Journal of Korea Trade Vol. 23, No. 7, November 2019, 13-33
https://doi.org/10.35611/jkt.2019.23.7.13
ISSN 1229-828X

Does National Distance Affect Different Industries in Different Ways? A Test of the Ghemawat CAGE Model

JKT 23(7)

Received 6 August 2019
Revised 12 September 2019
Accepted 15 November 2019

Hak Cho Kim
College of Business Administration, Kangwon National University, South Korea

Jong-Wook Kwon
College of Business Administration, Kangwon National University, South Korea

Zhibin Zhou
School of International Economics and Trade, Jiangxi University of Finance and Economics, China

Ji Hyun Heo†
School of Business, Ludong University, China

Abstract

Purpose – This study empirically investigated whether national distances (Cultural, Administrative, Geographic and Economic distance) have different effects on industries in different ways.

Design/methodology – The empirical model utilized industry level export trade data to examine the differentiated effects of each national distance. By using direct measurement and covering 75 countries, this paper analyzes the effect of distances in different industries. More specifically, this study classified the industries into a more-sensitive/less-sensitive scale.

Findings – The empirical results showed the complicated impacts of national distances on trade. Trade in industries that are more sensitive to cultural and administrative distances was not decreased as greatly as trade in industries that are less sensitive to cultural and administrative distances. Also, industries that are more sensitive to geographic distance showed a stronger negative impact on trade than less sensitive industries. Lastly, economic distance decreased trade for industries that are more sensitive to economic distance, while economic distance did not significantly increase trade for industries that are less sensitive to economic distance.

Originality/value – As the first study to empirically find out whether national distance has different effects on industries, this study updated the measurements of national distance.

Keywords: CAGE Model, Cultural Distance, Export Trade, Industry Sensitivity, National Distance
JEL Classifications: M16, F14, F23

1. Introduction

National distance is one of the most widely studied research topics in international business (IB) and other research fields (Popli et al., 2016). We found 11,344 national distance-related papers published on the Web of Science (WoS), showing the popularity of national distance studies. We also found 228 national distance-related research papers in international business fields from seventeen IB journals, including the Journal of International Business Studies, International Business Review, and Journal of World Business. While the number of national distance-related papers in IB journals was not greater than the number on entry mode and

†**Corresponding author:** heo.jihyun@hotmail.com

foreign direct investment, the most popular research topics in IB, the number of national distance-related papers (11,344 papers) in all journals from the WoS database was greater than the number on entry mode (5,691 papers) and foreign direct investment (10,764papers) as of May 20, 2017.

There were various means to measure national distance, including cultural, geographic, administrative, and economic distance. Some studies used only one dimension, such as geographic distance or cultural distance, in their analysis. Others used several dimensions, such as the four dimensions of Ghemawat (2001), or the nine dimensions by Berry, Guillén and Zhou (2010), including economic, financial, political, administrative, cultural, demographic, knowledge, global connectedness, and geographic distance. Regardless of the type of national distance measurement used, most studies found that distance had a negative association with trade. Trade decreases with distance because doing business in foreign markets encounters greater costs and risks from barriers created by distance, and national distance can make foreign markets considerably more or less attractive.

However, most studies assumed that national distance decreased trade to the same degree for all industries, despite the possibility that national distance may affect different industries in various ways (Ghemawat, 2001). For example, Dow and Karunaratna (2006) measured geographic distance in kilometers and tested how geography affected trade. The results showed that geographic distance led to a more than 0.4% decrease in the machinery trade. However, lightweight products such as watches will be expected to decrease less with geographic distance. In addition, Frankel and Rose (2002) estimated that the amount of trade between countries 5,000 miles apart would be only 20% of the amount that would be expected for trade between countries 1,000 miles apart. However, not every product will decrease by the same degree in terms of trade quantity. For example, heavy or bulky products, such as cement and steel, are greatly influenced by geographic distance because of the high cost of transportation and communication. Similarly, fragile or perishable products are also significantly influenced by geographic distance due to increased transportation costs. Conversely, industries such as coffee, tea, cocoa, leather, fur, gold, and non-monetary industries are not significantly influenced by geographic distance (Ghemawat, 2001).

Most previous studies failed to take into account the particular characteristic that national distance decreases trade by different means, although Ghemawat (2001) suggested that the negative effect of national distance on trade could differ across industries. Despite the importance of his argument, he did not test the differentiated effect of national distance on trade. Thus, we empirically test whether national distance affects different industries in various ways. We extended Ghemawat's (2001) study in two respects.

First, to the best of our knowledge, this study is the first to empirically test whether national distance affects different industries in different ways. Ghemawat (2001) contended that national distance affects different industries in various ways. However, we could find no officially published papers from the WoS database. Second, we updated the measurement of CAGE distance because the national distance measurements were carried out differently across previous studies. We carefully reviewed the previous studies on CAGE distance measurement to develop an updated measurement methodology for CAGE distance.

2. Literature Review and Hypotheses

The widespread use and rapid adoption of national distance in many research fields are understandable, given that national distance explains various international business activities, including international entry mode choice (Brouthers, 2002; Chang Yi-Chieh et al., 2012; Dow and Larimo, 2009; Kogut and Singh, 1988; Quer, Claver and Rienda, 2007; Tihanyi,

Griffith and Russell, 2005), international diversification (Tihanyi, Griffith and Russell, 2005), performance (Tihanyi, Griffith and Russell, 2005), international merger and acquisition (Morosini, Shane and Singh, 1998; Ragozzino and Reuer, 2011; Weber, Tarba and Reichel, 2009), and international trade (Zaheer, Schomaker and Nachum, 2012). Although national distance was used to explain various international business activities including mergers and acquisitions, performance, entry modes, and diversification in addition to trade, we primarily reviewed previous studies focusing on research on the relation of national distance to trade to achieve our purpose. The best-established empirical result of previous research on national distance is that distance decreases trade. However, previous literature did not emphasize the various effects of national distance. Researchers took language commonality and colonial links as cultural proximities (Head and Mayer, 2013). Prior studies took national distance as a width scope of transaction cost (Tadesse and White, 2010b). Following Deardoff (2004) and Tadesse and White (2010b), the existing measurements of distance are not able to explain the effects of transaction cost on cross-border trade.

Researchers measured and used national distance in various ways. Certain researchers used only one dimension, such as geographic distance or cultural distance. Conversely, Ghemawat (2001) used four forms of national distance, namely cultural, administrative, geographic, and economic distance. Berry, Guillén and Zhou (2010) developed nine dimensions, including the following: economic, financial, political, administrative, cultural, demographic, knowledge, global connectedness, and geographic. Dow and Karunaratna (2006) used seven dimensions, namely the following: geographic, language, education, industrial development, democracy, religion, and cultural distance. Scholars choose specific measurements depending on research purposes. Also, Ghemawat (2001) did not clearly explain how to measure the CAGE distance. This fact could generate a serious problem, given that the use of different distance measurements could lead to different results. For example, Ghemawat (2001) used four items to measure cultural distance, namely language, ethnicity, religion, and social norms. However, Cuypers, Ertug and Hennart (2015) showed that the effects of linguistic distance and cultural distance, based on values, on international activities were not the same. Regardless of the methods of measurement that the scholars used, most previous national distance-related studies consistently show that distance decreases trade flows (Beckerman, 1956; Slangen, Beugelsdijk and Hennart, 2011). Trade decreases with distance because doing business in foreign markets engenders greater costs and risks from barriers created by distance. National distance can make foreign markets considerably more or less attractive and give rise to obstacles or barriers to smooth trade flows between trading partners.

