Effects of cultural distance on Swedish international trade

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by

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Master of Science Thesis INDEK 2017:141
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Abstract
The study aims at distinguishing the effect cultural distance on bilateral trade between Sweden and other countries. Commonly cultural variables have been included in previous studies in the form of dummy variables indicating shared colonial background, religion and language. This thesis takes culture in the form of values and attitudes in account, an approach that is lesser explored by researchers. By using data on culture and values for 97 countries from the World Value Survey and applying Inglehart’s two dimensions of culture in a gravity model, this thesis finds some evidence of cultural distance playing an important role in the volume traded. The sample included 344 observations of cultural distance under the period 1990-2014 and Swedish trade as well as interpreting the effects of exports and imports of manufactured products separately. Regression results using random effects modelling discovers a negative and significant effect of distance in traditional/secular-rational values on total trade and exports and a positive effect of survival/self-expression values on exports. This could indicate that depending of the type of cultural values measured, trade is affected in different ways.

Key-words
International Trade, Culture, Sweden, World Value Survey, Cultural distance, Economics, Gravity model
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Foreword

I would like to dedicate this thesis to my beloved grandmother Ilse, who has been waiting patiently for me to finally graduate and get a job. Also, a special thanks to my supervisor Per Thulin for helping me finding this interesting subject and gave me valuable feedback during the writing process. Also, thank you mom for always taking time to correct my spelling.

- Kajsa Mattsson
  8/13/2017
1. Introduction

1.1. Background

An important topic in economics is that of international trade. The subject of international trade contains numerous topics and theories that have evolved during decades. Unarguably, trade is today very important in most countries’ economy as a way to maximize the well-being of the population. Trading between countries brings an opportunity of acquiring goods that might not be able to produce within the own country’s borders or goods that cannot be produced with the same level of productivity. As a result of the potential gains from trade, most economies have become more open and involved in global trade during recent years and technological advancements have made trading easier and faster than ever before. International trade has been on a steady increase since World War II ended (Gottfries, 2013), when trade organisations like the World Trade Organization (WTO) was enacted, which assisted in the work towards global trade liberalisation. This as a part of the globalisation process. Also, regional trade agreements have been established such as European Free Trade Agreement (EFTA) that works towards trade liberalisation in Europe (Gottfries, 2013). An example of this trend towards increased levels and openness of trade is that trade as a percentage of GDP has increased from about 24 percent in 1960 to almost 58 percent in 2015 (Data.worldbank.org, 2017). Yet trade is not completely frictionless. Transportation of goods is still followed by costs, not only arising from geographical distance, but formal trade barriers such as tariffs and quotas.

The increased levels of world trade are a part of the globalisation process that has occurred during the past century. Thanks to globalisation borders that separate nations become less significant as nations become more entangled economically, politically and even to some extent culturally due to increased share of information. This process of globalisation is caused by many factors where better technology, increased levels of trade and foreign direct investments (FDI) are examples (Gottfries, 2013). With increased levels of trade comes a new dependency on products that are not from the own country. The term absolute and comparative advantage may be more relevant than ever before as it makes it possible for nations to specialize in industries in which they have an advantage in production, while importing the other goods from other places.

Distance and formal trade barriers aside, more recent studies have taken an interest in other types of possible barriers to trade; how cultural aspects may affect trade (Cyrus, 2012; Hutchinson, 2005; Linders et al., 2005). For example, common language that may lead to better communication and understanding may increase trade between two countries while on the other hand, not being able to communicate may impede businesses’ operations abroad as shown by (Hutchinson, 2005). Also, factors that by Linders et al. (2005) are labelled as cultural familiarity, such as common colonizer or common religious background have been proven to affect trade in studies. According to Linders et al. (2005), two countries can share the same religious beliefs, having the same colonial past or language similarities, which make
them familiar to other and create a basic understanding of the other country’s culture. However, this familiarity does not mean that the two cultures are similar in terms of values and attitudes. To illustrate the difference: India and USA are both former British colonies and English is the national language, still the cultures are quite different. These cultural familiarity factors are more or less time invariant but still culture and values changes over time and so do trade flows. This distinction between cultural familiarity and cultural similarity is central in this thesis as the aim is to capture the effect of cultural similarity rather than cultural familiarity. In this thesis the subject of trade will be studied further by tackling the lesser-studied context of cultural values, which is not to be confused by cultural familiarity. Do cultural values, or rather difference in cultural values, have any effect on why some countries trade more with each other than others? Every country has its unique values, which has been formed through historical events such as wars and conflicts, economy and political actions which has formed and shaped the culture (Schwarz, 2006). To account for cultural values this study makes use of data from World Value Survey (WVS), an organisation that has actively gathered data on values and attitudes regarding a vast number of topics since the beginning of the 1980’s. The WVS time series open for comparative analyses between countries or changes in values and attitudes over time and have been used in many studies which mostly focus on happiness, freedom and democratisation1. As cultural distance is a relatively recent subject encountered in trade research there are still some areas that are unexplored and results have in some cases been ambiguous depending on the factors used to measure culture and measurement of cultural identities of countries.

The issue of the extent to which cultural distance can affect bilateral trade should be of interest to various parties: both policy-makers and individual firms when deciding on business strategies. As for policy makers who wish to strengthen Swedish trade relations and promote growth.

1.2. Purpose

The purpose of this study is to investigate if there exists a significant relationship between similarities in values and bilateral trade by using data from World Values Survey to compute the two dimensions of culture by Inglehart (Inglehart and Baker 2000). These variables will serve as measurements of culture. Using Sweden and Swedish trade as the main focus point the thesis hopes to answer the question whether there is a significant relationship between cultural distance and Swedish trade and if so do Swedish firms choose to trade more or less with countries that are culturally similar.

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1.3. Delimitations

Due to the restrictions regarding this thesis some delimitations have been made to preserve the comprehensiveness and quality of this thesis. First and foremost, the focus of interest is the Swedish bilateral trade relations which other countries. Although cultural distance is a quite broad term and there are several ways that it can be measured the values used in this study are those from WVS, which will contribute to existing knowledge with the uniqueness in terms of usage in the trade context. There are many variables that can be included in these types of regressions, however, the selection of additional variables used will be accounted for in the theory and methodology sections. As data on bilateral trade require extensive research it is beyond the scope of this thesis to prepare a unique dataset for the variables, instead it relies on secondary data from reliable sources.

