and growing relationships. For example, Dohmen *et al.* (2008) highlight this ability to make credible threats as a potential bargaining advantage. However, this seems to only hold true for milder forms of negative reciprocity. In its strongest forms of decisively taking revenge and anti-social punishment, negative reciprocity may actually hinder coordination and cooperation (Gächter and Herrmann, 2009, Herrmann *et al.*, 2008). Caliendo *et al.* (2012) also find that a propensity to take revenge has a negative effect on the probability to stay in entrepreneurship, suggesting that high levels of negative reciprocity reflect non-cooperation and reduce one's own profits. The net effect on trade is unclear ex ante, but between-country differences in particular may drive a wedge between the trading partners' contract expectations and thus tend to hinder trade agreements.

**Bilateral differences** Following the literature on shared characteristics in trade such as language, ethnicity and culture, we also analyze a potential boosting effect of overall preference similarities between two countries, in as they might ease contractual agreements and communication. However, a simple affinity to similar people alone would predict increased trade both between, e.g. two highly risk-averse countries as well as between

two risk-neutral countries. On the other hand, a contrast in certain preference dimensions might actually also help to enable trade. For example, a particularly risk-averse exporter would naturally find it easier to agree on a contract with a risk-neutral importer readily willing to pay in advance, all other things being equal.

In fact, some agents might find it profitable to actually seek out trading partners of opposing attitudes, thus providing a channel of potential trade boost effects that go beyond simple unilateral level effects. Time and risk premia that impatient and risk-averse (and in combination with that, also less trusting) agents would be willing to pay can be exploited by agents willing to contractually provide the desired time and risk transformations because they are more patient and risk-tolerant themselves. By increasing the likelihood of finding such a respective trading partner there, interactions and trade flows between two diverging countries should tend to increase on average, e.g. a patient firm is more likely to find a partner willing to pay a time premium in countries that are on average more impatient.

In the following, we thus explore potential effects of bilateral differences and similarities as well as unilateral country-specific effects in a two-step gravity approach.

# 4 Results

## 4.1 Standard Gravity

The results from estimating the intensive margin of trade via PPML are reported in Table 2. Specification (1) is a conventional gravity equation regressing bilateral exports on distance[11], contiguity, colonial relationships, existing regional trade agreements, sharing a common language and country fixed effects. With one exception, the coefficients have the expected directions and are significant at the one percent level. Common language *lng*, however, is insignificant, which does not change when using native and spoken language dummies. This observation is in line with Melitz and Toubal (2014), who likewise find insignificant language effects when using PPML estimators[12] and whose dummies are used in this analysis.

Specification (2) incorporates a *bilateral distance in preferences* measure similar to Jaeggi *et al.* (2018) or Spolaore and Wacziarg (2018). This variable is defined as the unweighted average of the $l$ single preference distances: $\text{dpref} = \frac{1}{l}\sum_k^l(|\boldsymbol{z_{ki}} - \boldsymbol{z_{kj}})|$; and thus measures whether preferences affect outcomes simply by being different, which would speak for the overall preferences reflecting or proxying for a simple cultural (dis-)similarity. Such an outcome is not observed. Moreover, results for the conventional gravity parameters

[11]The measure is constructed by taking the natural logarithm of the average distance in kilometres between the most important population centre's of the two countries as calculated in Mayer and Zignago (2011).

[12]Overlap with the colonial relationship dummy may partially explain these results, as both are relatively broad measures for many-faceted conditions and durations of national exposure.

| | Basic Grav. | Agg. Pref. Dist. | Agg. Pref. Dist | Single Pref. Dist. | Single Pref. Dist. |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| ldist | $-0.60^{***}$ | $-0.60^{***}$ | $-0.59^{***}$ | $-0.60^{***}$ | $-0.59^{***}$ |
| | (0.06) | (0.07) | (0.06) | (0.06) | (0.06) |
| contig | $0.42^{**}$ | $0.43^{**}$ | $0.48^{***}$ | $0.44^{**}$ | $0.49^{***}$ |
| | (0.15) | (0.15) | (0.14) | (0.14) | (0.14) |
| colony | $0.29^{**}$ | $0.29^{**}$ | $0.31^{**}$ | $0.32^{**}$ | $0.34^{***}$ |
| | (0.11) | (0.11) | (0.10) | (0.10) | (0.09) |
| rta | $0.28^{**}$ | $0.27^{*}$ | $0.32^{**}$ | $0.27^{**}$ | $0.34^{***}$ |
| | (0.10) | (0.11) | (0.10) | (0.10) | (0.09) |
| lng | 0.05 | 0.04 | $-0.07$ | 0.03 | $-0.07$ |
| | (0.15) | (0.15) | (0.12) | (0.14) | (0.13) |
| dpref | | $-0.20$ | $-0.31$ | | |
| | | (0.40) | (0.35) | | |
| comleg | | | $0.18^{*}$ | | $0.16^{*}$ |
| | | | (0.07) | | (0.07) |
| leg.qlt | | | $0.14^{***}$ | | $0.15^{***}$ |
| | | | (0.02) | | (0.03) |
| dpati | | | | 0.04 | $-0.15$ |
| | | | | (0.12) | (0.10) |
| drisk | | | | 0.36 | $0.50^{\cdot}$ |
| | | | | (0.25) | (0.26) |
| dposrec | | | | 0.09 | $-0.01$ |
| | | | | (0.21) | (0.21) |
| dnegrec | | | | $-0.63^{***}$ | $-0.53^{***}$ |
| | | | | (0.15) | (0.16) |
| daltr | | | | $-0.17$ | $-0.09$ |
| | | | | (0.11) | (0.11) |
| dtrus | | | | 0.05 | 0.09 |
| | | | | (0.19) | (0.18) |
| Observations | 5112.00 | 5112.00 | 5112.00 | 5112.00 | 5112.00 |
| Deviance | 4784986994227.90 | 4781335510276.27 | 4653839002672.03 | 4671230483219.89 | 4556478256897.52 |
| Exp./Imp. FE | YES | YES | YES | YES | YES |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 2: Estimation of aggregated bilateral exports, $X_{ij}$, via PPML. The variables of interest are the distances in preferences, included as an unweighted average *dpref* in (2,3) and as single variables *dpati, drisk, dposrec, dnegrec, daltr, dtrus* (4,5). A dummy for common legal systems *comleg* and a measure for differences in legal quality *leg.qlt* are included in models (3) and (5) due to their potential impact on negotiations, the channel of interest. Model (1) is a standard gravity equation for comparison. Standard errors are clustered to Importer and Exporter fixed effects.

are barely altered by its inclusion, implying little correlation between these variables and the preferences - given fixed effects.

Inclusion of the single preference bilateral distance measures in specification (4) likewise barely affects the conventional variables, though the colony coefficient increases slightly. Of the preference distances, only that for distance in negative reciprocity *dnegrec* is significantly different from zero. If it were to increase by one standard deviation (0.236)[13] - e.g. the distance between Czechia and Lithuania -, the respective trade volume would decrease by 14.87%. These effects are not driven by level effects, i.e. a high distance being relevant on account of the high level of one partner - an issue for measures of legal quality[14]. As mentioned above, negative reciprocity may ex ante have adverse or positive effects in cooperations and thus relations, depending on which of its forms dominates. Negative reciprocity is understood as a willingness to commit costly punishment against a non-cooperating player, but may devolve into actions of revenge[15]. Being able to credibly commit to punishments could foster and stabilize contracts, but high levels of negative reciprocity would raise the risks of a contract for a given partner, potentially deterring them. Additionally, once a punishment has been committed within a relationship, it might end it for good - either by a "grim trigger"-like strategy of the negatively reciprocal player or by the negative signal of the punishment on his partner.

A distance in negative reciprocity attitudes can also translate to differing approaches regarding breach of contract and enforcement measures. Either party of such a distant would lack understanding for proposed measures, perceiving them instead as unfair or threatening. This is in line with behavioral literature stressing the crucial role of expectations, (perceived) intentions and concepts of "fairness" with regards to reciprocity and cooperation (e.g. Bosse *et al.*, 2009, Falk and Fischbacher, 2006, Fehr and Gächter, 2002). Dynamic aspects in this regard may impede formation of long-running and growing partnerships further. This again lends itself to the "grim trigger" punishment interpretation, i.e. ending all future business dealings in response to even minor contract deviations and against monetary rationality. Another possibility are spill-over effects, in the sense that overly harsh punishment - e.g. not engaging in potentially profitable deals - is often also observed in third parties (cf. Fehr and Gächter, 2002). In the trade setting, this would translate to a failed deal between firms A and B resulting in a firm C also refraining from business with firm B or even other firms from B's country.

Given these channels, negative reciprocity could also be related to non-performing legal systems (cf. Her-

[13]Summary statistics for the preference distances are listed in Table 6 of the Appendix.

[14]See subsection 4.3 for the investigation of level effects and, for example, Yu *et al.* (2015) for the discussion with regards to legal quality

[15]In line with behavioral and managerial literature, it would have been sensible to distinguish between the forms of negative reciprocity, which have been queried by sub-questions in the GPS data. Unfortunately, that data is not being provided in the publicly available data set.

rmann *et al.*, 2008), which might cause individuals to substitute legal intervention with private enforcement. A measure for distance in legal system quality[16] *leg.qlt* is added in specifications (3) and (5) to control for that possibility. Were such a link to exist, results might be biased by adverse effects of weaker legal systems on commerce. This seems not to be the case, as the coefficient of *dnegrec* changes only slightly as in these specifications. Regardless, both the rule of law indicator and the common legal system dummy are significant and possess positive effects, which is in line with previous literature[17]. In addition, the distance in risk becomes significant at the ten percent level[18] when controlling for legal systems with an effect comparable in size to that of negative reciprocity, but positive. This corresponds to a diversification or risk transformation argument, in that more risk-averse countries would outsource riskier enterprises, preferring to import their produce - and vice versa. This particular match of a more risk-averse and a risk-tolerant partner may facilitate agreement on the form of trade finance contracts because both partners could agree on allocating risk to the less risk-averse side. Given the significance and robustness issues with this result, it needs to be treated with caution.

## 4.2 Differentiated and Non-Differentiated Goods

Expanding on these results, specification (5) of Table 2 is used for an analysis on differentiated and non-differentiated goods, according to the Rauch (1999) specifications on the 3-digit level. That separation yields two sets of comparable trade volumes and allows further disentanglement of the effects. Comparing conventional bilateral variables yields expected and reasonable results: distance matters more for non-differentiated goods, trade agreements matter more for differentiated goods requiring complex regulation. Legal quality continues to matter, though a common legal system appears insignificant for non-differentiated goods. The latter is likely a result of the more formalized exchanges governing non-differentiated goods trade, which reduce the importance of legal recourse.

In general, preferences would be assumed to have stronger effects on differentiated goods, which are more negotiation-intensive and less arbitrated by exchanges or other institutions. That assumption is mostly borne out in specification (2) of Table 3: distances in patience *dpati* have a negative impact on trade volumes for differentiated goods, while distances in positive reciprocity *dposrec* have a positive effect, while there is no significant effect for patience in non-differentiated goods. Their coefficients correspond to a 7.3% decrease and a 10.4% increase per standard deviation[19], respectively. The more differentiated a good is, the more

[16] That measure is drawn from the Worldwide Governance Indicator *rule of law* (in levels) using absolute differences, as with the preferences.

[17] The directions and significance match the analysis by Yu *et al.* (2015), who also use WGI data as a bilateral variable. More generally, the positive effect of a difference in legal quality likely stems from the presence of one strong legal system in a bilateral setting compared to two weak ones.

[18] More precisely, its significance is on the 5.2% level.

[19] The standard deviation of *dpati* is 0.331, which equals for example the distance from Estonia to France. For positive

| | Differentiated Goods | | Non-Differentiated Goods | |
|---|---|---|---|---|
| | Agg. Pref. Dist. | Single Pref. Dist. | Agg. Pref. Dist. | Single Pref. Dist. |
| | (1) | (2) | (3) | (4) |
| ldist | $-0.54^{***}$ | $-0.53^{***}$ | $-0.81^{***}$ | $-0.80^{***}$ |
| | (0.07) | (0.07) | (0.07) | (0.07) |
| contig | $0.43^{***}$ | $0.45^{***}$ | $0.40^{*}$ | $0.41^{*}$ |
| | (0.11) | (0.10) | (0.17) | (0.17) |
| colony | $0.33^{*}$ | $0.37^{*}$ | $0.43^{***}$ | $0.45^{***}$ |
| | (0.14) | (0.14) | (0.10) | (0.10) |
| rta | $0.48^{***}$ | $0.52^{***}$ | $0.27^{*}$ | $0.30^{*}$ |
| | (0.09) | (0.10) | (0.12) | (0.12) |
| lng | 0.12 | 0.07 | $-0.19$ | $-0.18$ |
| | (0.15) | (0.15) | (0.17) | (0.18) |
| comleg | $0.25^{***}$ | $0.23^{***}$ | $0.14^{\cdot}$ | 0.12 |
| | (0.07) | (0.07) | (0.08) | (0.08) |
| leg.qlt | $0.16^{***}$ | $0.20^{***}$ | $0.14^{**}$ | $0.16^{*}$ |
| | (0.04) | (0.05) | (0.05) | (0.06) |
| dpref | 0.18 | | 0.15 | |
| | (0.39) | | (0.46) | |
| dpati | | $-0.22^{*}$ | | $-0.01$ |
| | | (0.11) | | (0.11) |
| drisk | | 0.27 | | 0.36 |
| | | (0.26) | | (0.30) |
| dposrec | | $0.35^{*}$ | | $-0.25^{\cdot}$ |
| | | (0.15) | | (0.14) |
| dnegrec | | $-0.34^{***}$ | | $-0.57^{*}$ |
| | | (0.09) | | (0.29) |
| daltr | | $-0.02$ | | 0.20 |
| | | (0.16) | | (0.22) |
| dtrus | | 0.04 | | 0.37 |
| | | (0.13) | | (0.39) |
| Observations | 5112.00 | 5112.00 | 5112.00 | 5112.00 |
| Deviance | 2191196437134.48 | 2148251386223.37 | 2786531148536.13 | 2743904306395.92 |
| Exp./Imp. FE | YES | YES | YES | YES |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 3: Estimation of aggregated bilateral exports, partitioned in differentiated and non-differentiated goods according to Rauch (1999) three-digit SITC classifications. The variables of interest are the distances in preferences, included as an unweighted average *dpref* in (1,2) and as single variables *dpati, drisk, dposrec, dnegrec, daltr, dtrus* (3,4). Standard errors are clustered to Importer and Exporter fixed effects.

likely is its trade within a system of repeated interactions, in which a more positively reciprocal player would reward his partner for cooperation, thus stabilising the relationship. On the other hand, a less patient partner might be unwilling to invest into the high negotiation costs required for such contracts. If the latter interpretation is correct, the negative impact would originate from comparably impatient countries, growing weaker for nations with above-average patience.