Despite this difference from previous studies in showing a clear relation of national distance to trade (Tadesse and White, 2010b; Zaheer, Schomaker and Nachum, 2012), certain limitations were found. Notably, a consensus has not yet emerged among national distances in previous studies. Such discordance cannot easily explain the reason. However, it can be explained by prior literature with different means, time periods, and country selection (Tadesse and White, 2010b). Additionally, most studies assumed that national distance decreased trade to the same degree for all industries. However, there is a possibility that national distance affects different industries in various ways (Ghemawat, 2001).

Based on these arguments, we set forth hypotheses below.

2.1. Hypotheses

While certain cultural characteristics such as language can be easily recognized and understood, social norms are deeply rooted in the principles of a personal guide for everyday choices and interactions. For example, unconventional behavior in China was not seriously considered for a long time due to the applicable social norms. Color sense is also closely

related to cultural prejudice. The meaning of "red" is beauty for Russians (Ghemawat, 2001). Consumers in the beauty industry are particularly sensitive to differences in consumer preferences. Due to social norms, the Japanese prefer small household appliances and automobiles. Similarly, the food industry is expected to be particularly sensitive to religious attributes. For example, Hindus do not eat beef because eating beef is forbidden by their religion. Cultural distance can be defined as the share of values and social norms between countries (Beugelsdijk et al., 2004). Cultural differences increase trade costs and give rise to a host country's uncertainty (Makino and Tsang, 2011). Cultural distance becomes a cost that hinders bilateral trade. Moreover, cultural distance increases the costs of firms due to managerial practices between countries (Beugelsdijk et al., 2004; Kogut and Singh, 1988). Therefore, MNCs are less motivated to export to culturally remote countries. Cultural distance has a negative impact on bilateral trade flows (Boisso and Ferrantino, 1997; Linders et al., 2005; Tadesse and white, 2010a/2010b). Based on these considerations, the following hypotheses are established.

H1: Industries that are more sensitive to cultural distance will show a greater negative impact on trade than less sensitive industries.

Administrative distance has a strong influence on international trade (Ghemawat, 2001; Makino and Tsang, 2011). As noted by Campbell, Eden and Miller (2012), administrative distance covers various types of distance, including political, regulatory, and institutional, between countries. Administrative distance is often captured by historical ties (Makino and Tsang, 2011), local rule and regulation differences (Ghemawat, 2001; Guler and Guillén, 2010), colonial ties, language, and religion (Berry, Guillén and Zhou, 2010; Guler and Guillén, 2010). Administrative procedures thicken national borders and raise business costs (Wilson, 2007). Therefore, increasing the distance between countries may lead to a burden for international companies in ensuring compliance with the administrative process. If the cost of the administrative process or regulation in the host country is higher than in the home country, the exporter will be reluctant to trade. Thus, certain industries that are strongly involved with government regulation, such as the aerospace industry, will be sensitive to administrative distance. Based on these supporting arguments, the following hypothesis was developed.

H2: Industries that are more sensitive to administrative distance will show a greater negative impact on trade than less sensitive industries.

Previous studies have proved geographic distance to be a barrier to international trade (Anderson and Van Wincoop, 2003; Disdier and Head, 2008; Frankel and Rose, 2002; Hummels, 1999; Leamer, 1974; Limao and Venables, 2001). Also, physical distance is used as the most powerful proxy of trade cost between countries (Borchert and Yotov, 2017; Disdier and Head, 2008; Magerman, Studnicka and Van Hove, 2016). Such results vary based on different time periods and countries. Although literature suggests that regional barriers decrease due to global connectivity (Magerman, Studnicka and Van Hove, 2016), geographical distance is regarded as a proxy to transportation expenses. In addition, the transportation cost in heavy industries will increase with distance. Similarly, fragile products or perishable goods will be sensitive to geographic distance. The geographic distance leads to an increase in transport costs in sending goods to a long-distance market, and the depreciated cost of goods during transportation affects trade. The following hypothesis is set around this theoretical background.

H3: Industries that are more sensitive to geographic distance will show a greater negative impact on trade than less sensitive industries.

Economic distance is the equivalence to development difference between countries (Tsang and Yip, 2007). The effects of economic distance between trading partners vary depending on the degree of resistance and acceptance of cross-border trade (Arslan, Tarba and Larimo, 2015; Berry, Guillén and Zhou, 2010; Boisso and Ferrantino, 1997). Thus, cross-border economic activities related to a partners' economic size are more sensitive to national distance. Ghemawat (2001) categorized industries into more sensitive and less sensitive to economic distance. Economic distance was expected to decrease trade in industries that are more sensitive to economic distance. At the same time, economic distance was expected to increase trade in industries that are less sensitive to economic distance. Based on these discussions, we developed the following hypothesis.

H4: Economic distance will decrease trade in industries that are more sensitive to economic distance, while economic distance will increase trade in industries that are less sensitive to economic distance.

3. Method

When we attempt to empirically test Ghemawat's (2001) suggestion of the industry sensitivity to distance, we encounter two problems in terms of methodology: CAGE distance measurement and industry selection. Because Ghemawat (2001) did not clearly explain how to measure the CAGE distance, we carefully reviewed previous studies on CAGE distance measurement. This aspect is important because previous studies showed that different distance measurement methods could produce different results. For example, Ghemawat (2001) explained that cultural distance could be measured by language, ethnicity, religion, and social norms. However, we can use cultural distance with an aggregated index of languages, ethnicities, religions, and social norms, or use a selection of each. Many previous papers focused on these measurements.

Cuypers, Ertug and Hennart (2015) showed that the effects of linguistic distance and cultural distance based on values on international activities were different. Dow and Karunaratna (2006) also showed that the effects of social value distance (coefficient = 0.195), linguistic distance (coefficient = −0.188), and religious distance (coefficient = −0.309) on exports were not the same. Thus, it may not be reasonable to compile a cultural distance index by including languages, ethnicities, religions, and social norms. For example, the food industry is sensitive to regional distance for Hindus because they are forbidden to eat beef by their religion. However, it is not clear whether the food industry is particularly sensitive to linguistic distance. All six sub-indices are used for measuring the cultural distance developed via the Kogut and Singh (1988) method in accordance with the previous literature (Campbell, Eden and Miller, 2012).

In addition, this measurement problem also influences industry selection. Products such as televisions that have high linguistic content belong to an industry that is more sensitive to cultural distance in terms of linguistic distance, while they do not belong to an industry that is more sensitive to cultural distance in terms of religious distance. Moreover, most previous studies on cultural distance used the Kogut and Singh (1988) method based on cultural values. Thus, one particular industry can be categorized into either more sensitive to cultural distance or less sensitive to cultural distance depending on the method of measurement of cultural

distance. To avoid this confusion, we acted in strict accordance with the industry classification of the Ghemawat (2001) study by dividing industries into areas that are more sensitive and less sensitive, respectively, to distance.

Table 1. List of Industries

	Cultural Distance	Administrative Distance	Geographic Distance	Economic Distance
More Sensitive	Meat and meat preparations (# 1)	Gold, nonmonetary (# 97)	Electricity current (# 35)	Nonferrous metals (# 68)
	Cereals and cereal preparations (# 4)	Electricity current (# 35)	Gas, natural and manufactured (# 34)	Manufactured fertilizers (# 56)
	Miscellaneous edible products and preparations (# 9)	Coffee, tea, cocoa, spices (# 7)	Paper, paperboard (# 64)	Meat and meat preparations (# 1)
	Tobacco and tobacco products (# 12)	Textile fibers (# 26)	Live animals (# 0)	Iron and steel (# 67)
	Office machines and automatic data-processing equipment (#75)	Sugar, sugar preparations, and honey (# 6)	Sugar, sugar preparations, and honey (# 6)	Pulp and waste paper (# 25)
Less Sensitive	Photographic apparatuses, optical goods, watches (# 88)	Gas, natural and manufactured (# 34)	Pulp and waste paper (# 25)	Coffee, tea, cocoa, spices (# 7)
	Road vehicles (# 78)	Travel goods, handbags (# 83)	Photographic apparatuses, optical goods, watches (# 88)	Animal oils and fats (# 41)
	Cork and wood (# 24)	Footwear (# 85)	Telecommunications and sound-recording apparatuses (# 76)	Office-machines and automatic data-processing equipment (# 75)
	Metalworking machinery (# 73)	Sanitary, plumbing, heating, and lighting fixtures (# 81)	Coffee, tea, cocoa, spices (# 7)	Power-generating machinery and equipment (# 71)
	Electricity current (# 35)	Furniture and furniture parts (# 82)	Gold, nonmonetary (# 97)	Photographic apparatuses, optical goods, watches (# 88)

Note: SITC designations are in parenthesis.