1.4. Structure of thesis

The structure of this thesis will be as follows: Section 2 will describe the main theories used as the basis of this study; the World Value Survey will be further explained as well as the findings of previous research in the area. The main hypotheses will be stated. Section 3 describes the methodology upon which the results are based together with description of the data used. Section 4 will be a presentation of the main findings which will be further discussed in section 5. The study will be concluded and proposals on further studies will be suggested in section 6.
2. **Theoretical background**

2.1. **Measuring culture**

Every country or region where humans live together has a culture, which can be described as a generalized reflection of norms, attitudes and values shared by its inhabitants. Cultures are formed and developed in a slow process and are persistent over time. Although cultures are evolving gradually, the process takes time and today’s values and attitudes can be traced from far back in a country’s history (Schwartz, 2006). The values that exist in any society have been accumulated through time and are affected by outer factors such as welfare, wars and politics. The concept of culture is broad and complex as it consists of several layers that can be hard to define and individuals’ attitudes are heavily context dependent. When outlining what culture is there are many areas that can be referred to. It can concern quite straightforward things such as language and religion and more subtle and complex things such as attitudes and social habits. Hence, a full description of a country’s culture may never be possible, a fact that have not discouraged researchers such as Geert Hofstede, Ronald Inglehart and Shalom H. Schwarz from studying and defining cultural aspects in terms of values in the past (Hsu, Woodside and Marshall, 2013).

2.1.1. **Cultural familiarity and cultural similarity**

Recently more studies have taken an interest in the cultural aspect of trade (e.g. Srivastava and Green, 1986; Tadesse and White, 2008). Early studies on the cultural distance, or rather unfamiliarity, included control variables for the ease of making business, such as shared language, shared religion or same colonial past. These variables are referred to by Linders et al. (2005) as indicators of cultural familiarity, meaning trading partners have a better understanding of each other’s culture, but not necessarily sharing the same culture. Cultural familiarity could lead to increased understanding and easier communications between trading partners. In their study, cultural differences are assessed with Hofstede’s dimensions of national culture and adds variables reflecting institutional quality and cultural familiarity dummies representing common religion, colonial past and shared language. The variables all showed a positive and significant effect on trade. Common language for example, is considered to make the communication easier, hence have positive effect on trade (Hutchinson, 2005). These variables have in most cases shown to have strong significance when used to estimate bilateral trade.

In this thesis, the focus will be directed towards values and attitudes as a cultural indicator and the two dimensions of culture developed by Inglehart will be used. Perhaps the most used cultural data is that of Geert Hofstede, who used data gathered by IBM employees for managerial purposes presenting an index consisting of four cultural dimensions: Power distance, individualism vs. collectivism, masculinity vs. femininity and uncertainty avoidance. According to Hsu, Woodside and Marshall (2013) the variable power distance relates to authority, which is similar to the Inglehart dimension called traditional/secular-rational and
Individualism vs. collectivism is similar to Inglehart’s survival/self-expression dimension, which is related to a society being focused on the individual or on the group. Schwarz, started his work on cultural indicators later than Hofstede and Inglehart and bases his research on three dimensions: Egalitarianism vs. Hierarchy, Autonomy vs. Embeddedness and Mastery vs. Harmony. The first dimension is as well related to authority and the second to self-orientation or group-orientation in a culture.

2.2. Inglehart and the world value survey

Values are indeed an important part of what makes up a culture and by investigating the dominating values in a country interesting parallels can be drawn to actions taken by the society such as democratization and technology advancements (Welzel, 2013). One of the most cited organisations working with collecting data on values is the World Value Survey which is a global network of scientists dedicated to observing and studying values around the world and understand the impacts of changing values on politics and social life. Since 1981 WVS has assembled data and conducted surveys in many countries. The advantage of WVS is that the extensive data collection covers most of the world’s populations, an advantage unmet by other, similar surveys. This fact has been made possible by the extensive network of local scientists in each of the surveyed countries making face-to-face interviews. Questions asked ranges between various fields such as family values, religiosity, economics, politics and social life. The structure data collection is conducted in “waves” meaning that data is collected during a period of 4-5 years under which the interviews where done. Since the beginning of the WVS in 1981 there have been 6 waves. The countries covered in the last, 6th wave represents a majority of the world’s populations in 57 countries. Since the start of the survey over 100 countries have been covered at some point of time, some figuring in several waves and others only in one (worldvaluessurvey.org, 2017).

The WVS data have been used to produce the Inglehart’s cultural dimensions illustrated in what is called the culture map (see figure 1). Developed by political scientists Ronald Inglehart and Christian Welzel it visualizes and compares countries’ cultures. The theory behind the culture map is that most of the differences in values can be explained in two dimensions, which according to Inglehart represents 70 percent of cross-country variations (worldvaluessurvey.org, 2017).
Traditional vs. secular-rational, based on aggregated scores on the WVS data the countries range on a scale between traditional and secular-rational. Traditional values accentuate the importance of religion, traditional family values and authority. Traditional values also reject abortion, divorce and countries that score high on these traditional values traditionally have a great sense of national pride. Opposed to traditional values is what is referred to as secular-rational values. In secular-rational societies there is less emphasis on religion and the traditional family. Authority is less important and divorce and abortion is more accepted as well as suicide (although not necessarily more common). On the horizontal axis, the survival vs. self-expression values are depicted. Survival values put emphasis on economic and personal security and the levels of trust and tolerance are lower. Societies with high scores in survival rates are often ethnocentric. The other end of the dimension values factors related to self-expression higher. Here values such as tolerance to foreigners and LGBT individuals, gender equality, environmental protection and personal quality of life is highly regarded. The scores in the culture map are essentially based on 10 variables from the World Value Survey from which the national traditional/secular-rational and survival/self-expression values are produced. The variables are listed with corresponding questions asked to respondents in Appendix A.
The map displays some clustering effects where countries within the same region and to some extent the same religion and heritage score similarly which indicates that religion and political and philosophical heritage has a significant effect on the cultural values of a nation. These findings have been thoroughly analysed by Welzel (2013). There are also some insights about the level of economic development displayed in the map: as countries become more developed in terms of industrialisation and technological advancements they move diagonally towards higher scored in both dimensions. The rationale behind this is that when basic security (survival and basic living conditions such as food and shelter) is ensured people start striving for self-expression and autonomy which is a basic human desire. The correlation is relevant in a democratisation process as can be seen in the groupings where countries that have a functioning democratic regime installed score higher while non-democracies generally score lower (Welzel 2013).