Regarding positive reciprocity in the trade of non-differentiated goods, the coefficient becomes negative. An increase in distance would correspond to a 7.45% decrease in trade volumes. In light of the overall results, this sign switch appears as an anomaly. It is likely the result of two separate effects. First, as mentioned previously, repeated interactions matter less for non-differentiated goods. List- and reference-pricing remove the need for more complex negotiations and thus for repeated interactions. Displaying positive reciprocity - be it in gifts, accomodation or behaviour - becomes less likely and relevant. For differentiated goods, meanwhile, such a gesture - especially when unexpected from the less reciprocal partner - can help overcome obstacles in the negotiations. The second effect is, consequently, the cultural distance expressed within the preferences - larger distances express a foreignness in view and thought, which might complicate negotiations.

In a similar vein, the impact of distances in negative reciprocity is weaker for differentiated than non-differentiated goods (8 to 13.45% per standard deviation). The effect of a willingness to punish - especially an unexpected one for a less reciprocal partner - remains adverse and negative but likely diminishes with good complexity, as it becomes more difficult to find alternative suppliers (or customers). Here, the worse quality fit of an alternative partner balances the increased expected cost of trading with a more negatively reciprocal partner. Additionally, the expectation of punishment may have stabilising effects on existing contracts.

Notably, the aggregate distance in preferences is insignificant for both types of goods, as in the aggregate. This need not imply an insignificance of preference distances as an expression of a cultural separation, but is likely a result of opposing effects within the preferences and in regards to a values dissonance. In contrast to, for example a values dissonance (see Jaeggi *et al.*, 2018), preference distances can be beneficial to economic exchange as well.

## 4.3 Impact on Average Barriers

In a next step, the fixed effects, i.e. the average trade barriers, are extracted from the single preference specifications (2) and (4) of subsection 4.2, Table 3, to decompose the effects of GPS preferences on trade outcomes. The effects from the separate sets are used due to the substantial observed differences in coefficients between the goods classes[20]. Exporter and importer fixed effects of the two goods specifications are each

reciprocity, it is 0.298 - the distance from France to Italy).

[20]Second stage estimations for the aggregate bilateral volumes are shown in Table 9 and Table 10 of Appendix C. Summarily, the preferences are non-significant for the fixed effects of aggregate bilateral volumes.

| | Second Stage | | | |
|---|---|---|---|---|
| | Differentiated Goods | | Non-Differentiated Goods | |
| | Exporter | Importer | Exporter | Importer |
| | (1) | (2) | (3) | (4) |
| (Intercept) | $19.30^{***}$ | $-0.79$ | $20.55^{***}$ | $-2.61$ |
| | (4.66) | (2.87) | (4.05) | (3.29) |
| avg.char | $-0.35$ | 0.05 | $-0.39$ | $-0.22$ |
| | (1.07) | (0.66) | (0.59) | (0.48) |
| pop | $0.04^{**}$ | $0.03^{***}$ | $0.03^{***}$ | $0.04^{***}$ |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| gdpcap | $0.43^{*}$ | $0.55^{***}$ | $0.75^{***}$ | $0.55^{***}$ |
| | (0.21) | (0.13) | (0.16) | (0.13) |
| landlocked | $-1.41^{*}$ | $-0.92^{*}$ | $-1.31^{*}$ | $-0.92^{*}$ |
| | (0.67) | (0.41) | (0.51) | (0.41) |
| patience | $1.86^{\cdot}$ | $-0.31$ | $-1.60^{*}$ | $-0.37$ |
| | (1.06) | (0.66) | (0.80) | (0.65) |
| risktaking | $-2.25^{*}$ | 0.34 | $1.96^{**}$ | $-0.00$ |
| | (0.90) | (0.56) | (0.68) | (0.55) |
| posrecip | 0.97 | 0.30 | 0.26 | $-0.16$ |
| | (1.08) | (0.67) | (0.82) | (0.66) |
| negrecip | 0.64 | 0.16 | $-0.20$ | 0.71 |
| | (0.89) | (0.55) | (0.68) | (0.55) |
| altruism | $-0.84$ | $-0.24$ | $-0.50$ | 0.15 |
| | (1.02) | (0.63) | (0.77) | (0.62) |
| trust | 0.46 | 0.56 | 0.84 | 0.24 |
| | (0.91) | (0.56) | (0.69) | (0.56) |
| $R^2$ | 0.57 | 0.58 | 0.52 | 0.61 |
| Adj. $R^2$ | 0.50 | 0.51 | 0.44 | 0.55 |
| Num. obs. | 72 | 72 | 72 | 72 |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 4: Estimation of Fixed Effects, i.e. Average Trade Barriers, via a two-step approach. Exporter and importer fixed effects are extracted from Table 3 specifications (2) and (4) and estimated via OLS using unilateral size and location variables, the average bilateral characteristics relating to the country in question and the single preference variables. Columns (1) and (2) show country characteristics for differentiated goods and (3) and (4) for non-differentiated goods. Exporter results are displayed first in each case.

regressed on average bilateral characteristics relating to the country in question, population and per-capita GDP, a landlocked dummy and the single preferences in their levels. Population *pop* and per-capita GDP *gdpcap* are significant and have the expected positive signs for importers and exporters alike, while being landlocked has an expected negative effect, signaling the higher transport costs arising from lacking ocean access. Average bilateral characteristics are included for consistency only and cannot be interpreted on their own. The results are shown in Table 4.

Preferences only seem to matter for exporters (specifications (1) and (3)), though PPML tends to overstate origin country fixed effects, which might cause the lack of significance for the importer fixed effects. In general, however, search costs and risks associated with international trade are considered to be borne disproportionately by the exporter. For him, preferences would then be more important than for the importer, who is "only" the recipient of request, contract and goods.

Of the preferences, risk-taking is most dominant. The less risk-averse a population is on average[21], the less differentiated goods it exports but the more non-differentiated ones. For patience, the reverse is true: more patient countries export more in differentiated goods and vice versa. Both effects are of similar size, yet risk has a somewhat stronger and more robust effect, whereas patience is significant only on the ten percent level in specification (1). For differentiated goods, a one standard deviation change in risk-taking (0.302, see Table 1) would lower the average fixed effect (21.6) by 3.15%. This corresponds to a decrease in exports of approximately equal size and a jump from Brazil's risk attitude to Sweden's. The same change implies an increase of 2.41% for non-differentiated goods. Patience yields the opposite result: a one standard deviation increase (0.370: from Brazil to Vietnam) in the preference increases exports of differentiated goods by 3.18%, but decreases those of non-differentiated ones by 2.41%.[22]

According to these results, higher risk-aversion corresponds to an exporter's product mix heavy on differentiated goods, whereas exporters more willing to incur risks trade more in non-differentiated goods. This corroborates the risk transformation argument for distance in risk since alternative suppliers for differentiated goods are scarcer. A risk-averse exporter would thus reduce his exposure to volatility in trade flows. A less averse player, on the other hand, could benefit from risk premiums offered to him for trading in non-differentiated goods, whose suppliers are more easily switched and substituted. Risk-tolerant exporters of raw products such as Australia, Canada or Saudi-Arabia as well as the highly risk-averse Japan would bear out this interpretation. Russia and Brazil, both rich in resources and risk-averse, on one side and Britain and Denmark, poor in resources, but risk-tolerant, on the other side would serve as anecdotal evidence to alleviate concerns that resource allotment drives the effects.

The coefficients for patience align with their underlying long-term considerations or discount factor arguments. Differentiated goods require more up-front investment to produce or trade and involve more complex searches and negotiations with potential partners. Both requires a longer time horizon for the players in question, while non-differentiated goods remove the necessity for search and negotiations by accessing organized exchanges. Additionally, different patience levels allow term transformation, i.e. firms specializing on products maximizing profits for their country's particular time horizons. These foci would differ between nations, netting efficiency and allocation gains from trade - subsequently reinforcing these specializations and thus causing the link observed for the average barriers. Capital allotment - based on discount factors - and contract enforcement would seem reasonable channels for these specialization procedures[23]. As illustrated by Nunn (2007), better enforcement implies more trade in goods which are intensive in relationship-specific

[21] The variables are normalized to the global average in the GPS data. That mean is risk-averse, not risk-neutral.

[22] Given these opposing effects for the two commodity class subsets, it is unsurprising that the preferences have no significant impact on the fixed effects of total bilateral flows, as seen in Appendix C

[23] The latter is particularly notable as inclusion of a legal quality variable causes patience to become insignificant. The corresponding results are displayed in Table 11 and Table 12.

investments. Patience, as long-term orientation, would be conducive to considering gains from repeated interactions and more elaborate trade networks. The costs for contract enforcement and its design would then become bearable given the expected future gains from engaging in the effort.

However, while these are potential effect channels, causality cannot be inferred from the available information. Higher patience could also result from a previous trend resulting in a wealthier nation and a more competent enforcement regime. The specialization channels above should also be visible in the first stage since differently patient nations should have diverging specialization and thus incentive to trade. Instead, the coefficient is non-significant or negative. While this might be caused by countries with patience levels too low for mutually beneficial trade, it nonetheless stresses the limits of the patience preference, which is strongly related to measures of national wealth (Dohmen *et al.*, 2016).[24]

## 4.4 Breadth of Trade - The Extensive Margin

Lastly, the extensive goods margin of trade and thus the negotiations facilitating economic exchange are observed using the 3-digit Rauch specifications to transform trade volumes into 240 binary choices per country pair. That is: Does $i$ export good $c$ to country $j$? These choices are aggregated and used as the dependent variable in a PPML regression on conventional variables (specification (1)) and the single preference distances, (2) and (3,4) in Table 5. Legal system variables are added in (2) to match the previous methodology. Specifications (3) and (4) are identical to (2) in terms of variables, but analyze breadth of trade solely for differentiated (3) or non-differentiated goods (4).

Once again, the conventional variables have mostly expected results. Distance is negative and significant, whereas a colonial relationship and a common official language have positive and - except for *colony* in specification (3) - significant effects.[25] On the other hand, regional trade agreements have significant impacts only in specifications (2) and (4), which include parameters for the legal systems and trade in non-differentiated goods. This result is consistent with the interpretation that trade agreements require legal enforcement to be effective. Furthermore, it is not readily apparent why bilateral trade arrangements would expand the amount of goods categories traded. Above all, both partners will attempt to improve the terms of trade for their strengths, their specializations, not seek to expand trade into goods categories where neither is specialized. Meanwhile, contiguity is never significant and possesses a negative coefficient throughout all three specifications, which might point to geographic clusters of countries with similar profiles. Proximity may also enhance national specialization and thus decrease the breadth of goods traded between such partners.

Distances in patience, risk and positive reciprocity appear significant for the breadth of trade between

[24] In general, it should be noted that - as the effect sizes imply - these interpretations do not explain trade patterns as a whole, but rather anomalies within them.

[25] In that context, the non-significance of *lng* in PPML seems to be related to export volumes as dependent variable.

| | Basic Grav. | Single. Pref. Dist | Differentiated Goods | Non-Differentiated Goods |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| ldist | $-0.25^{***}$ | $-0.26^{***}$ | $-0.23^{***}$ | $-0.34^{***}$ |
| | (0.04) | (0.03) | (0.03) | (0.04) |
| contig | $-0.07$ | $-0.05$ | $-0.04$ | $-0.09$ |
| | (0.08) | (0.07) | (0.07) | (0.08) |
| colony | $0.11^{*}$ | $0.09^{\cdot}$ | 0.06 | $0.16^{**}$ |
| | (0.05) | (0.05) | (0.05) | (0.05) |
| rta | 0.01 | $0.06^{\cdot}$ | 0.04 | $0.13^{**}$ |
| | (0.03) | (0.03) | (0.03) | (0.04) |
| lng | $0.32^{***}$ | $0.29^{***}$ | $0.29^{***}$ | $0.30^{***}$ |
| | (0.06) | (0.06) | (0.06) | (0.07) |
| comleg | | $0.09^{***}$ | $0.08^{**}$ | $0.12^{***}$ |
| | | (0.03) | (0.03) | (0.03) |
| leg.qlt | | $0.07^{*}$ | $0.07^{*}$ | 0.05 |
| | | (0.03) | (0.03) | (0.03) |
| dpati | | $0.23^{***}$ | $0.24^{***}$ | $0.24^{***}$ |
| | | (0.06) | (0.06) | (0.06) |
| drisk | | $-0.15^{**}$ | $-0.15^{*}$ | $-0.18^{**}$ |
| | | (0.06) | (0.07) | (0.06) |
| dposrec | | $-0.07^{\cdot}$ | $-0.09^{*}$ | $-0.04$ |
| | | (0.04) | (0.04) | (0.04) |
| dnegrec | | 0.08 | 0.09 | 0.07 |
| | | (0.06) | (0.06) | (0.08) |
| daltr | | 0.00 | 0.02 | $-0.04$ |
| | | (0.04) | (0.04) | (0.05) |
| dtrus | | $-0.04$ | $-0.03$ | $-0.07$ |
| | | (0.07) | (0.07) | (0.08) |
| Observations | 5112.00 | 5112.00 | 5112.00 | 5112.00 |
| Deviance | 78802.90 | 73277.17 | 54906.48 | 27110.08 |
| Exp./Imp. FE | YES | YES | YES | YES |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 5: PPML-like estimation of determinants for the breadth of trade. Bilateral trade is defined as the number of three-digit SITC goods categories with non-zero export values, i.e. $T_{ij} = \sum_c t_{cij}$. The variables of interest are the distances in preferences, included as single variables *dpati, drisk, dposrec, dnegrec, daltr, dtrus* (2). Model (1) is a standard gravity equation for comparison, specifications (3) and (4) estimate differentiated and non-differentiated goods, respectively. Standard errors are clustered to importer and exporter fixed effects.

two nations.[26] Negative reciprocity, however, is no longer significant on any standard level. Insofar as willingness to punish and the value of the punishment increase with that of trade, this discrepancy does make sense. More intense relations would be burdened under higher potential costs - or risks - than lesser ones. In the face of a partner willing to punish, reduction of the exposure to that partner seems reasonable. Likewise, higher levels of negative reciprocity could be beneficial to the initial formation of trade by acting as a commitment enforcement device, thus countermanding the deterring influence of punishment costs and explaining the positive coefficient. Following that notion, the negative effect on aggregate volumes appears to be driven solely by the intensive margin, that is: by existing relationships being less intense. This is also consistent with specific trade relations being permanently discontinued by highly-punishing agents with a high degree of negative reciprocity.

Similarly, the distance in positive reciprocity changes its sign compared to its effect for the intensive margin of differentiated goods (see Table 3) and becomes negative. A one standard deviation increase in the distance of positive reciprocity would reduce the amount of goods traded by 2.68% and 1.2% for differentiated and non-differentiated goods, respectively; or 2.1% on aggregate. It could therefore be interpreted as an effect of cultural divide - the difference in approaches leading to misunderstandings preventing the formation of a contract. This argument aligns with the positive impact on the intensive margin - at which point the divide would be overcome - and the negative coefficient of *dposrec* for the value of non-differentiated goods exports[27]. Being less complicated and elaborate, these transactions benefit less from one side being more accommodating. For the same reason, the negative effect for the extensive margin of non-differentiated goods should be less pronounced - as is indeed observed in specification (4), where it becomes insignificant[28].