3.1. Data

We used a database compiled from different sources, including UN Comtrade Data from WITS, Hofstede's Cultural Index, World Governance Indicator, Centre d'Etudes Prospectives et d'Informations Internationales, World Development Indicators, CIA Factbook, and the World Trade Organization. Table 2 shows the full list of variable definitions and sources. To generate balanced panel data, the period of 1996 to 2015 is used to fit data availability. Therefore, each distance (cultural, administrative, geographic, and economic) has 10 industries (five more sensitive and five less sensitive industries to distance) to compare effects of industry sensitivity for 75 countries (see Appendix Table A - Country List).

Table 2. Variable Definitions and Sources

Variable	Definition	Source
$lnEx_{ijt}$	Log of export volume from exporter country to importer country, by time t (1996 – 2015)	UNcomtrade data from WITS (World Integrated Trade Solution)
CD_{ij}	$\sum_{i=1}^{6}\left\{\left(I_{ij}-I_{iu}\right)^2/V_i\right\}/6$	Hofstede's cultural index, Kogut and Singh (1988), Author's calculation
AD_{ij}	$\sum_{i=1}^{6}\left\{\left(I_{ij}-I_{iu}\right)^2/V_i\right\}/6$	WGI (World Governance Indicator), Kogut and Singh (1988)
GD_{ij}	Geographic distances based on capital cities of exporter and importer countries	Cepii (entre d'Etudes Prospectives et d'Informations Internationales)
ED_{ijt}	$\left\lvert(GDPpc_{it})-(GDPpc_{jt})\right\rvert$ Constant 2010 price, 1,000 USD	WDI (World Development Indicator)
$Language_{ij}$	1 if both countries use common language, 0 otherwise	Cepii (Centre d'Etudes Prospectives et d'Informations Internationales)
$Religion_j$	1 if 30% or greater proportion of Muslims in total population, 0 otherwise	CIA Factbook
$GATT/WTO_j$	1 if host country is member of GATT/WTO, 0 otherwise	WTO (World Trade Organization)

3.2. Variables

3.2.1. Dependent Variable

Exports. We measured bilateral export data as a dependent variable, where $lnEx_{ijt}$ is the log of the export trade volume from exporter country i to importer country j at time t in each industry. The bilateral industry-level export data are expressed in 1,000 USD. We argue that industry-level export data are more suitable to show industry sensitivity based on CAGE hypotheses than the data used in the previous literature. We built the bilateral export data set based on the two-digit SITC (Standard International Trade Classification) level. To generate balanced panel data, the period of 1996 to 2015 fits data availability. Finally, five more sensitive and five less sensitive industries to each distance category were compared to determine whether more industries that are more sensitive to each distance category are more greatly negatively affected by distance.

In order to estimate our main objective, we include various distance variables and other control variables in our analysis. The empirical equation model to test the hypotheses is as follows:

$$lnEx_{ijt} = \beta_0 + \beta_1 CD_{ij} + \beta_2 AD_{ij} + \beta_3 GD_{ij} + \beta_4 ED_{ijt} + \beta_5 Language_{ij} + \beta_6 Religion_j + \beta_7 GATT/WTO_j + \gamma_i + \gamma_j + \delta_t + \varepsilon_{ijt} \quad (1)$$

3.2.2. Explanatory Variable

a) Cultural distance

We measured the cultural distance between exporter and partner countries based on Hofstede's six dimensions[1]. However, since our paper uses bilateral export data, we also need to apply bilateral cultural distance. Therefore, our cultural distance was measured using the well-known Kogut and Singh (1988) method. The formula was expressed as follows:

$$\sum_{i=1}^{6}\left\{\left(I_{ij}-I_{iu}\right)^{2}/V_{i}\right\}/6$$

where i represents each cultural dimension by Hofstede, while j and u represent exporter and partner countries, respectively. V_i represents the variance of each cultural dimension. In practical terms, j and u represent exporter and importer countries, respectively. We assume that culture has constant characteristics over time. We expect cultural distance to have a negative coefficient sign.

b) Administrative Distance

We measured the administrative distance between exporters and importers over time. There was no consensus on how to measure administrative distance. After reviewing previous research on administrative distance measurement (Berry, Guillén and Zhou, 2010; Campbell, Eden and Miller, 2012), we used World Governance Indicator (WGI) data[2]. All six sub-indices are used for measuring administrative distance as developed by Kogut and Singh (1988)(Campbell, Eden and Miller, 2012). Therefore, we also estimate administrative distance using the same method as cultural distance. We expect that a large administrative distance between an exporter and its partner countries will deter trade flows.

c) Geographic Distance

Geographic distance was measured using the distance between exporter and importer countries. This variable was calculated using the distance from the exporter country's capital city to the importer country's capital city (Campbell, Eden and Miller, 2012; Clark and Pugh, 2001; de Jong et al., 2015; Salomon and Wu, 2012). This variable and the results are reported based on the natural logarithm. Since geographic distance is related to transportation cost, we assume that the larger the distance, the higher will be the transportation costs. Therefore, a closer geographic distance between trading partners leads to easier trade flows (Ghemawat, 2001; Frankel and Rose, 2002).

d) Economic Distance

We measured economic distance by the absolute value of the difference in per capita GDP between exporter and importer countries (Beugelsdijk, Nell and Ambos, 2017; Ghemawat, 2001; Håkanson and Ambos, 2010; Makino and Tsang, 2011; Siegel, Licht and Schwartz, 2011;

---

[1] Hofstede's six cultural dimensions are (1) Power distance, (2) Individualism, (3) Masculinity, (4) Uncertainty Avoidance, (5) Long Term Orientation, and (6) Indulgence. Explanation and availability of each dimension can be found at his website (https://geert-hofstede.com/national-culture.html).

[2] We used six governance indicators to build our administrative distance variable. The sub-indices of WGI are (1) Control of Corruption, (2) Government Effectiveness, (3) Political Stability, (4) Regulatory Quality, (5) Rule of Law, and (6) Voice and Accountability. Since WGI omitted data for 3 years, we interpolated omitted data for the analysis. More detailed information and methodology can be found at the World Governance Indicator website (http://info.worldbank.org/governance/wgi/#home).

Tsang and Yip, 2007). Generally, export flows are activated more when the exporter and the importer country's economic distance is small (Ghemawat, 2001).

e) Language

Additionally, we controlled our analysis by including certain variables that are considered to have a huge impact on trade flows. It is well known that language is one of the important factors used to estimate international transactions and is known as a trade barrier in the gravity equation. Furthermore, a wide range of previous literature noted that a common language (or linguistic ties) between trading partners increased the trade volume (Egger and Lassmann, 2012). $Language_{ij}$ represents a common language between exporter and importer countries.

f) Religion

$Religion_j$ represents a host country's proportions of Muslims in the total population. Certain religions demand specific products or specific ways of processing products (i.e., Islam and Hinduism). Both linguistic ties and the proportion of the specific religion in the total population affect not only trade but also national distance (Cui Long et al., 2017; Hofstede, 1980; Kirkman, Lowe and Gibson, 2006; Tang and Koveos, 2008).

g) GATT/WTO

$GATT/WTO_j$ represents membership in GATT (General Agreement on Tariffs and Trade) and the WTO (World Trade Organization). Both GATT and the WTO enable easy access to foreign markets between member countries; we choose this variable to control whether our sample is affected by general multilateral agreements.