2.3. **Swedish values and trade**

The Swedish values are to some extent different from many other countries as can be seen from the Culture map in previous section. Sweden ranks high in both Secular-Rational values and Self-expression values, indicating a culture where religion and other values that are considered traditional is of low importance and that there is a high drive for the habitants to be able to freely express themselves. As can be seen from the map from the sixth wave of observations from WVS Sweden is closest to the other Scandinavian countries, Norway and Denmark considering values, followed by the other countries in the protestant part of Europe; Finland, Iceland and the Netherlands. The closeness in values with Norway and Denmark has been consistent through all years of the study. On the other hand, when looking at the two dimensions separately Sweden scores closest to Japan when it comes to traditional/secular-rational values and has done so in the three latest waves with a cultural distance 0.24, 0.1 and 0.14 for wave 1, 2 and 3 respectively\(^2\). The furthest distance to Sweden ever was Ghana in wave 5 with 3.8. Other African countries have similar distances as well as some Latin American countries such as Colombia, Ecuador and Trinidad and Tobago all scoring over 3.5 at some point in time. On the Survival/Self-expression dimension Sweden ever lowest distance is to Australia in wave 3 with 0.3, Otherwise the other Nordic countries have similar scores as well as the Netherlands, New Zealand and USA. Here, the furthest distance is with Iraq in wave 5 with a score of 4. Other countries scoring high (all more than 3.8) are Tunisia, Russia, Romania, Ukraine and Moldova.

Interestingly, many of the closest distances are found in the early waves while the furthest distances are found in later waves which might indicate that Swedish values have become more extreme in later years. Calculating an average distance for between Sweden and all the other countries in wave 2-5\(^3\) confirms this theory and results are presented in table 1.

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\(^2\) The method of calculating cultural distance is explained more in detail in chapter 3, 
\(^3\) The first wave of cultural distance has been excluded from this thesis due to insufficient statistics on trade. Hence, the choice to not include it in table 1.
When it comes to trade Sweden is a strong supporter of free trade and openness and the Swedish economy is dependent on foreign trade for growth and development (U.S. Department of State, 2017). Swedish business structure is not hierarchical, but rather flat and consensus in important decisions are preferred (Global Business Culture, n.d.).

Further looking at Sweden’s main trade partners (see figure 2) it is evident that Germany is the biggest trading partner. The table shows the trade as sum of imports and exports from Sweden to the largest trading partners. The most important partner by far is Germany and the other Nordic countries but also USA and UK.

<table>
<thead>
<tr>
<th>Wave</th>
<th>Mean distance Survival/Self-expression</th>
<th>Mean distance Traditional/Secular-rational</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1.545702</td>
<td>0.9907911</td>
</tr>
<tr>
<td>3</td>
<td>2.012824</td>
<td>1.437534</td>
</tr>
<tr>
<td>4</td>
<td>2.082484</td>
<td>1.815159</td>
</tr>
<tr>
<td>5</td>
<td>2.387004</td>
<td>2.049882</td>
</tr>
<tr>
<td>6</td>
<td>2.259658</td>
<td>1.885771</td>
</tr>
</tbody>
</table>

Figure 2 Swedish major trading partners by sum of imports and exports. The trade is calculated for the end-year of each WVS wave and expressed in constant 2005 US$ millions, Source (IMF data, 2017)
2.4.  Literature study

2.4.1.  Early trade theories

Trade as a subject in economics have been widely studied for decades and with pioneers such as Adam Smith and his notation on absolute advantage and David Ricardo’s extension of Smith’s theory on comparative advantage the foundation of trade theory is firmly established in research. Smith introduced the concept of absolute advantage in his book *The Wealth of Nations* (1776), where he stated that nations of firms in certain regions can produce certain goods at a lower input cost than other. This ability creates an absolute advantage, and countries that have an absolute advantage in some sector can choose to specialize in the production of that goods and import others. In his paper *Principles of Political Economy and Taxation* (1817), economist David Ricardo developed the concept of absolute advantage further with the theory of comparative advantage. Comparative advantage is the idea that countries should focus on producing goods that they can produce in an efficient way, while simply importing other goods from abroad, similarly to the theory of absolute advantage. The difference between the two however is that of opportunity cost, equal to the benefits of using the available resources to produce alternative products. The theories of Smith and Ricardo in its simplest forms does not account for potential barriers of trade but intuitively they indicate that all countries can gain from trade and trade liberalization although some countries may gain more than others. The comparative advantage can be exploited, which is the case of MNEs that produces different parts of their commodities in countries where the comparative advantage of producing that part is the highest. Slicing up the value chain, naturally leads to even more trade as parts may be shipped around the world before assembly. Although these fundamental insights of international trade have been recognised by literature the subject of trade is still complex and many some area are yet not fully understood.

As this thesis aims at establishing a relationship between cultural distance and trade earlier research is an important source of information. When focusing more on the trade aspect than production, it can be concluded that flow of goods is not completely without obstacles. Various factors determine trade more than comparative advantage and though studies have managed to establish important facts concerning trade, relationship between culture and trade is yet sparsely studied.