The difference in patience increases all trade connections by 7.6% per standard deviation in patience. This positive effect supports the specialization channel described above in subsection 4.2. Likely, the more patient country in the respective pair invests more heavily in international trade to achieve further specialization gains. If so, countries with higher distances in patience would follow diverging specialization and investment paths, yielding different product sets and thus venues for trade.[29] This interpretation also fits the observation from the fixed effects analysis (see subsection 4.3) of high patience reducing (outward) export barriers for

[26] In the second stage, none of the preferences is significant for the average trade barriers, though population and GDP per capita remain significant for importers and exporters as well as differentiated and non-differentiated goods alike (see Table 17). This may showcase the limits of the preferences' influence or that of the breadth of trade approach to PPML.

[27] A Logit estimation (see footnote 8) of trade formation - i.e. the bilateral decision to trade in one specific commodity class - corroborates that interpretation, insofar as its coefficient for *dposrec* is likewise negative. This implies that such a distance makes it less likely to establish trade in any goods class and between any two countries with differing preference leanings. While no other preference distance is significant in that model, *dpref* - their unweighted average - is, implying that the negative impact of *dposrec* is related to this more general perceptional distance. See Appendix E for the results.

[28] The non-significance in the subset also explains the 10% level significance on the aggregate.

[29] Note that *dpati* only measures the squared distance between two countries' patience preference values. It does not capture whether the exporter or the importer has a higher patience, because it is not necessarily apparent that one tendency would be superior to the other. Such a direction variable is, however, not significant upon inclusion; nor does it alter the results.

differentiated goods and low patience reducing them for non-differentiated commodities. Term orientation can, therefore, be seen as a motivation for specialization and trade.

Last, distances in risk negatively impact trade overall by 4.5% per additional standard deviation distance. Interpretation of this effect is not straightforward: a willingness to take risks could manifest as entering new business areas (i.e. another commodity class), whereas risk aversion could result in diversification over goods or partners. Referencing the average trade barrier results, the negative sign can be understood as a sign for risk transformation. In the resulting relationship, both partners focus on goods suitable to their risk profiles, specializing over that preference. The number of goods traded would reduce in the intensity of this transformation, while similarly inclined countries would lack this option and trade either less - given *drisk*'s positive sign in the volume specification - or with goods less geared to one another.[30]

# 5 Robustness

This section addresses potential robustness issues relating to either the GPS data, correlations with potential alternative explanations, sample and variable definitions.

## 5.1 Relationship with similar surveys

While the GPS is unique in its focus on decision-relevant preferences and experimental validation, some of its contents have been analysed before. Amongst them, the World Values Survey (WVS) (Jaeggi *et al.*, 2018) and the Hofstede Dimensions (Hofstede *et al.*, 2010) report measures for some of the Falk preferences. Therefore, these are ideally suited to control for potential measurement errors and sample biases in the GPS. Notably, analysing the unique GPS measure alongside the Hofstede and WVS measures for its non-unique parts.

Additionally, Wacziarg's genetic and religious distances (Spolaore and Wacziarg, 2016, 2018) are used to ascertain their relationship with preferences, controlling for potential links between these traits and preferences. This follows the literature on ancient origins of cultural and societal traits.

**World Values Survey** The World Values Survey is a global study designed to gather information on values and beliefs of different nations. It is a questionnaire containing items relating to the subject's personal and professional life, their beliefs, culture and values, as well as questions on the perceptions of their society. Among these, trust, altruism, risk and time preferences are addressed, allowing direct comparison with the

[30] More generally, it must be noted that the commodity classes are relatively broad, so that they are an imprecise measure of breadth of trade as an expression of the sum of cross-country negotiations.

GPS. 57 countries of the GPS are also included in the WVS, 47 of them contain all of the items, providing a sufficiently large set for comparison.

Jaeggi *et al.* (2018) have already calculated bilateral distances for the World Values Survey measures, which are used in this robustness check. The output table can be found in the appendix as Table 18. Using their mean distance in World Values Survey items instead of the aggregated distance in GPS preferences does not alter the result noted in subsection 4.1. Both coefficients are insignificant on any level. When replacing trust, altruism, risk and time preferences with the WVS distances, the latter's time preferences become significant on the 5% level. Risk does not. This also holds true regardless of whether the GPS reciprocity measures are omitted or included. This discrepancy might result from the reduced sample size, if it is not random but - for example - biased by development standards. Depending on a person's (or nation's) material wealth, saving becomes easier and risk-aversion more logical given higher potential losses. This bias might also manifest differently depending on the phrasing of questions or the execution of experiments.

Notably, the main result of an adverse impact of negative reciprocity distances on trade remains significant. The coefficient is reduced from a 0.53 decrease to one of 0.43 when swapping Falk for WVS measures, which is still substantially and potentially a result of reducing sample size.

**Hofstede Dimensions** Geert Hofstede has modelled national culture as a six-dimensional model with the dimensions proposed as basic issues for societal organisation. These dimensions include long-term orientation and uncertainty avoidance, which correspond to patience and risk attitude in the GPS, thereby allowing comparison.

However, since the Hofstede dimensions are computed as the result of comparing a global set of countries, they lack the metrics needed to redefine them as bilateral measures. Consequently, they will be inserted into the second-stage fixed effects estimations. This, in turn, necessitates computation of the first-stage - the gravity equation - without preference distances to avoid confounding. This alteration causes patience to lose significance in the second-stage results, and reduces slightly the coefficient for risktaking[31]. This implies either a lack of robustness for the patience measure or a less accurate definition of the fixed effects due to the omitted preference distances in the first stage.

Keeping this trade-off in mind, comparing regressions of patience and risktaking with *uncertainty avoidance* and *long-term versus short-term orientation* on average barriers yields different results. These are displayed in Table 20 of the appendix. While patience and risk are significant in the GPS set - if, in case of patience, barely -, only long-term orientation is significant in the Hofstede set; and only for exporters of differentiated goods. Again, the reduction in sample size may affect accuracy adversely. The wider defini-

[31] For detailed results, see Table 19

tion of Hofstede's indices in terms of values, moreale and philosophy also contrasts with the GPS' focus on economic decisions, further limiting accuracy. This points to the need for caution in defining preferences and surveys for their observation - as well as limiting their overall robustness.

**Genetic and Religious Distance** Thirdly, the relationship between preferences and other persistent, long-term drivers of cultural characteristics has to be considered, particularly common origins. To this end, measures for genetic and religious distance from Jaeggi *et al.* (2018) are used. Both aspects can be seen as persistent influences on developing characteristics of any nation's population and their distance relates to the (in-)frequency of interaction between any two nations. If not the causes, they can still be used as proxies for shared history or origins. Table 21 shows the detailed results for weighted distances and for an alternative definition of these distances using only the dominant genetic or religious "group" within each country.

In the GPS sample, only the plurality measure for genetic distance is significant. Neither religious distances nor weighted genetic distance possess systematic effects on trade volumes, when preferences, legal systems and typical gravity variables are being included. Moreover, the significance and coefficient sizes of distances in negative reciprocity and risk are not being significantly impacted.

## 5.2 OECD subset

As mentioned before, economic preferences - and the experiments and questions with which they are measured - might be influenced by the economic situations of the subjects in question. Risk and patience in particular might be linked to the wealth and development path of the country in question beyond relationships covered by GDP per capita or institutional settings. If preferences are linked to economic characteristics, endogeneity could ensue through relationships between them and trade patterns and intensities.

The OECD, an organization of primarily western and comparatively wealthy nations, provides a suitable subset of countries less heterogeneous in terms of wealth, institutional quality and societal organisation. While this similarity mitigates the risk of endogeneity noted above, it also limits generality of results if preference distances impact trade differently for less developed nations. Additionally, the distribution of preferences and their distances is significantly different within the OECD set compared to the whole GPS set[32]. Zero trade is also less common - lowered, on aggregate, from 6.5 to 1%, while the average value of bilateral exports is almost four times as high and the extensive goods margin roughly doubles.

All bilateral analysis conducted for the full sample are also applied to the OECD subset. With only 25 OECD members included in the GPS, fixed effects regressions are excluded due to the small sample size.

[32]The distribution of the preferences and distances for the OECD subset is shown in Table 22 and Table 23 of the appendix, respectively.

For aggregate and separate differentiated and non-differentiated trade volumes, preference distances have stronger effects within the OECD than for the full GPS set - see Table 24 and Table 25 in the appendix for detailed results. Distance in negative reciprocity is similar in size and direction to the GPS results, though insignificant for non-differentiated goods. While this one non-significance runs counter to previous results, it must be noted that non-differentiated goods trade within the OECD accounts for 31% of the volume compared to 37% for the full set. Transferability of results is therefore limited[33] and the result for negative reciprocity holds for all but one specifications.

For positive reciprocity, the hypothesis of a beneficial effect from positively reciprocal gestures - e.g. gifts, perceptions of fairness - is emphasised by the significance and size of the respective coefficient. For distance in patience, the effect on all volumes is significant and positive, with one additional standard deviation in patience raising trade by 18.0%. This supports the term transformation and specialization hypotheses discussed previously in section 2, but contrasts with the results for the GPS set observed. This might result from a minimum level of patience being required to achieve these agreements and gain, or from a non-linear effect in that term transformation becomes impossible above some maximum distance. The average patience of 0.317 for the OECD subset - in contrast to net zero for the GPS - points towards such effects[34].

## 5.3 Partners of Trade

Instead of using average barriers, trade inclination could also be measured by the chosen number of trading partners per commodity or the average number of commodities traded with a given partner. These metrics yields an average of 87 out of 240 commodities per partner and 26 out of 72 countries per commodity with non-zero trade[35]. In both cases, the variance is about two times higher for exports compared to imports, stressing heterogeneity in exporters.[36] Regressing these metrics on population, GDP per capita, landlocked status, average bilateral characteristics and preferences yields similar results to the primary extensive goods margin of trade specification in subsection 4.3: Only risktaking is significant - if on the 10% level -, and with diminishing effect on trade activity. Excluding average bilateral characteristics, which are themselves included here only for robustness purposes, raises significance of risktaking to the 5% level. This corroborates the diversification and risk transformation interpretation for risk averse players.

[33]The generality of the OECD robustness check is restricted further by the GPS' definition. As the distributions are normalized to the individual level of the full set, preferences in the OECD set need not follow that same normal distribution. They cannot be computed in the same manner either because non-normalized data is not provided.

[34]This contrast also underscores the potential of links between patience and economic development given the OECD's composition.

[35]Summary statistics are provided in Table 27 of the appendix.

[36]The smaller variation for importers also helps to explain the lack of significance for the average trade barriers of importers.

# 6 Conclusion

We have explored the potential influence of cross-country differences in the national preference structures of patience, risk attitude, reciprocity, trust and altruism on international trade flows. Using the novel GPS data set by Falk *et al.* (2018) and controlling for a wide set of alternative influences and explanations, we find several relations of interest. Chief among them, diverging levels in negative reciprocity are associated with significant reductions in bilateral trade volumes. We argue that this mainly results from mismatched views and expectations colliding during negotiations. Contract enforcement conduct, proposed and executed punishments for non-cooperative behavior and "grim trigger"-like strategies are possible catalysts for this mismatch, resulting in increased risks and costs of deals concluded in such a partnership.

In addition, we find two-tiered effects for patience and risk on trade. First, more patient or risk-averse countries tend to export more differentiated and less homogeneous goods, whereas the opposite holds true for more impatient or risk-tolerant countries. We attribute this to term and risk transformation effects, wherein the different preferences affect investment, production and trade patterns. As goods are subject to different risks and amortization cycles, including complexity of negotiations, players will self-select into products befitting their own preferences in that regard. This then provides them a comparative advantage in trade with these goods. Interestingly, we find a positive effect for the distance in patience on the extensive margin, which lends itself to the specialization argument. More opportunities exist between partners with different term preferences.

On the other hand, we find no significant effects of trust on trade, be it in levels or differences. This contrasts with the existing literature and, while largely owed to the abstract definition of the preferences, points to a need for further research on the composition of preferences. The same applies for negative reciprocity, where a separation into issues of costly punishment and revenge would be interesting. Also, the differences in effects observed across multilateral resistance terms as well as intensive and extensive margins deserve further attention, both within and without the context of preferences. In that vein, we also detect divergence between the effects for distance in positive reciprocity. It is beneficial for volumes, but adverse for the extensive goods margin, which - in a dynamic setting - could be understood as a stabilizing effect of unexpected acts of positive reciprocity (e.g. gifts) that is impossible prior to formation.

Nonetheless, we introduce a number of hitherto unknown potential determinants of trade and mechanisms for their effects. While we cannot - yet - speak of causal inference, term, risk and reciprocity attitudes present an intriguing approach towards explaining certain anomalies in trade flows and behaviors not covered by conventional theory. We also join the literature strands on trade, behavioral economics and contracts with one another, tying trade outcomes to the people deciding upon their design. In terms of further

research, formalization of our proposed mechanisms, the relationship between preferences and institutional environments, and a breakdown of negative reciprocity into its different shades would seem most fruitful.

Our results suggest that behavioral motivations and aspects can matter in trade. Preferences provide a rationale and mechanism for anomalies in trade flows. They offer an expansion to cultural distances, but also a methodical means for these to express themselves. In terms of policy implications, they define limits to the effects of infrastructure, institutions and political action. This includes trade agreements, which could focus on term and risk transformation aspects as well as alleviate concerns regarding the risk of unfair punishments. Supranational mediators for firms' trade disputes would appear a measure suitable to reducing these risks by delegating the punishment to a neutral court.

## References


Aeberhardt, R., Buono, I. and Fadinger, H. (2014). Learning, incomplete contracts and export dynamics: Theory and evidence from french firms. *European Economic Review*, **68**, 219–249.

Ahn, J. (2011). *A Theory of Domestic and International Trade Finance*. IMF Working Papers 11/262, International Monetary Fund.

Akerlof, G. A. (1982). Labor contracts as partial gift exchange. *The Quarterly Journal of Economics*, **97** (4), 543–569.

Algan, Y. and Cahuc, P. (2014). Trust, growth, and well-being: New evidence and policy implications. In *Handbook of Economic Growth*, Elsevier, pp. 49–120.

Anderson, J. E. and van Wincoop, E. (2003). Gravity with gravitas: A solution to the border puzzle. *American Economic Review*, **93** (1), 170–192.

Andreoni, J. (1989). Giving with impure altruism: Applications to charity and ricardian equivalence. *Journal of Political Economy*, **97** (6), 1447–1458.

Antras, P. (2003). Firms, contracts, and trade structure. *The Quarterly Journal of Economics*, **118** (4), 1375–1418.

— and Foley, C. F. (2015). Poultry in motion: a study of international trade finance practices. *Journal of Political Economy*, **123** (4), 853–901.

Araujo, L., Mion, G. and Ornelas, E. (2016). Institutions and export dynamics. *Journal of International Economics*, **98**, 2–20.

Arrow, K. J. (1972). Gifts and exchanges. *Philosophy & Public Affairs*, **1** (4), 343–362.

Baker, G., Gibbons, R. and Murphy, K. J. (2002). Relational contracts and the theory of the firm. *The Quarterly Journal of Economics*, **117** (1), 39–84.

Bernhofen, D. M. and Brown, J. C. (2005). An empirical assessment of the comparative advantage gains from trade: evidence from japan. *American Economic Review*, **95** (1), 208–225.

Besedeš, T. (2008). A search cost perspective on formation and duration of trade. *Review of International Economics*, **16** (5), 835–849.