3.3. Statistical Analysis

In our analysis, γ_i, γ_j, and δ_t are the fixed effects of the exporter, partner, and time, respectively. The analysis begins with Ordinary Least Squares (OLS) with fixed effects by exporter, partner, and time. Therefore, we apply exporter and importer fixed effects to address multilateral resistance, as suggested by Anderson and Van Wincoop (2003). This approach will help us stimulate the gravity type of trade analysis in log-linear form (Head and Mayer, 2013), particularly when unobserved time-invariant factors as well as heterogeneity exist in the data due to multilateral resistance (Baier, Bergstrand and Feng, 2014; Suvankulov, 2016). Finally, the time fixed effect will capture the unobservable time-varying effect through periods.

Since our panel data are available for 20 years (from 1996 to 2015), our analysis allows for longer-term effects, but is subject to bias while using the standard OLS estimator. We included exporter and importer fixed effects for controlling characteristics that may have an effect on trade (Borchert and Yotov, 2017). One of the problems of cross-country analysis is the country selection problem. To avoid this problem, we choose sample countries based on the availability of Hofstede's six cultural dimensions. Therefore, 75 countries' bilateral industry level export data were used for our analysis ($75 \times 74 \times 20$). Another problem in international trade studies is zero trade. Previous papers noted that large numbers of international trade events are counted as zero, but did not consider the relevant analysis. For instance, Helpman, Melitz and Rubinstein (2008) found that half of their dataset included zero trade. When we used a conventional log-linear model to analyze the effects of trade flows, this became problematic when using logarithms. That is, using the log of trade value omits observations from the sample. This zero-trade issue is important in empirical estimation because the omission of observations leads to a reduction of information in the data. This

issue leads to erroneous results from an estimation (Helpman, Melitz and Rubinstein, 2008). To avoid this problem, we use the Poisson Pseudo Maximum Likelihood (PPML) estimator as an alternative method (Martin and Pham, 2007; Santos, Silva and Tenreyro, 2006). This method allows us to use a non-log form of the dependent variable in the model, whereas other explanatory variables remain in log forms. Specifically, the PPML estimator also has another advantage in that it provides a better approach when heteroscedasticity exists. Therefore, we use the Poisson Pseudo Maximum Likelihood (PPML) estimator to check the robustness of our analysis.

4. Result

The summary statistics and correlation matrix are presented in Table 3.

Table 3. Correlation Matrix (Total observations: 1,277,941)

	Mean	Std. Dev.	Min	Max	1	2	3	4	5	6	7	8
$lnEx_{ijt}$	6.274	3.510	-6.908	18.238	1							
CD	2.000	1.172	0.030	7.160	-0.062	1						
AD	2.024	2.099	0.002	14.098	-0.115	0.403	1					
GD	8.507	0.951	4.088	9.892	-0.206	0.198	0.191	1				
ED	21.924	20.371	0.000	109.627	-0.062	0.350	0.563	0.040	1			
Language	0.083	0.275	0.000	1.000	0.054	-0.187	-0.018	-0.006	-0.052	1		
Religion	0.200	0.400	0.000	1.000	-0.065	-0.061	0.176	0.045	-0.038	-0.010	1	
GATT/ WTO	0.896	0.305	0.000	1.000	0.038	0.014	-0.155	0.085	0.046	0.064	-0.223	1

Note: A total of 28 industries were used for the correlation test.

The analyses are not subject to multicollinearity, although certain variables show correlations. Since multicollinearity may mislead the results, we utilized the variance inflation factor (VIF). The result has shown an appropriate level that was not over 2 for all models. Therefore, multicollinearity may not be problematic in this analysis.

The empirical results are reported in three parts. In the first part, each industry is aggregated into either a more sensitive or a less sensitive industry group, respectively. Then, a regression analysis was performed on trade between all possible pairs of countries on each dimension of distance to estimate industry sensitivity to distance with the OLS estimator with fixed effects. We also compared these results with the results from the previous studies. An additional test was performed to determine how strongly industry sensitivity to distance was supported. The negative effect in the more sensitive industry groups is expected to be greater than that in the less sensitive industry groups. If the negative effect in the less sensitive industry groups were greater than that in the more sensitive industry groups, we would argue that Ghemawat's (2001) suggestion of industry sensitivity to distance is not strongly supported. Finally, we estimate Equation (1) using the PPML estimator to obtain robust results.

Table 4 presents the regression results, and all columns show appropriate model fitness by R-squared[3]. According to Hypothesis 1, industries that are sensitive to cultural distance were

[3] According to basic estimation analysis by general OLS, it is hard to compare the coefficients for results where each group is visible with relatively small differences. We could not confirm that the results support Ghemawat's assumption. Therefore, we do not present basic conventional OLS estimator results here.

expected to show a greater negative impact on trade than the less sensitive industries. We compared the beta coefficient of the more sensitive industries with that of the less sensitive industries. Contrary to Hypothesis 1, Columns 1 and 2 reveal that the less sensitive group (coefficient = −.102) shows a stronger negative impact on trade than the more sensitive group (coefficient = −.081). Thus, Hypothesis 1 was not supported. Similarly, we expected that industries that are more sensitive to administrative distance would show a greater negative impact on trade than the less sensitive industries. Surprisingly, however, the less sensitive industry group (coefficient = −.066) shows a stronger negative impact on trade than the more sensitive group (coefficient = −.019). Thus, Hypothesis 2 was not supported. As predicted in Hypothesis 3, industries sensitive to geographic distance showed a stronger negative impact on trade than the less sensitive industries. Thus, Hypothesis 3 was supported. The results from this study confirmed the results reported in the previous literature findings that geographic distance has a strong and constant negative effect on trade (Chetty, 1999; Clark and Pugh, 2001; Dow, 2000; Luostarinen, 1979; Ojala and Tyrväinen, 2007; Srivastava and Green, 1986). Finally, the results in Columns 7 and 8 reveal that the more sensitive group shows a significant negative impact on trade. In contrast, the less sensitive group shows no significant impact on trade with the more sensitive group. This result partially supports Hypothesis 4 in that economic distance decreases trade in more sensitive industries, while it increases trade in less sensitive industries.

As expected, language and GATT/WTO as control variables have a positive significant impact on trade. These results are consistent with those of the previous literature in that a common language decreases the distance between trading countries (Klitmøller and Lauring, 2013; López-Duarte and Vidal-Suárez, 2010) and multilateral agreements increase trade volume between countries (Ghemawat, 2001). Table 5 shows an additional regression test to determine how strongly industry sensitivity to distance was supported. Ghemawat (2001) suggested that the negative effect in the more sensitive industry groups was expected to be greater than that in the less sensitive industry groups. Thus, if the negative effect in the less sensitive industry groups were greater than that in the more sensitive industry groups, we would argue that Ghemawat's (2001) suggestion of industry sensitivity to distance is not strongly supported. In terms of cultural distance, tobacco and tobacco products (# 12) in the more sensitive to cultural distance category show a greater significant negative effect on trade than cork and wood (# 24) in the less sensitive to cultural distance category. Similarly, cereals and cereal preparations (# 4) in the more sensitive to cultural distance category were expected to show a greater significant negative effect on trade than metalworking machinery (# 73) in the less sensitive to cultural distance category. However, metalworking machinery in the less sensitive to cultural distance category shows a greater significant negative effect on trade than cereals and cereal preparations in the more sensitive to cultural distance category. Similarly, regarding administrative distance, coffee, tea, cocoa, and spices (# 7) in the more sensitive to distance category were expected to show a greater significant negative effect on trade than sanitary, plumbing, heating, and lighting fixtures (# 81) in the less sensitive to distance category.