2.4.1.  Determinants of bilateral trade

Tinbergen (1962) was allegedly the first to introduce the gravity model of trade that stated that bilateral trade flows depend on each of the two countries’ size, measured by GNP and the transportation costs that are roughly dependent on the geographical distance between the two countries. His model resonated with researchers following him and these are today determinants that are widely accepted in trade research and is commonly accounted for in gravitation models. Size of the exporting and importing country is mostly accounted for as proposed by Tinbergen’s original gravity model of trade, using GNP, GDP or GDP per capita. The implication is that size has a positive correlation to trade. Size of the economy has been proven significant in most studies even though different gravitation modelling techniques and measurement variables are used (Srivastava and Green, 1986).
There is a well-established notion from early research on the geographical distance and bilateral trade flows (Srivastava and Green, 1986; Tinbergen 1962; Disdier and Head, 2008), where distance has a negative effect on trade assumedly due to higher per-unit transport costs. But the decline due to just the physical distance may not be the only explanation to why some country-pairs trade more than others. According to Disdier and Head (2008) the physical distance cannot account for all trade differences. One of the most used methods of estimating the geographical distance is by using the great circle formula, which estimate the distance between the two principal cities in the countries following the earth surface. The reason for this method prevalence is because no research on actual distance of transportation routes is necessary, only longitude and latitude coordinates.

As trade concerns shipment of goods between countries more than the pure physical distance is often considered. There is some proof that landlocked countries, i.e. countries with no access to a coast line, experience less trade than countries that have access to ports. This because being dependent on the neighboring countries for the transit of imports and exports increases transaction costs and create a vulnerability due to this dependency (Smith, 1776)

2.4.2. Cultural distance and trade

Although, there has previously been a lack of research on cultural distance and trade effects, in recent years some studies have picked up on the subject with mixed results. Linders et al. (2005) notice a significant positive effect of cultural distance and trade using Hofstede’s index of cultural values contrary to the common assumption that cultural distance creates a barrier for trade which have been found in other notable studies such as Tadesse and White (2008) and Cyrus (2012). Lankhuizen and de Groot (2014) presents a theory that the positive effect found by Linders et al. (2005) could indicate that countries trade more when the comparative advantages of doing so outweighs the benefits of cultural similarity. Linders et al. (2005) argue that if countries share similar culture there is a higher degree of other types of entries into a foreign market, such as foreign direct investment, while for countries with distant values managers tend to not commit as strongly and assert to modes that does not require as much close interaction, such as import and export. Assessing this theory Lankhuizen and de Groot came up with the hypothesis that the cultural effect on trade might not have a linear relationship. Their study show evidence of trade increasing with cultural distance up until a certain threshold where the cultural distance then turns negative and decreases for greater cultural distance.

Tadesse and White (2008) used the WVS data during the period 1996-2001 to study the effect on 9 OECD member states and trade with 58 additional countries included in the WVS at the time. Using one aggregate term to proxy cultural distance based on Inglehart’s two dimensions of culture while also assessing the effect on immigration on trade, they found that for the 9 countries in the study all showed a negative effect on trade due to cultural distance and a positive effect on trade from immigration. A similar study by Cyrus (2012) examines the cultural distance and trade using the WVS between all country pairs available between the year 1981 and 2008, including 90 countries where each country not included every year. The objective is two folded, measuring both the effect of cultural distance on trade and the effect
of trade on cultural distance. The study uses both pooled OLS and IV-GMM regressions to estimate the gravity equation. Cultural distance is measured by using four variables from WVS longitudinal dataset indicating *trust, respect, obedience* and *control*. These variables are based on questions whether “most people can be trusted” and whether respect and tolerance is important for children to learn (respect) or if obedience is most important for children to learn (obedience). The fourth variable (control) is based on if the persons feel “freedom of choice and control in life”. The cultural distance is measured as the difference between countries’ scores in each of these variables as well as in an aggregated term whilst controlling for cultural familiarity variables. The initial model displayed a negative, significant relationship between bilateral trade and cultural distance. However, the aggregated cultural value turned insignificant when additional variables for cultural familiarity, common language and religious similarity was added. For the model with separated values the most significant is the negative relation between *control* and trade.

This study distinguishes itself from previous research by using the, in this context, lesser used data from WVS to estimate the effect of culture on trade. It distinguishes from Cyrus (2012) study of cultural distance and trade by including the last wave of cultural values from WVS and focusing on Swedish trade only. However, the most distinct difference is the choice of variables reflecting cultural values. As Cyrus (2012) uses four variables in both aggregated and separate terms the variables differ from the ones used in this thesis, constructed by Inglehart and Welzel. Inglehart and Welzel base their cultural values on 10 variables from WVS to construct their two dimensions of culture, which is used as indicators of cultural distance in this thesis. This hopefully captures a larger part of the countries’ cultural values. The variables used by Cyrus and Inglehart Welzel are to some extent overlapping, for example the same indicator of trust is used but it leaves out questions regarding religiosity and ethical questions regarding the justification of abortion and homosexuality. The data from WVS has some advantages over other similar studies, for example Hofstede’s cultural index, which is the most used indicator of culture (Hsu, Woodside and Marshall, 2013). First and foremost, the WVS data covers more countries. And the methodology behind the collection of data differs. Hofstede’s work consists of six dimensions of culture which is based on analyses of data gathered by IBM employees (Linders et al., 2005) and not by face-to-face interviewers as WVS. This gives reason to believe that WVS might give a more accurate interpretation of the answers as local people may better pick up and understand the respondents’ answers. The focus on Swedish trade flows with other countries has not been studied before using this data and method. The specific case of Sweden is interesting due to the “extreme” secular-rational values combined with highly individualistic society, which makes Sweden very culturally distant from many of its potential trading partners.
<table>
<thead>
<tr>
<th>Study</th>
<th>Objective</th>
<th>Cultural familiarity</th>
<th>Cultural distance</th>
<th>Cultural distance Data</th>
<th>Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disdier and Head (2008)</td>
<td>Estimate the effects of geographical distance on trade</td>
<td>Common language</td>
<td></td>
<td></td>
<td>Mixed methods</td>
<td>Significant effect of distance</td>
</tr>
<tr>
<td>Hutchinson (2005)</td>
<td>Common language and trade</td>
<td>Common language</td>
<td></td>
<td></td>
<td>Gravity model</td>
<td>Positive significant effect</td>
</tr>
<tr>
<td>Lankhuizen and de Groot (2014)</td>
<td>Examine linearity of the effect of cultural distance and trade</td>
<td>Colonial past, shared language</td>
<td>Cultural distance and Squared Cultural distance</td>
<td>Hofstede model</td>
<td>Positive relationship</td>
<td>Cultural distance is not linearly correlated to trade.</td>
</tr>
<tr>
<td>Linders et. al. (2005)</td>
<td>Institutional and cultural distance and trade</td>
<td>Common religion, colonial past, shared language</td>
<td>Hofstede’s four dimensions of cultural distance</td>
<td>Hofstede model</td>
<td>Positive effect of cultural distance</td>
<td></td>
</tr>
<tr>
<td>Srivastava and Green (1986)</td>
<td>Adding cultural and political variables to the gravity model</td>
<td>Colonial past and Language/reli gion aggregate</td>
<td></td>
<td>Gravity model</td>
<td>Significant positive effects of cultural variables</td>
<td></td>
</tr>
<tr>
<td>Tadesse and White (2007)</td>
<td>Effects of cultural distance on exports in OECD countries and export</td>
<td>English as common language</td>
<td>Aggregate term of Inglehart’s two dimensions of cultural distance</td>
<td>WVS</td>
<td>Gravity model: Tobit</td>
<td>Significant negative effect</td>
</tr>
<tr>
<td>Tinbergen (1962)</td>
<td>Establishing the gravity model in trade</td>
<td></td>
<td></td>
<td></td>
<td>Gravity model</td>
<td>Significant effects of size and distance</td>
</tr>
</tbody>
</table>
2.5. Hypothesis