Bosse, D. A., Phillips, R. A. and Harrison, J. S. (2009). Stakeholders, reciprocity, and firm performance. *Strategic Management Journal*, **30** (4), 447–456.

Cable, D. M. and Shane, S. (1997). A prisoner's dilemma approach to entrepreneur-venture capitalist relationships. *The Academy of Management Review*, **22** (1), 142–176.

Caliendo, M., Fossen, F. and Kritikos, A. (2012). Trust, positive reciprocity, and negative reciprocity: Do these traits impact entrepreneurial dynamics? *Journal of Economic Psychology*, **33**, 394–409.

Defever, F., Fischer, C. and Suedekum, J. (2016). Relational contracts and supplier turnover in the global economy. *Journal of International Economics*, **103**, 147–165.

Dohmen, T., Enke, B., Falk, A., Huffman, D. and Sunde, U. (2016). *Patience and the Wealth of Nations*. Working Papers 2016-012, Human Capital and Economic Opportunity Working Group.

—, Falk, A., Huffman, D. and Sunde, U. (2008). Representative trust and reciprocity: Prevalence and determinants. *Economic Inquiry*, **46** (1), 84–90.

Donaldson, D. (2015). The gains from market integration. *Annual Review of Economics*, **7** (1), 619–647.

Donaubauer, J., Glas, A., Meyer, B. and Nunnenkamp, P. (2018). Disentangling the impact of infrastructure on trade using a new index of infrastructure. *Review of World Economics*, **154** (4), 745–784.

Egger, P. and Larch, M. (2008). Interdependent preferential trade agreement memberships: An empirical analysis. *Journal of International Economics*, **76** (2), 384–399.

Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D. B. and Sunde, U. (2018). Global evidence on economic preferences. *The Quarterly Journal of Economics*, **133** (4), 1645–1692.

—, —, —, Huffman, D. B. and Sunde, U. (2016). *The Preference Survey Module: A Validated Instrument for Measuring Risk, Time, and Social Preferences*. IZA Discussion Papers 9674, Institute for the Study of Labor (IZA).

— and Fischbacher, U. (2006). A theory of reciprocity. *Games and Economic Behavior*, **54** (2), 293 – 315.

Fehr, E. and Gächter, S. (2002). Altruistic punishment in humans. *Nature*, **415** (6868), 137.

—, Gächter, S. and Kirchsteiger, G. (1997). Reciprocity as a contract enforcement device: Experimental evidence. *Econometrica*, **65** (4), 833–860.

Felbermayr, G. J. and Toubal, F. (2010). Cultural proximity and trade. *European Economic Review*, **54** (2), 279–293.

Fensore, I., Legge, S. and Schmid, L. (2017). *Human Barriers to International Trade*. Economics Working Paper Series 1712, University of St. Gallen, School of Economics and Political Science.

Frank, J. (2018). *The effect of culture on trade over time: New evidence from the GLOBE data set*. Tech. rep., Hohenheim Discussion Papers in Business, Economics and Social Sciences.

Frankel, J. A. and Romer, D. (1999). Does trade cause growth? *American Economic Review*, **89** (3), 379–399.

Freedom House (2018). Aggregate category and subcategory scores, 2003-2018.

Gächter, S. and Herrmann, B. (2009). Reciprocity, culture and human cooperation: previous insights and a new cross-cultural experiment. *Philosophical Transactions of the Royal Society B: Biological Sciences*, **364** (1518), 791–806.

Giuliano, P., Spilimbergo, A. and Tonon, G. (2013). Genetic distance, transportation costs, and trade1. *Journal of Economic Geography*, **14** (1), 179–198.

Guiso, L., Sapienza, P. and Zingales, L. (2009). Cultural biases in economic exchange? *Quarterly Journal of Economics*, **124** (3), 1095–1131.

Head, K. and Mayer, T. (2013). What separates us? sources of resistance to globalization. *Canadian Journal of Economics*, **46** (4), 1196–1231.

— and — (2014). Gravity equations: Workhorse,toolkit, and cookbook. In *Handbook of International Economics*, Elsevier, pp. 131–195.

—, — and Ries, J. (2010). The erosion of colonial trade linkages after independence. *Journal of International Economics*, **81** (1), 1–14.

Herrmann, B., Thöni, C. and Gächter, S. (2008). Antisocial punishment across societies. *Science (New York, N.Y.)*, **319**, 1362–7.

Hlavac, M. (2018). stargazer: Well-formatted regression and summary statistics tables.

Hofstede, G., Hofstede, G. J. and Minkov, M. (2010). *Cultures and Organizations: Software of the Mind. Revised and expanded third edition. New York*.

Hummels, D. L. and Schaur, G. (2013). Time as a trade barrier. *American Economic Review*, **103** (7), 2935–2959.

Jaeggi, A., Legge, S. and Schmid, L. (2018). Dyadic value distance: Determinants and consequences. *Economics Letters*, **165**, 48–53.

Kaufmann, D., Kraay, A. and Mastruzzi, M. (2009). *Governance Matters VIII: Aggregate And Individual Governance Indicators 1996-2008*. Policy Research Working Papers, The World Bank.

Kihlstrom, R. E. and Laffont, J.-J. (1979). A general equilibrium entrepreneurial theory of firm formation based on risk aversion. *Journal of Political Economy*, **87** (4), 719–748.

Knack, S. and Keefer, P. (1997). Does social capital have an economic payoff? a cross-country investigation. *The Quarterly Journal of Economics*, **112** (4), 1251–1288.

Kukharskyy, B. (2016). Relational contracts and global sourcing. *Journal of International Economics*, **101**, 123–147.

Lameli, A., Nitsch, V., Südekum, J. and Wolf, N. (2015). Same same but different: Dialects and trade. *German Economic Review*, **16** (3), 290–306.

Leifeld, P. (2013). texreg: Conversion of statistical model output in r to html tables. *Journal of Statistical Software*, **55** (8), 1–24.

Marshall, M. G., Gurr, T. R. and Jaggers, K. (2018). Polity iv project: Political regime characteristics and transitions, 1800-2017.

Mayer, T. and Zignago, S. (2011). *Notes on CEPII's distances measures: The GeoDist database*. Working Papers 2011-25, CEPII research center.

McLaren, J. (1999). Supplier relations and the market context: a theory of handshakes. *Journal of International Economics*, **48** (1), 121–138.

Melitz, J. and Toubal, F. (2014). Native language, spoken language, translation and trade. *Journal of International Economics*, **93** (2), 351–363.

Neyman, J., Scott, E. L. *et al.* (1948). Consistent estimates based on partially consistent observations. *Econometrica*, **16** (1), 1–32.

Nikiforakis, N. (2008). Punishment and counter-punishment in public good games: Can we really govern ourselves? *Journal of Public Economics*, **92** (1-2), 91–112.

Nunn, N. (2007). Relationship-specificity, incomplete contracts and the pattern of trade. *Quarterly Journal of Economics*, **122** (2), 569–600, reprinted in D. Bernhofen (ed.), Empirical International Trade, Edward Elgar Publishing, 2010.

— and Puga, D. (2012). Ruggedness: The blessing of bad geography in africa. *Review of Economics and Statistics*, **94** (1), 20–36.

Rauch, J. E. (1999). Networks versus markets in international trade. *Journal of International Economics*, **48** (1), 7–35.

— and Watson, J. (2003). Starting small in an unfamiliar environment. *International Journal of industrial organization*, **21** (7), 1021–1042.

Rieger, M. O., Wang, M. and Hens, T. (2015). Risk preferences around the world. *Management Science*, **61** (3), 637–648.

Santos Silva, J. M. C. and Tenreyro, S. (2006). The log of gravity. *Review of Economics and Statistics*, **88** (4), 641–658.

—, — and Wei, K. (2014). Estimating the extensive margin of trade. *Journal of International Economics*, **93** (1), 67–75.

Sapienza, P., Toldra-Simats, A. and Zingales, L. (2013). Understanding trust. *The Economic Journal*, **123** (573), 1313–1332.

Schmidt-Eisenlohr, T. (2013). Towards a theory of trade finance. *Journal of International Economics*, **91** (1), 96–112.

Spolaore, E. and Wacziarg, R. (2009). The diffusion of development. *Quarterly Journal of Economics*, **124** (2), 469–529.

— and — (2016). Ancestry, language and culture. In *The Palgrave handbook of economics and language*, Springer, pp. 174–211.

— and — (2018). Ancestry and development: New evidence. *Journal of Applied Econometrics*, **33** (5), 748–762.

Stammann, A. (2017). Fast and feasible estimation of generalized linear models with many two-way fixed effects. *arXiv preprint arXiv:1707.01815*.

Steiner, N. D. (2012). Testing for a political bias in freedom house democracy scores: Are u.s. friendly states judged to be more democratic? *SSRN Electronic Journal*.

Sutter, M., Kocher, M. G., Glätzle-Rützler, D. and Trautmann, S. T. (2013). Impatience and uncertainty: Experimental decisions predict adolescents field behavior. *American Economic Review*, **103** (1), 510–531.

Trefler, D. (1995). The case of the missing trade and other mysteries. *American Economic Review*, **85** (5), 1029–1046.

Wickham, H. (2016). *ggplot2: Elegant Graphics for Data Analysis*. Springer-Verlag New York.

—, François, R., Henry, L. and Müller, K. (2018). dplyr: A grammar of data manipulation.

Yotov, Y. V., Piermartini, R., Monteiro, J.-A. and Larch, M. (2016). *An advanced guide to trade policy analysis: The structural gravity model*. World Trade Organization.

Yu, S., Beugelsdijk, S. and de Haan, J. (2015). Trade, trust and the rule of law. *European Journal of Political Economy*, **37**, 102–115.

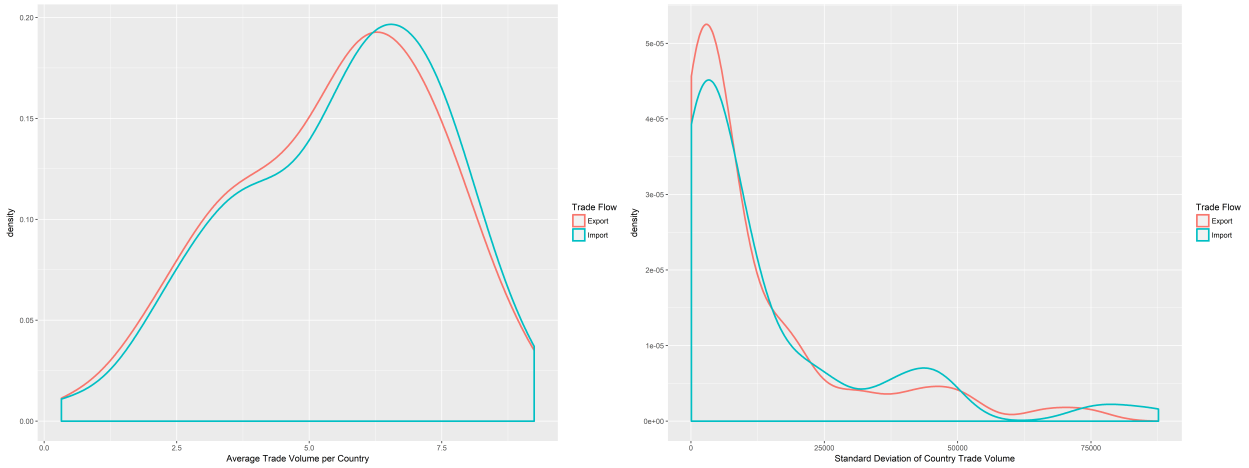


Figure 3: The density functions of the mean (left) and standard deviation (right) of each origin country's trade with all other reporting partners within the GPS set.

# Appendices

## A Export Substitutes for Import Data

Eight countries had not reported any data by the time the data was downloaded. These missing entries were replaced with existing export data by their reporting partner nations. This method is potentially biased due to the complete lack of data on trade between these eight countries and potential reporting errors with regards to the traded volumes. While the former issue cannot be addressed with the data available, the latter issue can be investigated by comparing export and import flows of all countries within the GPS set that do report their foreign trade. For these countries, average exports and imports to all other reporting countries in the set are computed as well as standard deviations for these flows.

The two resulting distributions can then be tested against the null hypothesis of being drawn from the same population by conducting Kolmogorov-Smirnov tests. That null hypothesis cannot be dismissed for the two- or either one-sided test. Figure 3, depicting the distributions of the means and standard deviations for all 68 reporting countries, visualizes the similarity between the two report classes. Given these results, the export data can thus be used as replacement for imports of non-reporting countries.

For robustness, all estimates have also been conducted for a subset including reporting countries only. In these estimations, all effects grow in significance and size in the extensive margins. In the intensive margin, patience and its distance become less pronounced or even non-significant, while the effect of risk becomes slightly stronger in distances and levels.

# B Summary Statistics for Trade and Preferences

| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| dpati | 5,256 | 0.415 | 0.331 | 0.0001 | 1.684 |
| drisk | 5,256 | 0.338 | 0.273 | 0.0001 | 1.763 |
| dposrec | 5,256 | 0.382 | 0.298 | 0.0005 | 1.608 |
| dnegrec | 5,256 | 0.309 | 0.236 | 0.00002 | 1.228 |
| daltr | 5,256 | 0.386 | 0.305 | 0.0001 | 1.846 |
| dtrus | 5,256 | 0.317 | 0.236 | 0.0001 | 1.315 |
| dpref | 5,256 | 0.358 | 0.124 | 0.061 | 0.812 |

Table 6: Summary statistics for distances in preference.

| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| Trading | 1,261,440 | 0.360 | 0.480 | 0 | 1 |
| Value.IM | 1,261,440 | 8,935,006.000 | 228,039,017.000 | 0 | 74,214,173,234 |

Table 7: Rauch data summary statistics.

| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| Volume | 5,256 | 2,144,401,356.000 | 11,944,184,075.000 | 0 | 425,430,216,719 |
| TradeLinks | 5,256 | 86.317 | 71.344 | 0 | 224 |
| TradePartner.o | 5,256 | 67.342 | 5.756 | 47 | 72 |
| TradePartner.d | 5,256 | 67.342 | 5.990 | 48 | 72 |

Table 8: Summary statistics for bilateral trade outcomes.

# C Fixed Effects on aggregate trade

The exporter and importer fixed effects for aggregate bilateral trade volumes are extracted from specification (5) of the standard gravity estimations shown in Table 2. For both effects, four specifications are used and shown in Table 9 and Table 10, starting with a baseline (1) including only population, GDP per capita, landlocked status and the average bilateral characteristics parameter. In specification (2), the single preferences are added, whose effect is then controlled for potential correlation with institutional (3) and legal (4) parameters. The former are drawn from the Freedom House (2018) indices on public representation, civil liberties and liberal nature of the state surveyed, whereas the latter is the rule of law parameter from the WGI (2009) whose differences are used in the gravity specifications. Since preferences may matter more when institutional restrictions and assurances are insufficient, their inclusion might be relevant to prevent omitted

variable biases. Population, GDP per capita and landlocked status have the expected effects. All preferences, however, are insignificant as determinants of the average trade barriers for aggregated trade. Considering the diametrically opposed effects observed in the second stage for differentiated and non-differentiated goods, this result is plausible.