However, sanitary, plumbing, heating, and lighting fixtures (# 81) are less sensitive to distance; this category shows a greater significant negative effect on trade than coffee, tea, cocoa, and spices (# 7), which are more sensitive to cultural distance.

Regarding geographic distance, we found one exceptional industry pair that could not support Ghemawat's (2001) suggestion of industry sensitivity to distance. Thus, live animals (# 0) in the more sensitive to distance category were expected to show a greater significant negative effect on trade than nonmonetary gold (# 97) in the less sensitive to distance category. However, both of these industries showed no significant differences.

Table 4. Analysis of CAGE Model with Fixed Effects

	Cultural Distance		Administrative Distance		Geographic Distance		Economic Distance	
	More	**Less**	**More**	**Less**	**More**	**Less**	**More**	**Less**
CD	**-0.081** ***	**-0.102** ***	-0.095 ***	-0.106 ***	-0.074 ***	-0.028 ***	-0.021 **	-0.080 ***
	(0.007)	**(0.007)**	(0.008)	(0.006)	(0.009)	(0.008)	(0.008)	(0.007)
AD	-0.056 ***	-0.097 ***	**-0.019** ***	**-0.066** ***	-0.020 ***	-0.013 **	-0.092 ***	-0.031 ***
	(0.005)	(0.005)	**(0.006)**	**(0.004)**	(0.007)	(0.006)	(0.006)	(0.005)
GD	-1.418 ***	-1.381 ***	-1.469 ***	-1.453 ***	**-1.601** ***	**-1.170** ***	-1.348 ***	-1.210 ***
	(0.008)	(0.008)	(0.009)	(0.007)	**(0.010)**	**(0.009)**	(0.010)	(0.008)
ED	-0.003 ***	0.001 **	-0.004 ***	0.008 ***	-0.006 ***	-0.001 **	**-0.002** ***	**-0.001**
	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	**(0.001)**	**(0.001)**
Language	0.606 ***	0.611 ***	0.489 ***	0.622 ***	0.594 ***	0.492 ***	0.232 ***	0.419 ***
	(0.021)	(0.023)	(0.025)	(0.019)	(0.029)	(0.025)	(0.027)	(0.022)
Religion	0.823 ***	-0.199 **	-1.675 ***	-1.644 ***	0.700 ***	-0.111	-0.679 ***	-0.862 ***
	(0.089)	(0.093)	(0.111)	(0.080)	(0.125)	(0.111)	(0.116)	(0.088)
GATT/ WTO	0.215 ***	0.461 ***	0.147 ***	0.226 ***	0.097 *	0.342 ***	0.381 ***	0.274 ***
	(0.036)	(0.038)	(0.044)	(0.032)	(0.050)	(0.044)	(0.045)	(0.037)
Constant	9.547 ***	8.831 ***	12.309 ***	12.075 ***	11.025 ***	7.237 ***	10.894 ***	8.211 ***
	(0.151)	(0.148)	(0.156)	(0.122)	(0.205)	(0.168)	(0.182)	(0.143)
Obs.	255,230	216,017	177,938	218,607	166,338	213,571	212,463	252,855
R^2	0.401	0.473	0.381	0.529	0.340	0.352	0.291	0.428

Notes: 1. * p <0.1, ** p <0.05, *** p<0.01.
2. Dependent variable is $lnEX_{ijt}$.
3. Exporter, importer and time fixed effects are included in the analysis.

Table 5. Best and Worst Case for Hypothesis

	Cultural Distance		Administrative Distance		Geographic Distance		Economic Distance	
	More	**Less**	**More**	**Less**	**More**	**Less**	**More**	**Less**
Best case	Ind. #12	Ind. #24	Ind. #35	Ind. #83	Ind. #34	Ind. #25	Ind. #56	Ind. #71
CD	**-0.238** ***	**-0.037** ***	-0.125 **	-0.139 ***	-0.146 ***	-0.071 ***	0.014	-0.137 ***
	(0.017)	**(0.012)**	(0.061)	(0.010)	(0.032)	(0.020)	(0.019)	(0.010)
AD	0.008	-0.071 ***	**0.422** ***	**-0.037** ***	0.042	0.006	-0.052 ***	-0.108 ***
	(0.013)	(0.009)	**(0.061)**	**(0.007)**	(0.028)	(0.015)	(0.014)	(0.007)
GD	-1.311 ***	-1.687 ***	-1.797 ***	-1.391 ***	**-2.207** ***	**-1.420** ***	-1.782 ***	-1.477 ***
	(0.019)	(0.015)	(0.092)	(0.011)	**(0.037)**	**(0.023)**	(0.022)	(0.012)
ED	-0.001	0.003 ***	-0.050 ***	0.008 ***	-0.027 ***	-0.004 ***	**-0.007** ***	**0.009** ***
	(0.001)	(0.001)	(0.006)	(0.001)	(0.003)	(0.002)	**(0.001)**	**(0.001)**
Obs.	38,518	46,922	3,052	46,273	14,923	28,574	29,579	60,863
R^2	0.420	0.563	0.651	0.719	0.496	0.521	0.481	0.697
Worst case	Ind. #4	Ind. #73	Ind. #7	Ind. #81	Ind. #0	Ind. #97	Ind. #1	Ind. #41
CD	**-0.058** ***	**-0.127** ***	-0.048 ***	-0.073 ***	-0.150 ***	-0.051	-0.120 ***	-0.107 ***
	(0.012)	**(0.010)**	(0.011)	(0.009)	(0.016)	(0.034)	(0.015)	(0.020)
AD	-0.077 ***	-0.131 ***	**-0.026** ***	**-0.172** ***	0.045 ***	0.091 ***	-0.145 ***	0.191 ***
	(0.009)	(0.007)	**(0.008)**	**(0.007)**	(0.013)	(0.033)	(0.012)	(0.017)
GD	-1.877 ***	-1.367 ***	-1.616 ***	-1.718 ***	**-1.717** ***	**-1.662** ***	-1.633 ***	-1.220 ***
	(0.015)	(0.012)	(0.013)	(0.011)	**(0.018)**	**(0.037)**	(0.018)	(0.024)
ED	-0.011 ***	0.006 ***	-0.006 ***	0.007 ***	0.001	0.005 *	**0.008** ***	**-0.016** ***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	**(0.001)**	**(0.002)**
Obs.	57,228	52,458	57,040	51,740	34,256	14,036	40,594	21,588
R^2	0.558	0.689	0.596	0.698	0.572	0.433	0.563	0.379

Notes: 1. * p <0.1, ** p <0.05, *** p<0.01.
2. Dependent variable is $lnEX_{ijt}$.
3. Exporter, importer and time fixed effects are included in the analysis.
4. Other control variables are included in all empirical analysis, although they are not shown in the table.