Possible outcome of this study could be that there is a negative correlation between difference in values and the trade intensity as different value systems may create a lack of understanding that serves as a barrier in the form of higher transaction costs. On the other hand, it might be possible to argue that differences in values between two nations might enable the countries to exploit comparative advantages, and raise trade. Thereby, two hypotheses are formulated:

\[
H:0 \ \text{Differences in values between two countries decrease bilateral trade flows}
\]
\[
H:1 \ \text{Differences in values between two countries increase bilateral trade flows}
\]

To further analyze the effect of cultural distance on trade on a more detailed level this thesis also aims at investigating if there are separate effects if Sweden is the exporting or importing country. Separating the two may bring information to where policy makers could direct improvements in cultural issues. Hence additional hypotheses are made:

\[
H2: \ \text{Difference in cultural values has significant effects on export between Sweden and its trading partner.}
\]
\[
H2: \ \text{Difference in cultural values has significant effects on import between Sweden and its trading partner.}
\]

Intuitively, if cultural distance is significant for total trade, one should be able to see similar effects on imports and exports separately. However, whether cultural distance has a larger effect on imports or exports could be interesting for direction of new policy implementations.
3. Method

3.1. Econometric model, the gravity model for international trade

In trade theory one of the most frequently used, successful models of estimating the effects of bilateral trade is the gravity model. Initially based on Newton’s gravity model used in physics the use of the model has been proven effective in the field of economics and trade. The intuition behind the model is that the trade flows depend on the masses of economic activity in the origin and destination country. The relationship is inversely related to the distance between origin and destination. This leads to the theory that larger countries and countries that are located close will trade more with each other while smaller countries located far away from each other will trade less. First to introduce the model in economics was Tinbergen (1962) who assumed the following relationship:

\[ X_{ij} = \frac{Y_i^\alpha Y_j^\beta}{D_{ij}^\gamma} \]  \hspace{1cm} (1)

Where \( X_{ij} \) is the trade between country i and j, \( Y_i \) is the size measured in GDP of country i and \( Y_j \) is the GDP of country j, \( D_{ij} \) is the geographical distance between country i and j. The exponents \( \alpha, \beta, \gamma \) represent the elasticities of GDP, GDP, and distance, \( D \), respectively.

For the purpose of making a regression analysis the gravity model (1) is rewritten by taking the natural logarithm (2), and adding a random error component, \( \varepsilon_{ij} \) containing factors that are not explained by the specified model:

\[ \ln(X_{ij}) = \alpha \ln(Y_i) + \beta \ln(Y_j) - \gamma \ln D + \varepsilon_{ij} \]  \hspace{1cm} (2)

In (2) the log-linear model allows us to interpret \( \alpha, \beta, \gamma \) as the coefficients in the regression results. The output of the regression will then, due to the taken logs, be interpreted as for each 1 percent change in \( Y \), \( X \) will change by \( \alpha \) percent,

Using panel data estimation instead of cross-sectional or pure time-series data has some benefits as it accounts for individual heterogeneity and provides more variability, less collinearity and higher efficient estimates (Baltagi, 2005). Since panel data take both changes over time and individual effects into account we add the sub notation \( t \) to the regression model to indicate the time (in this case the WVS waves). The choices of regression specification technique in panel data are usually between pooled OLS, fixed effects (FE) or random effects (RE) models. The choice requires an evaluation of the specific properties of the data used,

An original gravity estimation that is used by many was made by Anderson and Wincoop (2003) by using the fixed effects model to provide a theoretical foundation for the gravity modelling the field of economics. The main issue with using the FE model is that it does not estimate variables that are time-invariant such as geographical distance, language spoken and
common borders. The effect of these variables is assumed to be included in the individual intercept and becomes excluded from the estimation results, which is not the case with the random effects model which allows for time-invariant effects to be estimated. To formally test whether to use FE or RE models a Hausman test can be used in order to determine if individual effects are uncorrelated with the other regressors. If the null hypothesis of the Hausman test is not rejected both FE and RE are consistent, however, the FE model is less efficient. On the other hand, if the null hypothesis is rejected the only consistent estimation model is FE.

Since the panel data consist of factors varying both over time and between individuals the error component of the regression consists of two parts (3): individual-specific and remaining disturbance. Hence error is denoted as follows:

$$\varepsilon_{ij} = \mu_i + \nu_{it}$$

where $\mu_i$ represents the unobservable individual-specific effect i.e., all individual specific effects that are not included in the regression, and $\nu_{it}$ the remaining disturbance. What distinguishes the FE and RE models is the assumption that between the individual effects, denoted $\mu_i$, and regressors, some correlation is allowed in the FE model while the RE model imposes a zero-correlation restriction.