# D Fixed Effects on Differentiated and Non-Differentiated Goods

The exporter and importer fixed effects for bilateral trade volumes for differentiated and non-differentiated goods are extracted from the specifications used for single preference distance analysis in subsection 4.2, which is itself identical to specification (5) of the total trade volumes (see Table 2) but used on the two sets for the split goods categories. Results for differentiated goods are shown first (Table 11, Table 12), those for non-differentiated goods second (Table 13, Table 14) - in each case, the first table displays exporter and the second importer effects.

As before - for aggregated trade -, control variables for the institutional and legal quality are added in specifications (3) and (4) each, while (1) is a baseline estimation with the conventional variables only. In (2), the single preference variables are added without further controls - this specification is also the one used in Table 4. In all specifications, the conventional variables are significant, while preferences matter for exporters only.

## D.1 Differentiated Goods

For differentiated goods, a higher willingness to tolerate risk is associated with an lower inclination towards exporting of differentiated goods. This effect is significant in specifications (2) and (4) with only small differences in its coefficient. However, it loses significance when controlling for political rights and civil liberties. Both of these variables are numerical, but with lower values signalling a higher status. Thus, risktaking and the legal regime of a country appear to be correlated. A legal regime and its institutions will influence perceptions of uncertainty within a given society. This uncertainty may in turn influence risk attitudes, in that risks and their associated costs might be over- or understated depending on dependability and reliability of a legal system. While it is beyond the scope of this analysis to explicitly define such a relation, the preferences are better understood as a channel by which cultural, historic or other soft national characteristics affect trade flows.

Patience also loses significance when including the Freedom House measures, which is likely attributable to both variables' correlation with GDP (see Dohmen *et al.*, 2016), causing multicorrelation issues regarding estimation efficiency in the small set. Additionally, it has been argued that Freedom House suffers from bias

| | Exporter Fixed Effects | | | |
|---|---|---|---|---|
| | Baseline | Single Pref. | Single Pref. Rights | Single Pref. Legal |
| (Intercept) | $22.12^{***}$ | $21.04^{***}$ | $21.75^{***}$ | $21.51^{***}$ |
| | (3.39) | (3.78) | (4.20) | (3.87) |
| avg.char | $-0.10$ | $-0.33$ | $-0.45$ | $-0.22$ |
| | (0.68) | (0.77) | (0.79) | (0.79) |
| pop | $0.04^{***}$ | $0.03^{***}$ | $0.04^{***}$ | $0.03^{***}$ |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| gdpcap | $0.59^{***}$ | $0.57^{***}$ | $0.54^{**}$ | $0.63^{**}$ |
| | (0.08) | (0.15) | (0.17) | (0.18) |
| landlocked | $-1.30^{**}$ | $-1.21^{*}$ | $-1.29^{*}$ | $-1.24^{*}$ |
| | (0.45) | (0.49) | (0.52) | (0.50) |
| patience | | $-0.14$ | $-0.33$ | 0.00 |
| | | (0.78) | (0.89) | (0.82) |
| risktaking | | 0.40 | 0.61 | 0.32 |
| | | (0.66) | (0.72) | (0.68) |
| posrecip | | 0.16 | 0.13 | 0.18 |
| | | (0.80) | (0.82) | (0.80) |
| negrecip | | 0.31 | 0.41 | 0.27 |
| | | (0.66) | (0.71) | (0.66) |
| altruism | | $-0.38$ | $-0.37$ | $-0.44$ |
| | | (0.75) | (0.79) | (0.76) |
| trust | | 0.89 | 0.77 | 0.88 |
| | | (0.67) | (0.72) | (0.67) |
| ‘PR Rating‘ | | | 0.07 | |
| | | | (0.36) | |
| ‘CL Rating‘ | | | $-0.28$ | |
| | | | (0.37) | |
| Free | | | $-0.87$ | |
| | | | (1.47) | |
| PartFree | | | $-0.75$ | |
| | | | (0.88) | |
| rle | | | | $-0.20$ |
| | | | | (0.31) |
| $R^2$ | 0.54 | 0.56 | 0.58 | 0.57 |
| Adj. $R^2$ | 0.51 | 0.49 | 0.47 | 0.49 |
| Exp./Imp. FE | YES | YES | YES | YES |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 9: Estimation of Exporter Fixed Effects, i.e. Average Trade Barriers, via a two-step approach. Exporter fixed effects are extracted from Table 2 specification (5) and estimated via OLS using unilateral size and location variables, the average bilateral characteristics relating to the country in question and the single preference variables. Column shows a regression on conventional country characteristics. (2) adds the single preferences in level, (3) and (4) add different institutional and legal quality controls.

| | Importer Fixed Effects | | | |
|---|---|---|---|---|
| | Baseline | Single Pref. | Single Pref. Rights | Single Pref. Legal |
| (Intercept) | −0.04 | −0.85 | 0.46 | −1.06 |
| | (2.74) | (3.09) | (3.39) | (3.17) |
| avg.char | 0.20 | 0.04 | −0.05 | −0.01 |
| | (0.55) | (0.63) | (0.64) | (0.65) |
| pop | $0.03^{***}$ | $0.03^{***}$ | $0.04^{***}$ | $0.03^{***}$ |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| gdpcap | $0.53^{***}$ | $0.55^{***}$ | $0.56^{***}$ | $0.52^{***}$ |
| | (0.07) | (0.13) | (0.14) | (0.15) |
| landlocked | $-1.03^{**}$ | $-0.95^{*}$ | $-1.04^{*}$ | $-0.94^{*}$ |
| | (0.36) | (0.41) | (0.42) | (0.41) |
| patience | | −0.31 | −0.78 | −0.37 |
| | | (0.64) | (0.72) | (0.67) |
| risktaking | | 0.16 | 0.52 | 0.19 |
| | | (0.54) | (0.59) | (0.56) |
| posrecip | | 0.09 | 0.08 | 0.08 |
| | | (0.65) | (0.66) | (0.66) |
| negrecip | | 0.41 | 0.66 | 0.43 |
| | | (0.54) | (0.57) | (0.55) |
| altruism | | −0.12 | −0.16 | −0.09 |
| | | (0.61) | (0.64) | (0.62) |
| trust | | 0.38 | 0.37 | 0.38 |
| | | (0.55) | (0.59) | (0.55) |
| ‘PR Rating‘ | | | 0.15 | |
| | | | (0.29) | |
| ‘CL Rating‘ | | | −0.49 | |
| | | | (0.30) | |
| Free | | | −1.18 | |
| | | | (1.19) | |
| PartFree | | | −0.60 | |
| | | | (0.71) | |
| rle | | | | 0.09 |
| | | | | (0.26) |
| $R^2$ | 0.59 | 0.60 | 0.62 | 0.60 |
| Adj. $R^2$ | 0.57 | 0.54 | 0.53 | 0.53 |
| Num. obs. | 72 | 72 | 72 | 72 |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 10: Estimation of Importer Fixed Effects, i.e. Average Trade Barriers, via a two-step approach. Importer fixed effects are extracted from Table 2 specification (5) and estimated via OLS using unilateral size and location variables, the average bilateral characteristics relating to the country in question and the single preference variables. Column shows a regression on conventional country characteristics. (2) adds the single preferences in level, (3) and (4) add different institutional and legal quality controls.

| | Diff. Goods: Exporter Fixed Effects | | | |
|---|---|---|---|---|
| | Baseline | Single Pref. | Single Pref. Rights | Single Pref. Legal |
| (Intercept) | $22.97^{***}$ | $19.30^{***}$ | $19.17^{***}$ | $18.24^{***}$ |
| | (4.49) | (4.66) | (5.07) | (4.74) |
| avg.char | 0.64 | −0.35 | −0.58 | −0.63 |
| | (1.02) | (1.07) | (1.05) | (1.10) |
| pop | $0.05^{***}$ | $0.04^{**}$ | $0.04^{***}$ | $0.04^{**}$ |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| gdpcap | $0.78^{***}$ | $0.43^{*}$ | $0.43^{\cdot}$ | 0.28 |
| | (0.12) | (0.21) | (0.22) | (0.25) |
| landlocked | $-1.63^{*}$ | $-1.41^{*}$ | $-1.44^{*}$ | $-1.35^{*}$ |
| | (0.65) | (0.67) | (0.67) | (0.67) |
| patience | | $1.86^{\cdot}$ | 0.63 | 1.51 |
| | | (1.06) | (1.15) | (1.10) |
| risktaking | | $-2.25^{*}$ | −1.49 | $-2.06^{*}$ |
| | | (0.90) | (0.94) | (0.91) |
| posrecip | | 0.97 | 0.91 | 0.91 |
| | | (1.08) | (1.06) | (1.08) |
| negrecip | | 0.64 | 1.41 | 0.73 |
| | | (0.89) | (0.91) | (0.89) |
| altruism | | −0.84 | −0.90 | −0.70 |
| | | (1.02) | (1.01) | (1.02) |
| trust | | 0.46 | 0.89 | 0.47 |
| | | (0.91) | (0.94) | (0.91) |
| ‘PR Rating‘ | | | $0.88^{\cdot}$ | |
| | | | (0.46) | |
| ‘CL Rating‘ | | | $-1.24^{*}$ | |
| | | | (0.48) | |
| Free | | | 0.13 | |
| | | | (1.90) | |
| PartFree | | | 0.43 | |
| | | | (1.14) | |
| rle | | | | 0.48 |
| | | | | (0.42) |
| $R^2$ | 0.50 | 0.57 | 0.62 | 0.58 |
| Adj. $R^2$ | 0.47 | 0.50 | 0.53 | 0.50 |
| Num. obs. | 72 | 72 | 72 | 72 |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 11: Estimation of Exporter Fixed Effects, i.e. Average Trade Barriers, via a two-step approach for differentiated goods only. Exporter fixed effects are extracted from Table 3 specification (2) and estimated via OLS using unilateral size and location variables, the average bilateral characteristics relating to the country in question and the single preference variables. Column shows a regression on conventional country characteristics. (2) adds the single preferences in level, (3) and (4) add different institutional and legal quality controls.

| | Diff. Goods: Importer Fixed Effects | | | |
|---|---|---|---|---|
| | Baseline | Single Pref. | Single Pref. Rights | Single Pref. Legal |
| (Intercept) | −0.34 | −0.79 | 0.61 | −0.75 |
| | (2.60) | (2.87) | (3.27) | (2.96) |
| avg.char | 0.15 | 0.05 | −0.04 | 0.06 |
| | (0.59) | (0.66) | (0.68) | (0.68) |
| pop | $0.03^{***}$ | $0.03^{***}$ | $0.03^{***}$ | $0.03^{***}$ |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| gdpcap | $0.53^{***}$ | $0.55^{***}$ | $0.55^{***}$ | $0.56^{***}$ |
| | (0.07) | (0.13) | (0.14) | (0.15) |
| landlocked | $-0.97^{*}$ | $-0.92^{*}$ | $-1.00^{*}$ | $-0.92^{*}$ |
| | (0.37) | (0.41) | (0.43) | (0.42) |
| patience | | −0.31 | −0.65 | −0.30 |
| | | (0.66) | (0.74) | (0.69) |
| risktaking | | 0.34 | 0.63 | 0.33 |
| | | (0.56) | (0.61) | (0.57) |
| posrecip | | 0.30 | 0.27 | 0.30 |
| | | (0.67) | (0.68) | (0.67) |
| negrecip | | 0.16 | 0.32 | 0.16 |
| | | (0.55) | (0.59) | (0.56) |
| altruism | | −0.24 | −0.25 | −0.24 |
| | | (0.63) | (0.65) | (0.64) |
| trust | | 0.56 | 0.51 | 0.56 |
| | | (0.56) | (0.61) | (0.57) |
| ‘PR Rating‘ | | | 0.04 | |
| | | | (0.30) | |
| ‘CL Rating‘ | | | −0.36 | |
| | | | (0.31) | |
| Free | | | −1.23 | |
| | | | (1.23) | |
| PartFree | | | −0.71 | |
| | | | (0.73) | |
| rle | | | | −0.02 |
| | | | | (0.26) |
| $R^2$ | 0.56 | 0.58 | 0.59 | 0.58 |
| Adj. $R^2$ | 0.53 | 0.51 | 0.49 | 0.50 |
| Num. obs. | 72 | 72 | 72 | 72 |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 12: Estimation of Importer Fixed Effects, i.e. Average Trade Barriers, via a two-step approach for differentiated goods only. Importer fixed effects are extracted from Table 3 specification (2) and estimated via OLS using unilateral size and location variables, the average bilateral characteristics relating to the country in question and the single preference variables. Column shows a regression on conventional country characteristics. (2) adds the single preferences in level, (3) and (4) add different institutional and legal quality controls.

evaluating US-friendly states - which are usually also western and wealthier - more positively (Steiner, 2012). That would likely bias the variable in a direction coinciding with America's patience and risk inclinations. On the other hand, patience might also result in stronger civic liberties - given their presumed long-term benefit of more efficient allocation.

### D.2 Non-Differentiated Goods

For non-differentiated goods, results are similar to those of differentiated goods. Risktaking is significant throughout all exporter specifications, but close to zero for the importer effects. Its coefficient changes from 1.96 to 1.83 throughout these specifications and remains significant on, at least, the 5% level. Patience on the other hand is significant only in specification (2) of the exporter effects, though its coefficient remains negative throughout and its significance level just slightly above the - albeit still low - 10% level.

## E Binomial Estimation of Bilateral Good-Specific Trade

The model presented in footnote 8 of section 2 is estimated using a Logit link function and the same variables and specifications as used for aggregated and separated volume sets. The resulting specifications - shown in Table 15 estimate the likelihood of goods from a specific 3-digit goods classification being traded between one country pair. Therefore, it is estimated not over 5112 bilateral pairs but over 1.226.880 bilateral goods combinations. The origin/destination fixed effects are supplemented by a commodity class dummy. It should be noted that these specifications suffer from the incidental parameter problem, wherein consistency is not achieved as the number of parameters increases equipollent with that of observations (cf. Neyman *et al.*, 1948).

All conventional variables have significant and robust effects with only little variance across the five specifications. In contrast to PPML, the coefficient for *common official language* is both significant and positive, which supports the observations of Melitz and Toubal (2014) with regards to the peculiarity of PPML in this regard. Compared with the meta-results presented by Head and Mayer (2014), the coefficients fall within the range of typical structural gravity estimates, pointing to - at least - a limited robustness of the binomial estimation.