Table 6. Robustness Check by PPML Estimator

	Cultural Distance		Administrative Distance		Geographic Distance		Economic Distance	
	More	**Less**	**More**	**Less**	**More**	**Less**	**More**	**Less**
CD	0.132	0.001	-0.180 **	-0.006	-0.156	0.037	-0.033	0.075
	(0.099)	(0.105)	(0.077)	(0.116)	(0.098)	(0.106)	(0.047)	(0.099)
AD	0.072	-0.100	-0.034	0.047	-0.057	0.060	0.021	0.045
	(0.064)	(0.066)	(0.051)	(0.052)	(0.072)	(0.078)	(0.037)	(0.065)
GD	-0.275 ***	-0.380 ***	-0.189 ***	-0.455 ***	-0.558 ***	-0.214 ***	-0.349 ***	-0.275 ***
	(0.067)	(0.076)	(0.066)	(0.084)	(0.046)	(0.061)	(0.045)	(0.065)
ED	-0.012 ***	-0.020 ***	0.010 **	-0.002	-0.008	-0.002	-0.013 ***	-0.009 **
	(0.004)	(0.006)	(0.005)	(0.006)	(0.008)	(0.004)	(0.004)	(0.004)
Language	0.943 ***	0.721 **	1.076 ***	0.818 **	0.972 ***	0.819 ***	0.570 **	0.858 ***
	(0.209)	(0.333)	(0.178)	(0.341)	(0.339)	(0.243)	(0.223)	(0.223)
Religion	-0.974 ***	-1.180 ***	-0.762 ***	-1.550 ***	-0.994 ***	-1.260 ***	-0.708 ***	-1.255 ***
	(0.184)	(0.198)	(0.150)	(0.255)	(0.197)	(0.217)	(0.135)	(0.214)
GATT/ WTO	1.162 ***	1.081 ***	0.792 ***	1.130 ***	0.892 ***	1.192 ***	0.954 ***	1.449 ***
	(0.175)	(0.209)	(0.204)	(0.292)	(0.206)	(0.184)	(0.161)	(0.178)
Constant	2.397 ***	4.671 ***	1.519 ***	3.427 ***	4.960 ***	2.110 ***	3.807 ***	2.469 ***
	(0.648)	(0.660)	(0.523)	(0.889)	(0.482)	(0.564)	(0.408)	(0.631)
Obs.	258,212	221,560	180,082	234,269	167,954	217,567	214,864	258,296
Log-likelihood	-3,365,479.51	-5,743,123.32	-1,159,789.70	-1,828,901.80	-1,348,400.88	-3,492,964.44	-2,518,136.69	-3,988,397.11

Notes: 1. * p <0.1, ** p <0.05, *** p<0.01.
2. Dependent variable is EX_{ijt}.

Additionally, we used the PPML estimator to check the robustness of our analysis in Table 6. The results in Table 6 support those of our OLS regression by rejecting Hypothesis 1 and Hypothesis 2, partially supporting Hypothesis 4, and supporting Hypothesis 3. Specifically, industries that are more sensitive to cultural distance showed no significant differences compared with those that are less sensitive to cultural distance. In terms of administrative distance, the results revealed the same patterns as cultural distance. However, as expected, industries more sensitive to geographic distance showed significant differences compared to those less sensitive to geographic distance. In terms of economic distance, as expected, economic distance decreased trade for industries that were more sensitive to economic distance. In contrast, economic distance did not significantly increase trade for industries that are less sensitive to economic distance.

5. Conclusion and Discussion

This study empirically tested the question of whether national distance affects different industries in various ways based on Ghemawat's (2001) CAGE distance framework. The results from this study can be summarized as follows. First, the negative impact of cultural distance on trade that is both more sensitive and less sensitive, respectively, to cultural distance showed no significant differences. In contrast, industries that are less sensitive to cultural distance show a stronger negative impact on trade than industries that are more sensitive to cultural distance. Second, the negative impact of administrative distance on trade for industries both more sensitive and less sensitive to cultural distance, respectively, did not show clear significant differences. Third, industries that are more sensitive to geographic distance showed a stronger negative impact on trade than the less sensitive industries. Fourth, economic distance decreased trade for industries that are more sensitive to economic distance, while economic distance did not significantly increase trade for industries that are less sensitive to economic distance.

The issue of industry sensitivity to distance involves very complex parameters. The results from this study show that national distance affects different industries in various ways, as Ghemawat (2001) suggested. However, this finding means that national distance affects different industries differently, depending on the particular way of assessing national distance. In terms of geographic distance, more sensitive industries to geographic distance showed a stronger negative impact on trade than less sensitive industries. Interestingly, the trade of industries that are more sensitive to cultural and administrative distance did not decrease more than that of industries that are less sensitive to cultural and administrative distance. Whereas economic distance decreased the trade of industries that are more sensitive to economic distance, economic distance did not significantly increase the trade of industries that are less sensitive to economic distance.

One possible explanation for this unexpected result is that the effect of cultural distance and administrative distance on trade is not simple. There is no consensus regarding the effect of cultural distance on trade (Tadesse and White, 2010b). For instance, some studies reported a positive relationship between cultural distance and trade (Linders et al., 2005), while others reported that greater cultural distance decreased trade (Boisso and Ferrantino, 1997; Tadesse and White, 2010b). Among these studies, there was no consensus regarding the effect of cultural distance on trade.

When we empirically tested industry sensitivity to distance, there was no consensus on CAGE distance measurement and industry selection. This lack of consensus on CAGE measurement may also cause mixed results. In addition, the selection of industry samples should be considered under reasonable standards. That is, each industry shows a different

effect due to distance, while various specific forms of defined distance exert different effects on particular industries.

On reviewing the previous research on national distance measurement, we found that there was no consensus on national distance measurement. Moreover, it was found that results from different measurement methodologies for distance were not the same. For example, Ghemawat (2001) suggested four items for measuring cultural distance, namely language, ethnicity, religion, and social norms. We reviewed 83 cultural-distance-related articles from the WoS database and found that one of the most popular measurement procedures for cultural distance was Kogut and Singh's (1988) method based on four Hofstede cultural dimensions, namely power distance, uncertainty avoidance, individualism, and masculinity. Then, GLOBE and Schwartz values were also used to measure cultural distance. In addition to such values, ethnicities, education, languages, and religions were also used. However, depending on the type of measurement any particular study used, the results could differ. For example, the effects of linguistic distance and cultural distance based on values and based on international activities were different (Cuypers, Ertug and Hennart, 2015; Dow and Karunaratna, 2006). Thus, it will be interesting to investigate which measurement procedure is best suited to explain industry sensitivity to distance in future studies.

Similarly, we could not find definitive determinants of industry sensitivity to distance; therefore, it was difficult to specify and categorize industry sensitivity to national distance. Thus, this measurement problem also influenced industry selection. To test industry sensitivity to distance with an extended range of industries, there is a need for more clearly defined criteria to categorize industry sensitivity to national distance. Products such as televisions, which have a high linguistic content, belong to a more sensitive industry to cultural distance in terms of linguistic distance, while they do not belong to a more sensitive industry to cultural distance in terms of regional distance. Therefore, in future research, the selection of industries that represent more or less sensitive industries for each form of national distance will be a great challenge in realizing accurate analysis. Furthermore, the choice of appropriate methods and measurement procedures should be conducted with the necessary care and diligence. The question of whether the negative impact of distance on bilateral trade increases or decreases over time, and why this occurs, also needs to be investigated. More sophisticated research needs to be performed in order to formulate more comprehensive implications for MNCs. For example, Ghemawat suggested that the electric power industry was more sensitive to administrative and geographic distance, but less sensitive to cultural distance.

In conclusion, this paper provides theoretical and managerial implications. First, our study empirically tests whether the various types of national distance have effects on trade evenly. Second, the theoretical problem is the measurement method for CAGE Distance. Measurement methods are not unified in existing studies. Therefore, this study provides clues as to which methods are the most rational and scientific. Third, from a practical point of view, rather than from a simple point of view that national distance has a negative impact on trade, a global company will need a strategy to understand and respond to how its industry is sensitive to national distance. For example, strategies may vary depending on whether the target country and the home country are geographically remote but culturally close to each other can be used.

References

Anderson, J. E. and E. Van Wincoop (2003), "Gravity with Gravitas: A Solution to the Border Puzzle", *American Economic Review*, 93(1), 170-192.

Arslan, A., S. Y. Tarba and J. Larimo (2015), "FDI Entry Strategies and the Impacts of Economic

Freedom Distance: Evidence from Nordic FDIs in Transitional Periphery of CIS and SEE", *International Business Review*, 24(6), 997-1008.