### 3.1.1. Dependent variable

In the model the dependent variable is the total trade between country i (Sweden) and country j taken in logs. Total trade is defined as the sum of export from country i (Sweden) to country j in time t, and imports to Sweden from country j measured millions of US$. Additional regressions will use exports and imports separately in order to determine if cultural distances affect importing or exporting firms differently. The data on trade volume per trading partner was sourced from IMF Directions of trade statistics (DOTS) which uses current figures on merchandise export and import to countries divided by counterpart. In the case of lacking data on certain countries and years the dataset contains estimates derived from reporting partner countries. The currency used is US$ expressed in millions, the volume of imports and exports from each country are converted using average annual exchange rates (IMF, 2017). This dataset was favoured over for example Statistics Sweden and UNCTAD’s Comtrade data due to the inclusiveness of the dataset, more countries for where cultural values from WVS existed and the time-series extended to include earlier waves.

The trade data used in this report is constrained to only concerning countries included in the WVS and where results are available, limiting the sample to 97 countries (including Sweden). Since all countries were not covered by the WVS study all waves, the panel is set to be unbalanced. During the process of assembling the data it was found that for many countries there was a lack of available data during the first WVS wave 1981-1984, both GDP and trade volume were missing. This occurred mostly for European countries that broke free from former Yugoslavia. Due to this lack of consistent data for the early years a decision was made to only include wave 2-6 in the study in order for the data to be more balanced. The choice of not including the first wave in the study will not result in a major loss in observations since only 20 countries were included in the World Value Survey that period and thus most
countries did not have observations on cultural distance during the first wave. Furthermore, although the original data from WVS contains over 100 countries and regions, due to a lack of data for certain countries on the trade between Sweden and some countries these have been dropped from the sample. For a full overview of the adjustments see appendix B. For each wave from the WVS the average trade volume has been calculated. Since the data from WVS has been collected for a long period some countries have changed. For example, the Balkan States did not exist before the 90’s while West Germany only existed during the first wave, Hence, there was no possibility for trade between Sweden and some specific countries during certain waves, which were partly corrected for by removing the first wave from the sample. There is also a reason to believe that cultural changes do not have an immediate effect on trade volume. For this reason, the trade volume has been taken as the volume of the last year of the wave. For example, trade volume for the wave 2009-2014 is estimated by the trade volume 2014. Hence, cultural distance is predominantly determined before the trade is measured.

3.1.2. Distance

The values from the culture map was collected from the WVS, where the specific numbers are a replicate of the values in the culture map during all years that the study has been conducted. Instead of using a statistical software to calculate the Traditional/Secular-Rational and Survival/Self-expression values, which is possible by using the WVS longitudinal data-file, a document of all cultural values for all countries wave 2-5 was recovered from an older version of the WVS webpage (World Value Survey, 2012) and data from the sixth wave was found at the Institute for Future Studies (2017). The numbers were then double checked with the data points in the maps published at WVS (2017). The data covers several countries, which are listed in Appendix B with some exclusions of countries where bilateral trade data from Sweden was unavailable.

The differences between values are included in the distance vector DISTANCE. Cultural values are those expressed in the cultural map; Traditional/Secular-Rational (TRADRAT) and Survival/Self-expression (SELFSURV) values. This indicates that the model includes two variables that aim at capturing the cultural distance between Sweden and country j at time t. The distance in culture and values changes in each wave. In this study the cultural distance is calculated by taking the absolute value of the Swedish score subtracted by the score of country j (4), For example⁴:

\[ |TRADRAT_{it} - TRADRAT_{jt}| = TRADRAT_{ijt} \text{ diff}, \quad (4) \]

The second measurement of distance is that of geographical distance between two countries. This information was derived from the CPEII dataset dist_cpeii that specifies the distance between main cities/agglomerations in terms of population by using the great circle formula (Cepii.fr, 2017), based on longitude and latitude coordinates. The distance is expressed in kilometres and considered to be time-invariant.

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⁴ A corresponding calculation is also made for the SELFSURV variable to obtain the cultural distance,
3.1.3. Additional variables

Some additional variables have been considered to have significant effect on bilateral trade. Several of these control variables have been used in previous studies. First, in accordance with the gravity model we consider the gross domestic product (GDP) as a measurement of the size of the economies. The gravity model predicts that size of economies have a positive effect on trade. In the model we use the Swedish GDP and the GDP of country j. The GDP is taken as an average for the years included in each wave. The data on GDP is sourced from the World Bank and is expressed in constant 2011 international $.

To control for other effects some additional variables are included in the model. These are dummy variables that indicates what is referred to as cultural familiarity by Linders et al, (2005). Here common language is considered. Common language is often added as a dummy variable that takes on the value 1 if a common language is spoken and 0 otherwise. Sharing a common language facilitates communication and hence expected to have a positive effect on trade.

Since Sweden is a small country the Swedish language is not widely spread to other countries. Finland has Swedish as an official minority language thus this is accounted for in the model. The close links to the other Scandinavian languages (Norwegian and Danish), where communication can be done relatively effortless is also considered as a common language. Nevertheless, English proficiency in Sweden is very high according to EF English proficiency index, in 2016 Sweden ranked 3rd in the world in English proficiency among countries not having English as a native language (Ef.se, 2017). A fact that is anticipated to influence trade flows in a positive way. For that reason, English speaking countries will be referred to as having a common language with Sweden in this study.

To identify the countries within the dataset where English is spoken information from Ethnologue.org have been used. Each country is classified using the Expanded Graded Intergenerational Disruption Scale (EGIDS), first developed by Lewis and Simons (2010; cited by Ethnologue, 2017). The scale includes 13 levels where a higher number indicates lower levels of proficiency. In this thesis, a decision has been made to use only level 1 to indicate that English is spoken. Level 1 indicates that English is the national language of the country and that English is the language used by the government, in education, work and mass media.