While, of the single preferences, only distance in positive reciprocity is significant - and negative, this model for the formation of trade in goods classes is the only one outside the OECD set in which the average distance in preferences (*dpref*) has an effect, namely a negative one significant on the 5% level. Like the effect of reciprocity, this is likely an influence similar to cultural distance. The diverging preference leanings make it more difficult to reach an initial agreement, thus reducing the likelihood of formation of trade.

| | Non-Diff. Goods: Exporter Fixed Effects | | | |
|---|---|---|---|---|
| | Baseline | Single Pref. | Single Pref. Rights | Single Pref. Legal |
| (Intercept) | $19.34^{***}$ | $20.55^{***}$ | $21.65^{***}$ | $21.30^{***}$ |
| | (3.86) | (4.05) | (4.41) | (4.13) |
| avg.char | −0.63 | −0.39 | −0.51 | −0.27 |
| | (0.56) | (0.59) | (0.61) | (0.61) |
| pop | $0.03^{**}$ | $0.03^{***}$ | $0.03^{***}$ | $0.03^{***}$ |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| gdpcap | $0.53^{***}$ | $0.75^{***}$ | $0.71^{***}$ | $0.85^{***}$ |
| | (0.09) | (0.16) | (0.18) | (0.19) |
| landlocked | $-1.18^{*}$ | $-1.31^{*}$ | $-1.36^{*}$ | $-1.35^{*}$ |
| | (0.49) | (0.51) | (0.53) | (0.51) |
| patience | | $-1.60^{*}$ | −1.41 | −1.38 |
| | | (0.80) | (0.90) | (0.83) |
| risktaking | | $1.96^{**}$ | $1.95^{*}$ | $1.83^{*}$ |
| | | (0.68) | (0.74) | (0.69) |
| posrecip | | 0.26 | 0.21 | 0.28 |
| | | (0.82) | (0.83) | (0.82) |
| negrecip | | −0.20 | −0.36 | −0.26 |
| | | (0.68) | (0.72) | (0.68) |
| altruism | | −0.50 | −0.43 | −0.59 |
| | | (0.77) | (0.80) | (0.77) |
| trust | | 0.84 | 0.58 | 0.84 |
| | | (0.69) | (0.74) | (0.69) |
| ‘PR Rating‘ | | | −0.36 | |
| | | | (0.36) | |
| ‘CL Rating‘ | | | 0.13 | |
| | | | (0.38) | |
| Free | | | −1.50 | |
| | | | (1.49) | |
| PartFree | | | −1.30 | |
| | | | (0.89) | |
| rle | | | | −0.30 |
| | | | | (0.32) |
| $R^2$ | 0.43 | 0.52 | 0.54 | 0.53 |
| Adj. $R^2$ | 0.39 | 0.44 | 0.43 | 0.44 |
| Num. obs. | 72 | 72 | 72 | 72 |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 13: Estimation of Exporter Fixed Effects, i.e. Average Trade Barriers, via a two-step approach for non-differentiated goods only. Exporter fixed effects are extracted from Table 3 specification (4) and estimated via OLS using unilateral size and location variables, the average bilateral characteristics relating to the country in question and the single preference variables. Column shows a regression on conventional country characteristics. (2) adds the single preferences in level, (3) and (4) add different institutional and legal quality controls.

| | Non-Diff. Goods: Importer Fixed Effects | | | |
|---|---|---|---|---|
| | Baseline | Single Pref. | Single Pref. Rights | Single Pref. Legal |
| (Intercept) | −1.60 | −2.61 | −1.30 | −2.99 |
| | (2.92) | (3.29) | (3.53) | (3.37) |
| avg.char | −0.09 | −0.22 | −0.29 | −0.29 |
| | (0.42) | (0.48) | (0.49) | (0.50) |
| pop | $0.04^{***}$ | $0.04^{***}$ | $0.04^{***}$ | $0.04^{***}$ |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| gdpcap | $0.52^{***}$ | $0.55^{***}$ | $0.57^{***}$ | $0.50^{**}$ |
| | (0.07) | (0.13) | (0.14) | (0.15) |
| landlocked | $-1.06^{**}$ | $-0.92^{*}$ | $-1.03^{*}$ | $-0.90^{*}$ |
| | (0.37) | (0.41) | (0.42) | (0.41) |
| patience | | −0.37 | −0.93 | −0.48 |
| | | (0.65) | (0.72) | (0.68) |
| risktaking | | −0.00 | 0.42 | 0.06 |
| | | (0.55) | (0.59) | (0.56) |
| posrecip | | −0.16 | −0.14 | −0.17 |
| | | (0.66) | (0.67) | (0.67) |
| negrecip | | 0.71 | $1.02^{\cdot}$ | 0.74 |
| | | (0.55) | (0.58) | (0.56) |
| altruism | | 0.15 | 0.06 | 0.19 |
| | | (0.62) | (0.64) | (0.63) |
| trust | | 0.24 | 0.23 | 0.24 |
| | | (0.56) | (0.59) | (0.56) |
| ‘PR Rating‘ | | | 0.25 | |
| | | | (0.29) | |
| ‘CL Rating‘ | | | $-0.60^{\cdot}$ | |
| | | | (0.30) | |
| Free | | | −1.17 | |
| | | | (1.19) | |
| PartFree | | | −0.51 | |
| | | | (0.72) | |
| rle | | | | 0.15 |
| | | | | (0.26) |
| $R^2$ | 0.60 | 0.61 | 0.64 | 0.62 |
| Adj. $R^2$ | 0.57 | 0.55 | 0.55 | 0.55 |
| Num. obs. | 72 | 72 | 72 | 72 |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 14: Estimation of Importer Fixed Effects, i.e. Average Trade Barriers, via a two-step approach for non-differentiated goods only. Importer fixed effects are extracted from Table 3 specification (4) and estimated via OLS using unilateral size and location variables, the average bilateral characteristics relating to the country in question and the single preference variables. Column shows a regression on conventional country characteristics. (2) adds the single preferences in level, (3) and (4) add different institutional and legal quality controls.

| | Basic Grav. | Agg. Pref. Dist. | Agg. Pref. Dist | Single Pref. Dist. | Single Pref. Dist. |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| ldist | $-1.03^{***}$ | $-1.02^{***}$ | $-1.03^{***}$ | $-1.03^{***}$ | $-1.03^{***}$ |
| | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) |
| contig | $0.72^{***}$ | $0.72^{***}$ | $0.72^{***}$ | $0.71^{***}$ | $0.71^{***}$ |
| | (0.18) | (0.18) | (0.18) | (0.18) | (0.18) |
| colony | $0.74^{***}$ | $0.74^{***}$ | $0.73^{***}$ | $0.74^{***}$ | $0.73^{***}$ |
| | (0.12) | (0.12) | (0.11) | (0.12) | (0.12) |
| rta | $0.19^{*}$ | $0.18^{*}$ | $0.20^{**}$ | $0.19^{*}$ | $0.21^{**}$ |
| | (0.08) | (0.08) | (0.08) | (0.08) | (0.08) |
| lng | $0.77^{***}$ | $0.76^{***}$ | $0.76^{***}$ | $0.75^{***}$ | $0.75^{***}$ |
| | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) |
| dpref | | $-0.40^{*}$ | $-0.45^{*}$ | | |
| | | (0.20) | (0.19) | | |
| leg.qlt 2 | | | 0.02 | | 0.01 |
| | | | (0.02) | | (0.02) |
| dpati | | | | 0.11 | 0.08 |
| | | | | (0.12) | (0.12) |
| drisk | | | | −0.27 | −0.27 |
| | | | | (0.18) | (0.18) |
| dposrec | | | | $-0.26^{**}$ | $-0.26^{**}$ |
| | | | | (0.10) | (0.10) |
| dnegrec | | | | 0.08 | 0.09 |
| | | | | (0.11) | (0.11) |
| daltr | | | | 0.05 | 0.06 |
| | | | | (0.10) | (0.10) |
| dtrus | | | | −0.13 | −0.13 |
| | | | | (0.12) | (0.12) |
| Observations | 1226880.00 | 1226880.00 | 1226880.00 | 1226880.00 | 1226880.00 |
| Deviance | 775510.36 | 775353.24 | 775265.77 | 774811.41 | 774788.51 |
| Country, Goods FE | YES | YES | YES | YES | YES |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 15: Binomial estimation of all bilateral three-digit SITC goods categories, with: $t_{cij} = 1, \text{if} x_{cij} > 0$ and zero otherwise. This specification aims to analyse determinants of the formation of trade. The variables of interest are the differences in preferences, included as an unweighted average *dpref* in (2,3) and as single variables *dpati, drisk, dposrec, dnegrec, daltr, dtrus* (4,5). Commonalities in legal systems are included in models (3) and (5) due to their potential impact on negotiations, the channel of interest. Model (1) is a standard gravity equation for comparison. Standard errors are clustered to importer, exporter and goods fixed effects. The coefficients of the conventional gravity variables all have the desired signs and are significant on, at least, the 5% level. Differences in the unweighted average of preference are significant (2), even when accounting for the legal systems (3), whereas only one of the single preference distances is significant, namely *dposrec*. The effects can be interpreted as changes in the likeliness of a specific bilateral trade flow becoming non-zero - or: being formed. That likelihood is then adversely impacted by different preference leanings of the national populations in question.

# F Further Breadth of Trade specifications

## F.1 PPML estimation of the Breadth of Trade, with *dpref*

Table 16 shows PPML breadth of trade regressions corresponding to the specifications used for aggregate and separate volume data. Specifications (1) and (5) are the ones also displayed in Table 5 - as specifications (1) and (2). Results for aggregate preference distances - with and without legal variables - are shown in columns (3) and (2), while column (4) shows the regression on single preference distances without legal parameters. Coinciding with the results for the Binomial specification, the average distance in preferences is significant when estimated without legal controls (column 2). Aside from this observation, the results are in line with those shown and analysed in Table 5.

## F.2 Fixed Effects of the Breadth of Trade

Table 17 shows the results for the second stage estimations using the fixed effects of the breadth of trade specification with single preference distances and legal controls. The specifications are equivalent to those shown in Table 4 of subsection 4.3. None of the preference measures - except for altruism on the 10%-level - are significant determinants of the fixed effects as estimated in the PPML derivative. Due to the modification of the PPML equation and the limited sample size for the fixed effects, these results need to be viewed with caution. On the other hand, the results may also point to the limitations of GPS preferences as an effect channel for the influence of cultural and historical factors on trade outcomes.

# G Tables of the Robustness Section

| | Basic Grav. | Agg. Pref. Dist. | Agg. Pref. Dist | Single Pref. Dist. | Single Pref. Dist. |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| ldist | $-0.25^{***}$ | $-0.26^{***}$ | $-0.26^{***}$ | $-0.26^{***}$ | $-0.26^{***}$ |
| | (0.04) | (0.04) | (0.03) | (0.03) | (0.03) |
| contig | $-0.07$ | $-0.07$ | $-0.05$ | $-0.04$ | $-0.05$ |
| | (0.08) | (0.08) | (0.07) | (0.07) | (0.07) |
| colony | $0.11^{*}$ | $0.11^{*}$ | $0.09^{\cdot}$ | $0.11^{*}$ | $0.09^{\cdot}$ |
| | (0.05) | (0.05) | (0.05) | (0.05) | (0.05) |
| rta | 0.01 | 0.02 | $0.08^{*}$ | 0.03 | $0.06^{\cdot}$ |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| lng | $0.32^{***}$ | $0.33^{***}$ | $0.28^{***}$ | $0.33^{***}$ | $0.29^{***}$ |
| | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) |
| dpref | | $0.37^{*}$ | 0.15 | | |
| | | (0.15) | (0.12) | | |
| comleg | | | $0.09^{**}$ | | $0.09^{***}$ |
| | | | (0.03) | | (0.03) |
| leg.qlt | | | $0.12^{***}$ | | $0.07^{*}$ |
| | | | (0.03) | | (0.03) |
| dpati | | | | $0.31^{***}$ | $0.23^{***}$ |
| | | | | (0.05) | (0.06) |
| drisk | | | | $-0.19^{**}$ | $-0.15^{**}$ |
| | | | | (0.06) | (0.06) |
| dposrec | | | | $-0.07^{\cdot}$ | $-0.07^{\cdot}$ |
| | | | | (0.04) | (0.04) |
| dnegrec | | | | 0.09 | 0.08 |
| | | | | (0.06) | (0.06) |
| daltr | | | | $-0.00$ | 0.00 |
| | | | | (0.04) | (0.04) |
| dtrus | | | | $-0.04$ | $-0.04$ |
| | | | | (0.07) | (0.07) |
| riskdir | | | | | 0.00 |
| | | | | | (0.03) |
| Observations | 5112.00 | 5112.00 | 5112.00 | 5112.00 | 5112.00 |
| Deviance | 78802.90 | 78226.31 | 75153.86 | 74375.44 | 73276.92 |
| Exp./Imp. FE | YES | YES | YES | YES | |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 16: PPML-like estimation of determinants for the breadth of trade. Bilateral trade is defined as the number of three-digit SITC goods categories with non-zero export values, i.e. $T_{ij} = \sum_c t_{cij}$. The variables of interest are the differences in preferences, included as an unweighted average *dpref* in (2,3) and as single variables *dpati, drisk, dposrec, dnegrec, daltr, dtrus* (4,5). Commonalities in legal systems are included in models (3) and (5) due to their potential impact on negotiations, the channel of interest. Model (1) is a standard gravity equation for comparison. Standard errors are clustered to importer and exporter fixed effects.

| | Differentiated Goods | | Non-Differentiated Goods | |
|---|---|---|---|---|
| | Exporter | Importer | Exporter | Importer |
| | (1) | (2) | (3) | (4) |
| (Intercept) | $4.28^{*}$ | $-1.10$ | 3.55 | $-1.14$ |
| | (1.93) | (0.88) | (2.18) | (1.13) |
| avg.char | $-0.51$ | $-0.48$ | $-0.53$ | $-0.31$ |
| | (1.00) | (0.46) | (0.75) | (0.39) |
| pop | $0.01^{**}$ | $0.01^{**}$ | $0.02^{***}$ | $0.01^{***}$ |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| gdpcap | $0.18^{*}$ | $0.08^{*}$ | $0.25^{**}$ | $0.12^{**}$ |
| | (0.07) | (0.03) | (0.08) | (0.04) |
| landlocked | $-0.63^{**}$ | $-0.10$ | $-0.57^{*}$ | $-0.19$ |
| | (0.22) | (0.10) | (0.26) | (0.14) |
| patience | 0.22 | 0.02 | 0.19 | 0.04 |
| | (0.35) | (0.16) | (0.41) | (0.21) |
| risktaking | $-0.36$ | 0.06 | $-0.08$ | 0.05 |
| | (0.29) | (0.13) | (0.35) | (0.18) |
| posrecip | 0.57 | $-0.05$ | 0.62 | 0.02 |
| | (0.36) | (0.16) | (0.42) | (0.22) |
| negrecip | 0.32 | 0.05 | 0.20 | 0.18 |
| | (0.29) | (0.13) | (0.34) | (0.18) |
| altruism | $-0.58^{\cdot}$ | $-0.05$ | $-0.69^{\cdot}$ | $-0.05$ |
| | (0.34) | (0.15) | (0.40) | (0.21) |
| trust | 0.10 | 0.01 | $-0.00$ | 0.03 |
| | (0.30) | (0.14) | (0.35) | (0.18) |
| $R^2$ | 0.52 | 0.37 | 0.52 | 0.46 |
| Adj. $R^2$ | 0.45 | 0.27 | 0.44 | 0.37 |
| Num. obs. | 72 | 72 | 72 | 72 |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 17: Estimation of Fixed Effects, i.e. Average Trade Barriers, for Breadth of Trade PPML via a two-step approach. Exporter and importer fixed effects are extracted from Table 5 specifications (2) and (4) and estimated via OLS using unilateral size and location variables, the average bilateral characteristics relating to the country in question and the single preference variables. Columns (1) and (2) show country characteristics for differentiated goods and (3) and (4) for non-differentiated goods. Exporter results are displayed first in each case.