Baier, S. L., J. H. Bergstrand and M. Feng (2014), "Economic Integration Agreements and the Margins of International Trade", *Journal of International Economics*, 93(2), 339-350.

Beckerman, W. (1956), "Distance and the Pattern of Intra-European Trade", *Review of Economics and Statistics*, 38(1), 31-40.

Berry, H., M. F. Guillén and N. Zhou (2010), "An Institutional Approach to Cross-National Distance", *Journal of International Business Studies*, 41(9), 1460-1480.

Beugelsdijk, S., H. De Groot, G. J. Linders and A. Slangen (2004), *Cultural Distance, Institutional Distance and International Trade* (Tinbergen Institute Discussion Paper, No. 05-074/3), Amsterdam and Rotterdam, Netherlands: Tinbergen Institute, 1-24.

Beugelsdijk, S., P. C. Nell and B. Ambos (2017), "When do Distance Effects Become Empirically Observable? An Investigation in the Context of Headquarters Value Creation for Subsidiaries", *Journal of International Management*, 23(3), 255-267.

Boisso, D. and M. Ferrantino (1997), "Economic Distance, Cultural Distance, and Openness in International Trade: Empirical Puzzles", *Journal of Economic Integration*, 12(4), 456-484.

Borchert, I. and Y. T. Yotov (2017), "Distance, Globalization, and International Trade", *Economics Letters*, 153, 32-38. http://dx.doi.org/10.1016/j.econlet.2017.01.023

Brouthers, K. D. (2002), "Institutional, Cultural and Transaction Cost Influences on Entry Mode Choice and Performance", *Journal of International Business Studies*, 33(2), 203-221.

Campbell, J. T., L. Eden and S. R. Miller (2012), "Multinationals and Corporate Social Responsibility in Host Countries: Does Distance Matter?", *Journal of International Business Studies*, 43(1), 84-106.

Campbell, N. C., J. L. Graham, A. Jolibert and H. G. Meissner (1988), "Marketing Negotiations in France, Germany, the United Kingdom, and the United States", *Journal of marketing*, 52(2), 49-62.

Central Intelligence Agency (CIA) (2017), *Religions, in The World Factbook*. Available from https://www.cia.gov/library/publications/the-world-factbook/fields/2122.html (accessed June 1, 2017)

Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) (2017), *GeoDist.* Available from http://www.cepii.fr/cepii/en/bdd_modele/presentation.asp?id=6 (accessed June 1, 2017)

Chang, Yi-Chieh, Ming-Sung Kao, Anthony Kuo and Chih-Fang Chiu (2012), "How Cultural Distance Influences Entry Mode Choice: The Contingent Role of Host Country's Governance Quality", *Journal of Business Research*, 65(8), 1160-1170.

Chetty, S. K. (1999), "Dimensions of Internationalisation of Manufacturing Firms in the Apparel Industry", *European Journal of Marketing*, 33(1/2), 121-142.

Clark, T. and D. S. Pugh (2001), "Foreign Country Priorities in the Internationalization Process: A Measure and an Exploratory Test on British Firms", *International Business Review*, 10(3), 285-303.

Cui, Long, Jong-Wook Kwon, Bo Zhang and Jung-Won Kim (2017), "A Comparative Study on the Cultural Difference between Countries: Focusing on Hofstede's Individualism Dimension", *Journal of International Trade & Commerce*, 13(4), 375-396.

Cuypers, I. R. P., G. Ertug and J. F. Hennart (2015), "The Effects of Linguistic Distance and Lingua Franca Proficiency on the Stake taken by Acquirers in Cross-Border Acquisitions", *Journal of International Business Studies*, 46(4), 429-442.

Deardoff, A. V. (2004), *Local Comparative Advantage: Trade Costs and the Pattern of Trade* (Discussion Paper, No. 500), Ann Arbor, MI: University of Michigan, 1-51.

De Jong, G., V. Van Dut, B. Jindra and P. Marek (2015), "Does Country Context Distance Determine Subsidiary Decision-Making Autonomy? Theory and Evidence from European Transition

Economies", *International Business Review*, 24(5), 874-889.

Disdier, A. C. and K. Head (2008), "The Puzzling Persistence of the Distance Effect on Bilateral Trade", *The Review of Economics and Statistics*, 90(1), 37-48.

Dow, D. (2000), "A Note on Psychological Distance and Export Market Selection", *Journal of International Marketing*, 8(1), 51-64.

Dow, D. and A. Karunaratna (2006), "Developing a Multidimensional Instrument to Measure Psychic Distance Stimuli", *Journal of International Business Studies*, 37(5), 578-602.

Dow, D. and J. Larimo (2009), "Challenging the Conceptualization and Measurement of Distance and International Experience in Entry Mode Choice Research", *Journal of International Marketing*, 17(2), 74-98.

Egger, P. H. and A. Lassmann (2012), "The Language Effect in International Trade: A Meta-Analysis", *Economics Letters*, 116(2), 221-224.

Frankel, J. and A. Rose (2002), "An Estimate of the Effect of Common Currencies on Trade and Income", *The Quarterly Journal of Economics*, 117(2), 437-466.

Ghemawat, P. (2001), "Distance Still Matters: The Hard Reality of Global Expansion", *Harvard Business Review*, 79(8), 137-147.

Guler, I. and M. F. Guillén (2010), "Institutions and the Internationalization of US Venture Capital Firms", *Journal of International Business Studies*, 41(2), 185-205.

Håkanson, L. and B. Ambos (2010), "The Antecedents of Psychic Distance", *Journal of International Management*, 16(3), 195-210.

Head, K. and T. Mayer (2013), *Gravity Equations: Workhorse, Toolkit, and Cookbook* (Discussion Paper, No. DP9322), London: Centre for Economic Policy Research, 1-65.

Helpman, E., M. Melitz and Y. Rubinstein (2008), "Estimating Trade Flows: Trading Partners and Trading Volumes", *The Quarterly Journal of Economics,* 123(2), 441-487.

Hofstede, G. (1980), *Culture's Consequences: International Differences in Work-Related Values*, Beverly Hills, CA: Sage.

Hofstede, G. (2017), *COMPARE COUNTRIES*. Available from https://www.hofstede-insights.com/product/compare-countries/ (accessed June 10, 2017)

Hummels, D. (1999), *Toward a Geography of Trade Costs* (SSRN Database), 1-54. Available from http://dx.doi.org/10.2139/ssrn.160533

Kirkman, B. L., K. B. Lowe and C. B. Gibson (2006), "A Quarter Century of Culture's Consequences: A Review of Empirical Research Incorporating Hofstede's Cultural Values Framework", *Journal of International Business Studies*, 37(3), 285-320.

Klitmøller, A. and J. Lauring (2013), "When Global Virtual Teams Share Knowledge: Media Richness, Cultural Difference and Language Commonality", *Journal of World Business*, 48(3), 398-406.

Kogut, B. and H. Singh (1988), "The Effect of National Culture on the Choice of Entry Mode", *Journal of International Business Studies*, 19(3), 411-432.

Leamer, E. E. (1974), "The Commodity Composition of International Trade in Manufactures: An Empirical Analysis", *Oxford Economic Papers*, 26(3), 350-374.

Limao, N. and A. J. Venables (2001), "Infrastructure, Geographical Disadvantage, Transport Costs, and Trade", *The World Bank Economic Review*, 15(3), 451-479.

Linders, G. J. M., A. Slangen, H. L. F. De Groot and S. Beugelsdijk (2005), *Cultural and Institutional Determinants of Bilateral Trade Flows* (Tinbergen Institute Discussion Paper, No. 05-074/3), Amsterdam and Rotterdam, Netherlands: Tinbergen Institute, 1-28. Available from http://dx.doi.org/10.2139 ssrn.775504

López-Duarte, C. and M. M. Vidal-Suárez (2010), "External Uncertainty and Entry Mode Choice: Cultural Distance, Political Risk and Language Diversity", *International Business Review*, 19(6), 575-588.