Sharing a common border is also controlled for by using a dummy variable. Sweden has land borders to Norway and Finland but in this study Denmark is also considered to have a common border due to Öresundsbron, a bridge that connects the two countries since January 1st 2000. A dummy variable for landlockedness has also been included since this is thought to influence trade negatively. The dependency on neighbouring countries theoretically impedes a country’s bilateral trade as transaction costs increases along with transport costs. To include this variable in the study a dummy variable is introduced, taking on the value 1 if landlocked and 0 otherwise. Landlocked countries are identified by the dataset geo_dist from Cepii.fr (2017).
With these considerations, we can specify the empirical model where the additional dummy variables for common language, common border and the existence of a trade agreement is included in an additional vector $X'$:

$$\ln(TRADE_{ijt}) = \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) - \beta_3 \ln(DISTANCE_{ijt}) + \beta_4 (TRADE_{ijt})$$

$$+ \beta_5 (SELFSURV_{ijt}) + \beta_6 (X'_{ijt}) + \mu_t + \nu_{it}$$

The core model to be tested is the original gravity model which aims at testing the two main hypotheses (H:0 and H:1 stated in section 2.5). To check robustness of the results the additional control variables are added into the model. Additionally, to extend the study the separated export and import models are tested in the same manner.

3.2. Data summary

Since the subject of this thesis requires extensive global data on trade between each country pair specifically there are not very many datasets. As it is beyond the scope of this thesis to collect own data regarding trade and values this study relies on secondary sources. The data used in the model has been derived from several sources. This due to the lack of a complete dataset containing all variables that are included in the model for all countries and years (1990-2014). Following is a description of the sources and a summary of the variables:

<table>
<thead>
<tr>
<th><strong>Table 3: Variable Description Summary</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Label</strong></td>
</tr>
<tr>
<td>Trade total US$ million (log)</td>
</tr>
<tr>
<td>Exports US$ million (log)</td>
</tr>
<tr>
<td>Imports US$ million (log)</td>
</tr>
<tr>
<td>GDP Sweden (Constant 2005 $)</td>
</tr>
<tr>
<td>GDP country j (Constant 2005 $)</td>
</tr>
<tr>
<td>Traditional/Secular-Rational diff.</td>
</tr>
<tr>
<td>Survival/Self-expression diff.</td>
</tr>
<tr>
<td>Geographical distance (KM)</td>
</tr>
<tr>
<td>Variables in vector X:</td>
</tr>
<tr>
<td>Common language</td>
</tr>
<tr>
<td>Common Border</td>
</tr>
<tr>
<td>landlocked</td>
</tr>
</tbody>
</table>
To look for presence of any random effects in the model an initial Breusch-Pagan Lagrange multiplier (LM) test was done. If the null hypothesis is not rejected, the correct specification is the pooled model. In this case, the null hypothesis was rejected which indicates that a pooled model is not appropriate for this study and instead FE or RE models must be considered. Model specification and whether to use Fixed or Random effects model a Hausman test has been conducted not rejecting the null hypothesis that difference in coefficients not systematic, which means a random effects model is appropriate for this study. The use of the random effects model allows for the time-invariant variables to be estimated. Running an initial Breusch-Pagan test for heteroscedasticity shows that a rejection of the null hypothesis: those error variances are all equal. This means that that the model suffers from heteroscedasticity. To account for that robust standard errors have been added to the model. In the study the choice has been made to use both an aggregate level of trade denoted Trade total, as well as imports and exports separately as dependent variables. Table 3 provides the summary statistics for the variables included in the study.

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Obs</th>
<th>Mean</th>
<th>Std, Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade total (log)</td>
<td>475</td>
<td>5.58</td>
<td>2.36</td>
<td>-1.45</td>
<td>10.70</td>
</tr>
<tr>
<td>Exports (log)</td>
<td>473</td>
<td>5.10</td>
<td>2.24</td>
<td>-1.71</td>
<td>9.76</td>
</tr>
<tr>
<td>Imports (log)</td>
<td>475</td>
<td>4.05</td>
<td>3.17</td>
<td>-5.85</td>
<td>10.25</td>
</tr>
<tr>
<td>GDPi (log)</td>
<td>475</td>
<td>11.19</td>
<td>1.90</td>
<td>7.17</td>
<td>16.47</td>
</tr>
<tr>
<td>GDPj (log)</td>
<td>475</td>
<td>12.76</td>
<td>0.18</td>
<td>12.51</td>
<td>12.98</td>
</tr>
<tr>
<td>Distance (log)</td>
<td>344</td>
<td>8.16</td>
<td>0.94</td>
<td>5.93</td>
<td>9.78</td>
</tr>
<tr>
<td>Traditional/rational diff.</td>
<td>344</td>
<td>1.72</td>
<td>0.96</td>
<td>0.00</td>
<td>3.80</td>
</tr>
<tr>
<td>Survival/Self-Expression diff.</td>
<td>475</td>
<td>2.12</td>
<td>0.99</td>
<td>0.03</td>
<td>4.03</td>
</tr>
<tr>
<td>Common Border</td>
<td>475</td>
<td>0.03</td>
<td>0.17</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Common language</td>
<td>475</td>
<td>0.25</td>
<td>0.43</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Landlocked</td>
<td>475</td>
<td>0.20</td>
<td>0.40</td>
<td>0.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Looking at the correlation of the variables there is high correlation between Sweden’s GDP and Swedish trade, geographical distance and the cultural variables are negatively correlated to trade as well as the trading partner being landlocked. The issue of multicollinearity, i.e. independent variables being highly correlated with other independent variables is not expected to be present. Formally testing the variables using a Variance Inflation Factor (VIF) test shows that the variables do not show issues with multicollinearity.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Trade total (log)</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>GDPi (log)</td>
<td>0.868</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>GDPj (log)</td>
<td>0.201</td>
<td>0.133</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Distance (log)</td>
<td>-0.312</td>
<td>0.010</td>
<td>-0.021</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Traditional/rational diff.</td>
<td>-0.353</td>
<td>-0.164</td>
<td>0.313</td>
<td>0.543</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Survival/Self-Expression diff.</td>
<td>-0.465</td>
<td>-0.457</td>
<td>0.223</td>
<td>-0.038</td>
<td>0.121</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Common Border</td>
<td>0.296</td>
<td>0.106</td>
<td>0.014</td>
<td>-0.387</td>
<td>-0.253</td>
<td>-0.298</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Common language</td>
<td>0.103</td>
<td>0.104</td>
<td>-0.005</td>
<td>0.189</td>
<td>0.242</td>
<td>-0.325</td>
<td>0.301</td>
<td>1.000</td>
</tr>
<tr>
<td>9</td>
<td>Landlocked</td>
<td>-0.379</td>
<td>-0.387</td>
<td>0.013</td>
<td>-0.135</td>
<td>-0.088</td>
<td>0.170</td>
<td>-0.087</td>
<td>-0.046</td>
</tr>
</tbody>
</table>
4. Empirical Results

Six models were tested using total trade (model 1 and 2) exports from Sweden (model 3 and 4) and imports to Sweden (model 5 and 6) as dependent variables. Each dependent variable was first tested considering only the original variables included in the gravity model; log of GDP for Sweden and country j and log of distance using the great circle formula.