## World Values Survey & GPS

| | Agg. Pref. Dist. | Agg. WVS Dist. | Single Pref. Dist | Single WVS Dist. | Joined Dist. |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| ldist | $-0.59^{***}$ | $-0.57^{***}$ | $-0.59^{***}$ | $-0.57^{***}$ | $-0.57^{***}$ |
| | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) |
| contig | $0.48^{***}$ | $0.49^{***}$ | $0.49^{***}$ | $0.54^{***}$ | $0.56^{***}$ |
| | (0.14) | (0.15) | (0.14) | (0.15) | (0.14) |
| colony | $0.31^{**}$ | $0.37^{***}$ | $0.34^{***}$ | $0.41^{***}$ | $0.40^{***}$ |
| | (0.10) | (0.11) | (0.09) | (0.11) | (0.10) |
| rta | $0.32^{**}$ | $0.39^{***}$ | $0.34^{***}$ | $0.41^{***}$ | $0.41^{***}$ |
| | (0.10) | (0.08) | (0.09) | (0.07) | (0.07) |
| lng | $-0.07$ | $-0.03$ | $-0.07$ | 0.09 | 0.10 |
| | (0.12) | (0.09) | (0.13) | (0.10) | (0.10) |
| comleg | $0.18^{*}$ | $0.15^{*}$ | $0.16^{*}$ | 0.10 | 0.05 |
| | (0.07) | (0.07) | (0.07) | (0.09) | (0.08) |
| leg.qlt | $0.14^{***}$ | $0.13^{**}$ | $0.15^{***}$ | $0.14^{***}$ | $0.13^{***}$ |
| | (0.02) | (0.04) | (0.03) | (0.03) | (0.03) |
| dpref | $-0.31$ | | | | |
| | (0.35) | | | | |
| DWvsMean | | 1.01 | | | |
| | | (3.59) | | | |
| dpati | | | $-0.15$ | | |
| | | | (0.10) | | |
| drisk | | | $0.50^{\cdot}$ | | |
| | | | (0.26) | | |
| dposrec | | | $-0.01$ | | 0.04 |
| | | | (0.21) | | (0.18) |
| dnegrec | | | $-0.53^{***}$ | | $-0.43^{*}$ |
| | | | (0.16) | | (0.17) |
| daltr | | | $-0.09$ | | |
| | | | (0.11) | | |
| dtrus | | | 0.09 | | |
| | | | (0.18) | | |
| Dtrust | | | | $-0.06$ | $-0.08$ |
| | | | | (0.76) | (0.73) |
| Daltruism | | | | $-0.39$ | $-0.47$ |
| | | | | (0.60) | (0.65) |
| Drisk | | | | 0.02 | $-0.15$ |
| | | | | (1.47) | (1.33) |
| Dtimepref | | | | $1.27^{*}$ | $1.22^{*}$ |
| | | | | (0.56) | (0.53) |
| Observations | 5112.00 | 3192.00 | 5112.00 | 2156.00 | 2156.00 |
| Deviance | 4653839002672.03 | 3702376242311.60 | 4556478256897.52 | 2724293614237.49 | 2702716621696.36 |
| Exp./Imp. FE | YES | YES | YES | YES | YES |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 18: Estimation of aggregated bilateral exports via PPML. Models (1) and (3) include the unweighted average of preference distances and the single preference distances, respectively. Models (2) and (4) replace these values with information from the World Values Survey, as defined by Jaeggi *et al.* (2018) for contrast and comparison. In Model (5), the two surveys are joined, with the WVS measures replacing their Falk equivalents.

## Average Trade Barriers without Preference Distances

| | Second Stage | | | |
|---|---|---|---|---|
| | Differentiated Goods | | Non-Differentiated Goods | |
| | Exporter | Importer | Exporter | Importer |
| | (1) | (2) | (3) | (4) |
| (Intercept) | $18.24^{***}$ | $-0.75$ | $21.30^{***}$ | $-2.99$ |
| | (4.74) | (2.96) | (4.13) | (3.37) |
| avg.char | $-0.63$ | 0.06 | $-0.27$ | $-0.29$ |
| | (1.10) | (0.68) | (0.61) | (0.50) |
| pop | $0.04^{**}$ | $0.03^{***}$ | $0.03^{***}$ | $0.04^{***}$ |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| gdpcap | 0.28 | $0.56^{***}$ | $0.85^{***}$ | $0.50^{**}$ |
| | (0.25) | (0.15) | (0.19) | (0.15) |
| landlocked | $-1.35^{*}$ | $-0.92^{*}$ | $-1.35^{*}$ | $-0.90^{*}$ |
| | (0.67) | (0.42) | (0.51) | (0.41) |
| patience | 1.51 | $-0.30$ | $-1.38$ | $-0.48$ |
| | (1.10) | (0.69) | (0.83) | (0.68) |
| risktaking | $-2.06^{*}$ | 0.33 | $1.83^{*}$ | 0.06 |
| | (0.91) | (0.57) | (0.69) | (0.56) |
| posrecip | 0.91 | 0.30 | 0.28 | $-0.17$ |
| | (1.08) | (0.67) | (0.82) | (0.67) |
| negrecip | 0.73 | 0.16 | $-0.26$ | 0.74 |
| | (0.89) | (0.56) | (0.68) | (0.56) |
| altruism | $-0.70$ | $-0.24$ | $-0.59$ | 0.19 |
| | (1.02) | (0.64) | (0.77) | (0.63) |
| trust | 0.47 | 0.56 | 0.84 | 0.24 |
| | (0.91) | (0.57) | (0.69) | (0.56) |
| rle | 0.48 | $-0.02$ | $-0.30$ | 0.15 |
| | (0.42) | (0.26) | (0.32) | (0.26) |
| $R^2$ | 0.58 | 0.58 | 0.53 | 0.62 |
| Adj. $R^2$ | 0.50 | 0.50 | 0.44 | 0.55 |
| Num. obs. | 72 | 72 | 72 | 72 |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 19: Estimation of Fixed Effects, i.e. Average Trade Barriers, via a two-step approach. Exporter and importer fixed effects are extracted from the Basic Gravity equation of subsection 4.1 Standard Gravity, but applied to differentiated and non-differentiated goods separately. They are then estimated via OLS using unilateral size and location variables, the average bilateral characteristics relating to the country in question and the single preference variables. The level of rule of law is also included, as its distance is - as with the preferences - excluded in the first stage. Columns (1) and (2) show country characteristics for differentiated goods and (3) and (4) for non-differentiated goods. Exporter results are displayed first in each case.

## Hofstede & GPS

| | Second Stage: Exporter | | | |
|---|---|---|---|---|
| | Differentiated Goods | | Non-Differentiated Goods | |
| | (1) | (2) | (3) | (4) |
| (Intercept) | $21.01^{***}$ | $16.84^{***}$ | $21.47^{***}$ | $12.92^{**}$ |
| | (4.33) | (4.58) | (3.70) | (4.12) |
| avg.char | 0.06 | −0.94 | −0.25 | $-1.52^{*}$ |
| | (0.99) | (1.00) | (0.54) | (0.57) |
| pop | $0.04^{**}$ | $0.02^{*}$ | $0.03^{***}$ | $0.02^{**}$ |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| gdpcap | $0.47^{*}$ | $0.32^{**}$ | $0.79^{***}$ | $0.41^{***}$ |
| | (0.20) | (0.11) | (0.15) | (0.09) |
| landlocked | $-1.44^{*}$ | −0.14 | $-1.34^{**}$ | −0.79 |
| | (0.62) | (0.77) | (0.47) | (0.63) |
| patience | $1.94^{\cdot}$ | | $-1.68^{*}$ | |
| | (1.03) | | (0.78) | |
| risktaking | $-2.36^{**}$ | | $1.88^{**}$ | |
| | (0.80) | | (0.61) | |
| uai | | 0.00 | | 0.02 |
| | | (0.01) | | (0.01) |
| ltowvs | | $0.02^{*}$ | | −0.01 |
| | | (0.01) | | (0.01) |
| $R^2$ | 0.56 | 0.44 | 0.50 | 0.49 |
| Adj. $R^2$ | 0.52 | 0.35 | 0.46 | 0.41 |
| Num. obs. | 72 | 44 | 72 | 44 |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

| | Second Stage: Importer | | | |
|---|---|---|---|---|
| | Differentiated Goods | | Non-Differentiated Goods | |
| | (5) | (6) | (7) | (8) |
| (Intercept) | −0.08 | $-6.81^{*}$ | −1.34 | $-8.94^{*}$ |
| | (2.66) | (3.33) | (3.01) | (3.33) |
| avg.char | 0.23 | $-1.35^{\cdot}$ | −0.03 | $-1.11^{*}$ |
| | (0.61) | (0.72) | (0.44) | (0.46) |
| pop | $0.03^{***}$ | $0.02^{**}$ | $0.04^{***}$ | $0.03^{***}$ |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| gdpcap | $0.59^{***}$ | $0.35^{***}$ | $0.57^{***}$ | $0.33^{***}$ |
| | (0.12) | (0.08) | (0.12) | (0.08) |
| landlocked | $-1.00^{*}$ | −0.38 | $-1.09^{**}$ | −0.64 |
| | (0.38) | (0.56) | (0.38) | (0.51) |
| patience | −0.34 | | −0.36 | |
| | (0.64) | | (0.63) | |
| risktaking | 0.32 | | 0.24 | |
| | (0.49) | | (0.49) | |
| uai | | 0.01 | | 0.01 |
| | | (0.01) | | (0.01) |
| ltowvs | | 0.00 | | 0.01 |
| | | (0.01) | | (0.01) |
| $R^2$ | 0.56 | 0.46 | 0.60 | 0.59 |
| Adj. $R^2$ | 0.52 | 0.37 | 0.56 | 0.53 |
| Num. obs. | 72 | 44 | 72 | 44 |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 20: Estimation of Fixed Effects, i.e. Average Trade Barriers, via a two-step approach. Exporter (1 - 4) and importer (5 - 8) fixed effects are extracted from a basic gravity regression on differentiated and non-differentiated goods, respectively; the basic equation is equivalent to specification (1) of subsection 4.1 Standard Gravity. The fixed effects are estimated via OLS following the design of subsection 4.3 Impact on Average Barriers, but restricted to preference measures for patience and risk. Uneven specifications show the results for GPS data, while even ones use Hofstede dimensions instead.

## Genetics, Religion & GPS

| | Single Pref. Dist. | Gen. Dist. | | Rel. Dist. | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| ldist | $-0.59^{***}$ | $-0.68^{***}$ | $-0.68^{***}$ | $-0.59^{***}$ | $-0.60^{***}$ |
| | (0.06) | (0.09) | (0.08) | (0.06) | (0.06) |
| contig | $0.49^{***}$ | $0.38^{**}$ | $0.38^{**}$ | $0.49^{***}$ | $0.49^{***}$ |
| | (0.14) | (0.13) | (0.13) | (0.13) | (0.14) |
| colony | $0.34^{***}$ | $0.41^{***}$ | $0.40^{***}$ | $0.34^{***}$ | $0.36^{***}$ |
| | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) |
| rta | $0.34^{***}$ | $0.34^{***}$ | $0.33^{***}$ | $0.34^{***}$ | $0.35^{***}$ |
| | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) |
| lng | $-0.07$ | $-0.06$ | $-0.05$ | $-0.06$ | $-0.06$ |
| | (0.13) | (0.13) | (0.13) | (0.13) | (0.12) |
| comleg | $0.16^{*}$ | $0.16^{*}$ | $0.15^{*}$ | $0.16^{*}$ | $0.16^{*}$ |
| | (0.07) | (0.07) | (0.07) | (0.07) | (0.07) |
| leg.qlt | $0.15^{***}$ | $0.14^{***}$ | $0.13^{***}$ | $0.15^{***}$ | $0.15^{***}$ |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| dpati | $-0.15$ | $-0.12$ | $-0.13$ | $-0.15$ | $-0.15$ |
| | (0.10) | (0.10) | (0.10) | (0.10) | (0.10) |
| drisk | $0.50^{\cdot}$ | $0.46^{\cdot}$ | $0.45^{\cdot}$ | $0.50^{*}$ | $0.49^{*}$ |
| | (0.26) | (0.25) | (0.25) | (0.25) | (0.25) |
| dposrec | $-0.01$ | 0.03 | 0.02 | $-0.00$ | $-0.01$ |
| | (0.21) | (0.21) | (0.21) | (0.21) | (0.21) |
| dnegrec | $-0.53^{***}$ | $-0.53^{***}$ | $-0.52^{***}$ | $-0.54^{**}$ | $-0.55^{**}$ |
| | (0.16) | (0.16) | (0.16) | (0.17) | (0.18) |
| daltr | $-0.09$ | $-0.06$ | $-0.05$ | $-0.08$ | $-0.07$ |
| | (0.11) | (0.11) | (0.10) | (0.11) | (0.11) |
| dtrus | 0.09 | 0.10 | 0.09 | 0.10 | 0.10 |
| | (0.18) | (0.19) | (0.19) | (0.18) | (0.18) |
| gendist_weighted | | 7.86 | | | |
| | | (5.15) | | | |
| gendist_plurality | | | $6.86^{\cdot}$ | | |
| | | | (4.06) | | |
| reldist_dominant | | | | 0.04 | |
| | | | | (0.10) | |
| reldist_weighted | | | | | 0.26 |
| | | | | | (0.29) |
| Observations | 5112.00 | 4970.00 | 4970.00 | 4970.00 | 4970.00 |
| Deviance | 4556478256897.52 | 4490405507118.85 | 4485219877511.58 | 4542324036171.87 | 4536843857953.66 |
| Exp./Imp. FE | YES | YES | YES | YES | YES |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 21: Estimation of aggregated bilateral exports, via PPML. Models (2) and (3) include genetical distances between populations in two different calculations, whereas specifications (4) and (5) include two version of religious distance. Both distances are taken from Spolaore and Wacziarg (2018) and compared to the GPS' preference distances.

**OECD Subset: Preference Distribution**

| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| patience | 25 | 0.317 | 0.416 | −0.431 | 1.071 |
| risktaking | 25 | −0.078 | 0.232 | −0.792 | 0.244 |
| posrecip | 25 | −0.073 | 0.284 | −1.038 | 0.316 |
| negrecip | 25 | 0.101 | 0.277 | −0.375 | 0.665 |
| altruism | 25 | −0.148 | 0.341 | −0.940 | 0.406 |
| trust | 25 | 0.021 | 0.260 | −0.519 | 0.532 |

Table 22: Summary statistics for the preferences within the OECD sample.

**OECD Subset: Preference Distance Distribution**

| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| dpati | 600 | 0.485 | 0.332 | 0.0001 | 1.502 |
| drisk | 600 | 0.249 | 0.214 | 0.001 | 1.036 |
| dposrec | 600 | 0.296 | 0.272 | 0.004 | 1.354 |
| dnegrec | 600 | 0.321 | 0.224 | 0.001 | 1.040 |
| daltr | 600 | 0.386 | 0.290 | 0.002 | 1.346 |
| dtrus | 600 | 0.297 | 0.217 | 0.001 | 1.051 |
| dpref | 600 | 0.339 | 0.130 | 0.061 | 0.712 |

Table 23: Summary statistics for distances in preference within the OECD sample.