Luostarinen, R. (1979), *Internationalization of the Firm: An Empirical Study of the Internationalization of Firms with Small and Open Domestic Markets with Special Emphasis on Lateral Rigidity as a Behavioral Characteristic in Strategic Decision-Making* (Vol. 30), Helsinki: Helsinki School of Economics.

Magerman, G., Z. Studnicka and J. Van Hove (2016), "Distance and Border Effects in International Trade: A Comparison of Estimation Methods", *Economics: The Open-Access, Open-Assessment E-Journal*, 10(2016-18), 1-31.

Makino, S. and E. W. K. Tsang (2011), "Historical Ties and Foreign Direct Investment: An Exploratory Study", *Journal of International Business Studies*, 42(4), 545-557.

Martin, W. and C. S. Pham (2007), *Estimating the Gravity Model When Zero Trade Flows are Frequent and Economically Determined* (Policy Research Working Paper, No. 7308), Washington, DC: World Bank, 1-59. Available from https://openknowledge.worldbank.org/handle/10986/22182 License: CC BY 3.0 IGO

Morosini, P., S. Shane and H. Singh (1998), "National Cultural Distance and Cross-Border Acquisition Performance", *Journal of International Business Studies*, 29(1), 137-158.

Ojala, A. and P. Tyrväinen (2007), "Market Entry and Priority of Small and Medium-Sized Enterprises in the Software Industry: An Empirical Analysis of Cultural Distance, Geographic Distance, and Market Size", *Journal of International Marketing*, 15(3), 123-149.

Popli, M., M. Akbar, V. Kumar and A. Gaur (2016), "Reconceptualizing Cultural Distance: The Role of Cultural Experience Reserve in Cross-Border Acquisitions", *Journal of World Business*, 51(3), 404-412.

Quer, D., E. Claver and L. Rienda (2007), "The Impact of Country Risk and Cultural Distance on Entry Mode Choice: An Integrated Approach", *Cross Cultural Management: An International Journal*, 14(1), 74-87.

Ragozzino, R. and J. J. Reuer (2011), "Geographic Distance and Corporate Acquisitions: Signals from IPO Firms", *Strategic Management Journal*, 32(8), 876-894.

Salomon, R. and Z. Wu (2012), "Institutional Distance and Local Isomorphism Strategy", *Journal of International Business Studies*, 43(4), 343-367.

Silva, J. M. C. S. and S. Tenreyro (2006), "The Log of Gravity", *The Review of Economics and Statistics*, 88(4), 641-658.

Siegel, J. I., A. N. Licht and S. H. Schwartz (2011), "Egalitarianism and International Investment", *Journal of Financial Economics*, 102(3), 621-642.

Slangen, A. H., S. Beugelsdijk and J. F. Hennart (2011), "The Impact of Cultural Distance on Bilateral Arm's Length Exports", *Management International Review*, 51(6), 875-896.

Srivastava, R. K. and R. T. Green (1986), "Determinants of Bilateral Trade Flows", *Journal of Business*, 59(4), 623-640.

Suvankulov, F. (2016), "Revisiting National Border Effects in Foreign Trade in Goods of Canadian Provinces", *The Journal of International Trade & Economic Development*, 25(8), 1045-1070.

Tadesse, B. and R. White (2010a), "Cultural Distance as a Determinant of Bilateral Trade Flows: Do Immigrants Counter the Effect of Cultural Differences?", *Applied Economics Letters*, 17(2), 147-152.

Tadesse, B. and R. White (2010b), "Does Cultural Distance Hinder Trade in Goods? A Comparative Study of Nine OECD Member Nations", *Open Economies Review*, 21(2), 237-261.

Tang, L. and P. E. Koveos (2008), "A Framework to Update Hofstede's Cultural Value Indices: Economic Dynamics and Institutional Stability", *Journal of International Business Studies*, 39(6), 1045-1063.

Tihanyi, L., D. A. Griffith and C. J. Russell (2005), "The Effect of Cultural Distance on Entry Mode Choice, International Diversification, and MNE Performance: A Meta-Analysis", *Journal of International Business Studies*, 36(3), 270-283.

Tsang, E. W. K. and P. S. L. Yip (2007), "Economic Distance and the Survival of Foreign Direct Investment", *Academy of Management Journal*, 50(5), 1156-1168.

Weber, Y., S. Y. Tarba and A. Reichel (2009), "International Mergers and Acquisitions Performance Revisited: The Role of Cultural Distance and Post". In C. Cooper and S. Finkelstein (Eds.), *Advances in Mergers and Acquisitions* (Vol. 8), Bingley, UK: Emerald Group Publishing Limited, 1-17.

Wilson, N. (2007), *Examining the Trade Effect of Certain Customs and Administrative Procedures* (OECD Trade Policy Working Paper, No. 42), Paris: Organisation for Economic Co-operation and Development, 1-28.

World Bank (2017), *World Development Indicators*. Available from https://data.worldbank.org/indicator/NY.GDP.PCAP.KD (accessed June 2, 2017)

World Bank (2017), *World Governance Indicators*. Available from http://info.worldbank.org/governance/wgi/#home (accessed June 2, 2017)

World Bank (2017), *World Integrated Trade Solution*. Available from https://wits.worldbank.org/ (accessed June 2, 2017)

World Trade Organization (WTO) (2017), *Members and Observers*, Geneva: Author. Available from https://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm (accessed June 2, 2017)

Zaheer, S., M. S. Schomaker and L. Nachum (2012), "Distance Without Direction: Restoring Credibility to a Much-loved Construct", *Journal of International Business Studies*, 43(1), 18-27.

Appendix

Table A. Country List

Total: 75 Countries		
Angola (AGO)	Greece (GRC)	Norway (NOR)
Albania (ALB)	Hong Kong (HKG)	New Zealand (NZL)
Argentina (ARG)	Croatia (HRV)	Pakistan (PAK)
Australia (AUS)	Hungary (HUN)	Peru (PER)
Austria (AUT)	Indonesia (IDN)	Philippines (PHL)
Belgium (BEL)	India (IND)	Poland (POL)
Bangladesh (BGD)	Ireland (IRL)	Portugal (PRT)
Bulgaria (BGR)	Iran Islamic Rep. (IRN)	Romania (ROU)
Brazil (BRA)	Iceland (ISL)	Russia (RUS)
Canada (CAN)	Italy (ITA)	Saudi Arabia (SAU)
Switzerland (CHE)	Jordan (JOR)	Singapore (SGP)
Chile (CHL)	Japan (JPN)	Serbia (SRB)
China (CHN)	Korea (KOR)	Slovak Rep. (SVK)
Colombia (COL)	Lebanon (LBN)	Slovenia (SVN)
Czech Rep. (CZE)	Libya (LBY)	Sweden (SWE)
Germany (DEU)	Lithuania (LTU)	Thailand (THA)
Denmark (DNK)	Luxembourg (LUX)	Turkey (TUR)
Dominican Rep. (DOM)	Latvia (LVA)	Tanzania (TZA)
Egypt Arab Rep. (EGY)	Morocco (MAR)	Ukraine (UKR)
Spain (ESP)	Mexico (MEX)	Uruguay (URY)
Estonia (EST)	Malta (MLT)	United States (USA)
Finland (FIN)	Mozambique (MOZ)	Venezuela (VEN)
France (FRA)	Malaysia (MYS)	Vietnam (VNM)
United Kingdom (GBR)	Nigeria (NGA)	South Africa (ZAF)
Ghana (GHA)	Netherlands (NLD)	Zambia (ZMB)