**OECD Subset: Standard Gravity**

| | Basic Grav. | Agg. Pref. Dist. | Agg. Pref. Dist | Single Pref. Dist. | Single Pref. Dist. |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| ldist | $-0.52^{***}$ | $-0.54^{***}$ | $-0.54^{***}$ | $-0.62^{***}$ | $-0.62^{***}$ |
| | (0.08) | (0.08) | (0.07) | (0.05) | (0.05) |
| contig | $0.69^{***}$ | $0.64^{***}$ | $0.64^{***}$ | $0.65^{***}$ | $0.65^{***}$ |
| | (0.15) | (0.15) | (0.15) | (0.11) | (0.12) |
| colony | $0.27^{*}$ | $0.23^{\cdot}$ | 0.20 | $0.26^{*}$ | $0.22^{*}$ |
| | (0.13) | (0.13) | (0.13) | (0.11) | (0.10) |
| rta | $0.56^{***}$ | $0.57^{***}$ | $0.55^{***}$ | $0.47^{***}$ | $0.45^{***}$ |
| | (0.13) | (0.11) | (0.11) | (0.12) | (0.12) |
| lng | 0.07 | 0.24 | $-0.02$ | 0.09 | $-0.09$ |
| | (0.19) | (0.17) | (0.18) | (0.19) | (0.19) |
| dpref | | $1.16^{\cdot}$ | $1.45^{*}$ | | |
| | | (0.66) | (0.61) | | |
| comleg | | | $0.29^{***}$ | | $0.20^{*}$ |
| | | | (0.08) | | (0.09) |
| leg.qlt | | | $-0.02$ | | $-0.12$ |
| | | | (0.11) | | (0.12) |
| dpati | | | | $0.41^{**}$ | $0.58^{***}$ |
| | | | | (0.15) | (0.14) |
| drisk | | | | $-0.08$ | $-0.15$ |
| | | | | (0.51) | (0.54) |
| dposrec | | | | $1.42^{***}$ | $1.42^{***}$ |
| | | | | (0.37) | (0.37) |
| dnegrec | | | | $-0.68^{***}$ | $-0.55^{***}$ |
| | | | | (0.13) | (0.14) |
| daltr | | | | $-0.07$ | $-0.08$ |
| | | | | (0.20) | (0.18) |
| dtrus | | | | $-0.36$ | $-0.33$ |
| | | | | (0.35) | (0.35) |
| Observations | 600.00 | 600.00 | 600.00 | 600.00 | 600.00 |
| Deviance | 1067402571727.43 | 1034332088258.07 | 1000590596644.01 | 913472073587.91 | 896094053924.81 |
| Exp./Imp. FE | YES | YES | YES | YES | YES |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 24: Estimation of aggregated bilateral exports, $X_{ij}$, of all members of the OECD included in the GPS dataset via PPML. The variables of interest are the distances in preferences, included as an unweighted average *dpref* in (2,3) and as single variables *dpati, drisk, dposrec, dnegrec, daltr, dtrus* (4,5). Commonalities in legal systems are included in models (3) and (5) due to their potential impact on negotiations, the channel of interest. Model (1) is a standard gravity equation for comparison. Standard errors are clustered to Importer and Exporter fixed effects.

## OECD Subset: Differentiated & Non-Differentiated Goods

| | Differentiated Goods | | Non-Differentiated Goods | |
|---|---|---|---|---|
| | Agg. Pref. Dist. | Single Pref. Dist. | Agg. Pref. Dist. | Single Pref. Dist. |
| | (1) | (2) | (3) | (4) |
| ldist | $-0.44^{***}$ | $-0.51^{***}$ | $-0.78^{***}$ | $-0.88^{***}$ |
| | (0.08) | (0.05) | (0.08) | (0.08) |
| contig | $0.60^{***}$ | $0.60^{***}$ | $0.71^{***}$ | $0.71^{***}$ |
| | (0.15) | (0.12) | (0.17) | (0.15) |
| colony | 0.22 | $0.23^{\cdot}$ | $0.25^{*}$ | $0.30^{**}$ |
| | (0.15) | (0.12) | (0.12) | (0.11) |
| rta | $0.69^{***}$ | $0.61^{***}$ | $0.31^{\cdot}$ | 0.16 |
| | (0.13) | (0.14) | (0.16) | (0.18) |
| lng | 0.06 | 0.00 | $-0.18$ | $-0.28$ |
| | (0.21) | (0.23) | (0.21) | (0.19) |
| comleg | $0.27^{***}$ | $0.19^{*}$ | $0.41^{***}$ | $0.32^{**}$ |
| | (0.08) | (0.09) | (0.07) | (0.10) |
| leg.qlt | $-0.00$ | $-0.11$ | $-0.02$ | $-0.08$ |
| | (0.11) | (0.12) | (0.11) | (0.13) |
| dpref | $1.33^{*}$ | | $1.56^{*}$ | |
| | (0.55) | | (0.79) | |
| dpati | | $0.57^{***}$ | | $0.55^{***}$ |
| | | (0.17) | | (0.14) |
| drisk | | $-0.00$ | | $-0.77$ |
| | | (0.48) | | (0.70) |
| dposrec | | $1.31^{**}$ | | $1.62^{***}$ |
| | | (0.44) | | (0.29) |
| dnegrec | | $-0.65^{***}$ | | $-0.33$ |
| | | (0.12) | | (0.24) |
| daltr | | $-0.02$ | | $-0.13$ |
| | | (0.18) | | (0.20) |
| dtrus | | $-0.40$ | | $-0.23$ |
| | | (0.41) | | (0.32) |
| Observations | 600.00 | 600.00 | 600.00 | 600.00 |
| Deviance | 709102727851.82 | 632675407110.67 | 396892747008.34 | 365040317187.53 |
| Exp./Imp. FE | YES | YES | YES | YES |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 25: Estimation of aggregated bilateral exports of all members of the OECD included in the GPS dataset, partitioned in differentiated and non-differentiated goods according to Rauch (1999) three-digit SITC classifications. The variables of interest are the distances in preferences, included as an unweighted average *dpref* in (1,2) and as single variables *dpati, drisk, dposrec, dnegrec, daltr, dtrus* (3,4). Standard errors are clustered to Importer and Exporter fixed effects.

## OECD Subset: Breadth of Trade

| | Basic Grav. | Single. Pref. Dist | Differentiated Goods | Non-Differentiated Goods |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| ldist | $-0.09^{**}$ | $-0.09^{***}$ | $-0.04^{*}$ | $-0.16^{***}$ |
| | (0.03) | (0.03) | (0.02) | (0.04) |
| contig | $-0.09^{*}$ | $-0.09^{*}$ | $-0.07^{\cdot}$ | $-0.13^{*}$ |
| | (0.04) | (0.04) | (0.04) | (0.05) |
| colony | $0.09^{*}$ | $0.07^{\cdot}$ | 0.05 | $0.12^{*}$ |
| | (0.04) | (0.04) | (0.04) | (0.05) |
| rta | 0.04 | 0.02 | 0.00 | 0.06 |
| | (0.03) | (0.02) | (0.01) | (0.04) |
| lng | $0.06^{**}$ | 0.04 | 0.04 | 0.05 |
| | (0.02) | (0.03) | (0.03) | (0.04) |
| comleg | | $0.05^{***}$ | $0.03^{**}$ | $0.09^{**}$ |
| | | (0.01) | (0.01) | (0.03) |
| leg.qlt | | $-0.04^{\cdot}$ | $-0.04$ | $-0.05^{\cdot}$ |
| | | (0.03) | (0.03) | (0.03) |
| dpati | | $0.16^{**}$ | $0.15^{*}$ | $0.20^{***}$ |
| | | (0.05) | (0.06) | (0.05) |
| drisk | | $-0.10$ | $-0.09$ | $-0.12$ |
| | | (0.06) | (0.06) | (0.10) |
| dposrec | | 0.06 | 0.02 | $0.16^{**}$ |
| | | (0.04) | (0.04) | (0.06) |
| dnegrec | | $-0.04$ | $-0.02$ | $-0.06$ |
| | | (0.03) | (0.03) | (0.05) |
| daltr | | $-0.00$ | 0.00 | $-0.01$ |
| | | (0.04) | (0.03) | (0.07) |
| dtrus | | $-0.05$ | $-0.04$ | $-0.08$ |
| | | (0.06) | (0.05) | (0.07) |
| Observations | 600.00 | 600.00 | 600.00 | 600.00 |
| Deviance | 3156.23 | 3025.02 | 1727.87 | 1840.89 |
| Exp./Imp. FE | YES | YES | YES | YES |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 26: PPML-like estimation of determinants for the breadth of trade for all OECD countries also included in the GPS. Bilateral trade is defined as the number of three-digit SITC goods categories with non-zero export values, i.e. $T_{ij} = \sum_c t_{cij}$. The variables of interest are the distances in preferences, included as single variables *dpati, drisk, dposrec, dnegrec, daltr, dtrus* (2). Model (1) is a standard gravity equation for comparison, specifications (3) and (4) estimate differentiated and non-differentiated goods, respectively. Standard errors are clustered to importer and exporter fixed effects.

## Summary Statistics for Trade in Partners and Commodities

| | Exporter | | | Importer | | |
|---|---|---|---|---|---|---|
| | Mean | Median | Sd | Mean | Median | Sd |
| avg.com.traded | 87.32 | 83.7 | 55.39 | 87.18 | 81.79 | 28.39 |
| avg.com.traded.D | 60.85 | 61.66 | 36.32 | 60.73 | 59.02 | 17.62 |
| avg.com.traded.nD | 26.47 | 24.33 | 19.54 | 26.45 | 24.9 | 11 |
| avg.nat.traded | 26.2 | 25.11 | 16.62 | 26.15 | 24.54 | 8.52 |
| avg.nat.traded.D | 18.26 | 18.5 | 10.9 | 18.22 | 17.71 | 5.29 |
| avg.nat.traded.nD | 7.94 | 7.3 | 5.86 | 7.93 | 7.47 | 3.3 |

Table 27: Descriptive statistics of average number of commodities traded and the average number of partners with which trade is non-zero. Both summaries are provided for aggregate trade, differentiated and non-differentiated goods.

## Average Commodities Traded

| | Second Stage | | | |
|---|---|---|---|---|
| | Differentiated Goods | | Non-Differentiated Goods | |
| | Exporter | Importer | Exporter | Importer |
| | (1) | (2) | (3) | (4) |
| (Intercept) | 121.88$^{*}$ | 110.60$^{***}$ | 53.96 | 65.92$^{**}$ |
| | (55.12) | (31.22) | (34.84) | (20.67) |
| avg.char | 18.38 | 13.76$^{\cdot}$ | 5.67 | 6.72$^{*}$ |
| | (12.68) | (7.18) | (5.11) | (3.03) |
| pop | 0.63$^{***}$ | 0.25$^{**}$ | 0.41$^{***}$ | 0.19$^{***}$ |
| | (0.13) | (0.08) | (0.07) | (0.04) |
| gdpcap | 9.50$^{***}$ | 5.01$^{***}$ | 5.24$^{***}$ | 3.13$^{***}$ |
| | (2.47) | (1.40) | (1.35) | (0.80) |
| landlocked | −14.26$^{\cdot}$ | −4.16 | −6.80 | −3.42 |
| | (7.96) | (4.51) | (4.35) | (2.58) |
| patience | 15.82 | 7.37 | 8.72 | 3.67 |
| | (12.58) | (7.13) | (6.87) | (4.07) |
| risktaking | −20.99$^{\cdot}$ | 0.51 | −6.33 | −1.37 |
| | (10.65) | (6.03) | (5.83) | (3.46) |
| posrecip | 8.45 | −3.10 | 2.48 | −1.05 |
| | (12.76) | (7.23) | (7.01) | (4.16) |
| negrecip | 15.41 | 1.44 | 5.74 | 4.26 |
| | (10.55) | (5.97) | (5.82) | (3.45) |
| altruism | −11.72 | −1.06 | −4.00 | −0.04 |
| | (12.00) | (6.80) | (6.61) | (3.92) |
| trust | 5.90 | 0.48 | 0.21 | 0.01 |
| | (10.81) | (6.12) | (5.89) | (3.49) |
| $R^2$ | 0.70 | 0.59 | 0.69 | 0.66 |
| Adj. $R^2$ | 0.65 | 0.52 | 0.64 | 0.60 |
| Num. obs. | 72 | 72 | 72 | 72 |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 28: OLS regression of average commodities traded by one nation with its partners on unilateral controls and preferences. The specifications are designed equivalent to those of subsection 4.3 Impact on Average Barriers. Columns (1) and (2) show country characteristics for differentiated goods and (3) and (4) for non-differentiated goods. Exporter results are displayed first in each case.

## Average Trading Partners

| | Second Stage | | | |
|---|---|---|---|---|
| | Differentiated Goods | | Non-Differentiated Goods | |
| | Exporter | Importer | Exporter | Importer |
| | (1) | (2) | (3) | (4) |
| (Intercept) | $36.56^{*}$ | $33.18^{***}$ | 16.19 | $19.77^{**}$ |
| | (16.54) | (9.36) | (10.45) | (6.20) |
| avg.char | 5.51 | $4.13^{\cdot}$ | 1.70 | $2.02^{*}$ |
| | (3.80) | (2.15) | (1.53) | (0.91) |
| pop | $0.19^{***}$ | $0.07^{**}$ | $0.12^{***}$ | $0.06^{***}$ |
| | (0.04) | (0.02) | (0.02) | (0.01) |
| gdpcap | $2.85^{***}$ | $1.50^{***}$ | $1.57^{***}$ | $0.94^{***}$ |
| | (0.74) | (0.42) | (0.40) | (0.24) |
| landlocked | $-4.28^{\cdot}$ | −1.25 | −2.04 | −1.03 |
| | (2.39) | (1.35) | (1.31) | (0.77) |
| patience | 4.75 | 2.21 | 2.62 | 1.10 |
| | (3.77) | (2.14) | (2.06) | (1.22) |
| risktaking | $-6.30^{\cdot}$ | 0.15 | −1.90 | −0.41 |
| | (3.19) | (1.81) | (1.75) | (1.04) |
| posrecip | 2.53 | −0.93 | 0.74 | −0.32 |
| | (3.83) | (2.17) | (2.10) | (1.25) |
| negrecip | 4.62 | 0.43 | 1.72 | 1.28 |
| | (3.16) | (1.79) | (1.75) | (1.04) |
| altruism | −3.52 | −0.32 | −1.20 | −0.01 |
| | (3.60) | (2.04) | (1.98) | (1.18) |
| trust | 1.77 | 0.14 | 0.06 | 0.00 |
| | (3.24) | (1.84) | (1.77) | (1.05) |
| $R^2$ | 0.70 | 0.59 | 0.69 | 0.66 |
| Adj. $R^2$ | 0.65 | 0.52 | 0.64 | 0.60 |
| Num. obs. | 72 | 72 | 72 | 72 |

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 29: OLS regression of average nations traded with by one nation on unilateral controls and preferences. The specifications are designed equivalent to those of subsection 4.3 Impact on Average Barriers. Columns (1) and (2) show country characteristics for differentiated goods and (3) and (4) for non-differentiated goods. Exporter results are displayed first in each case.

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ISSN 2190-9938 (online)
ISBN 978-3-86304-320-9