**Table 6: Regression results Cultural distance’s effect on trade**

<table>
<thead>
<tr>
<th>Dependent var,</th>
<th>(1) Trade (log)</th>
<th>(2) Trade (log)</th>
<th>(3) Exports (log)</th>
<th>(4) Exports (log)</th>
<th>(5) Imports (log)</th>
<th>(6) Imports (log)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP_i (log)</td>
<td>1.033***</td>
<td>0.991***</td>
<td>0.969***</td>
<td>0.925***</td>
<td>1.348***</td>
<td>1.298***</td>
</tr>
<tr>
<td></td>
<td>(0.0476)</td>
<td>(0.0521)</td>
<td>(0.0444)</td>
<td>(0.0484)</td>
<td>(0.0958)</td>
<td>(0.098)</td>
</tr>
<tr>
<td>GDP_j (log)</td>
<td>1.263***</td>
<td>1.333***</td>
<td>1.024***</td>
<td>1.102***</td>
<td>1.502***</td>
<td>1.582***</td>
</tr>
<tr>
<td></td>
<td>(0.196)</td>
<td>(0.205)</td>
<td>(0.200)</td>
<td>(0.210)</td>
<td>(0.309)</td>
<td>(0.319)</td>
</tr>
<tr>
<td>Distance_{ij} (log)</td>
<td>-0.892***</td>
<td>-0.860***</td>
<td>-0.823***</td>
<td>-0.783***</td>
<td>-1.090***</td>
<td>-1.091***</td>
</tr>
<tr>
<td></td>
<td>(0.104)</td>
<td>(0.114)</td>
<td>(0.0984)</td>
<td>(0.0978)</td>
<td>(0.170)</td>
<td>(0.205)</td>
</tr>
<tr>
<td>SELFSURV_{ij} diff.</td>
<td>0.106</td>
<td>0.0699</td>
<td>0.161(*)</td>
<td>0.114</td>
<td>-0.00662</td>
<td>-0.0291</td>
</tr>
<tr>
<td></td>
<td>(0.103)</td>
<td>(0.102)</td>
<td>(0.0959)</td>
<td>(0.0936)</td>
<td>(0.166)</td>
<td>(0.169)</td>
</tr>
<tr>
<td>TRADRAT_{ij} diff.</td>
<td>-0.148*</td>
<td>-0.108(*)</td>
<td>-0.150*</td>
<td>-0.0979</td>
<td>-0.161</td>
<td>-0.138</td>
</tr>
<tr>
<td></td>
<td>(0.0596)</td>
<td>(0.0591)</td>
<td>(0.0686)</td>
<td>(0.0709)</td>
<td>(0.100)</td>
<td>(0.101)</td>
</tr>
<tr>
<td>Common Border</td>
<td>0.752*</td>
<td>0.855**</td>
<td>0.855**</td>
<td>0.532</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.324)</td>
<td>(0.279)</td>
<td>(0.279)</td>
<td>(0.628)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common Language</td>
<td>0.243</td>
<td>0.293(*)</td>
<td>0.293(*)</td>
<td>0.253</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.172)</td>
<td>(0.175)</td>
<td>(0.175)</td>
<td>(0.353)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landlocked_j</td>
<td>-0.413(*)</td>
<td>-0.427*</td>
<td>-0.427*</td>
<td>-0.542</td>
<td>-0.542</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.205)</td>
<td>(0.183)</td>
<td>(0.183)</td>
<td>(0.434)</td>
<td>(0.434)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-14.71***</td>
<td>-15.41***</td>
<td>-12.04***</td>
<td>-12.91***</td>
<td>-21.06***</td>
<td>-21.49***</td>
</tr>
<tr>
<td></td>
<td>(2.502)</td>
<td>(2.505)</td>
<td>(2.443)</td>
<td>(2.487)</td>
<td>(3.783)</td>
<td>(3.752)</td>
</tr>
<tr>
<td>Observations</td>
<td>344</td>
<td>344</td>
<td>344</td>
<td>344</td>
<td>344</td>
<td>344</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
(*) p<0.1  *p<0.05  **p<0.01  ***p<0.001

Table 5- GDP_i (log) indicates log of Swedish GDP and GDP_j (log) is the log of GDP of the trading partner. Distance is the distance in km between Sweden (i) and the trading partner (j). TRADRAT diff. indicates the cultural distance in traditional/secular-rational values between Sweden (i) and the trading partner (j). SELFSURV diff. is the cultural distance in survival/self-expression values between Sweden (i) and the trading partner (j).
Additionally, the models included the two dimensions of cultural distance Survival/self-Expression (SELSURV) and Traditional/Secular-rational (TRADRAT) between Sweden and the counterpart. Then, each of the control variables of common border, common language and whether the counterpart is landlocked or not been included in models 2, 4 and 6 as dummy variables. As expected from the theoretical background the gravity variables GDP and distance are significant in all models and have a notably high effect on total trade, exports and imports. GDP has a positive effect on trade and distance is negative indicating that Sweden trade more with larger economies and less with economies that are geographically distant.

4.1. Cultural distance

Model 1 shows the variable TRADRAT is significant at the 0.05 level. The relationship is negative, which indicates that large differences in traditional/secular-rational values reduces trade between Sweden and other countries. This significant relationship is only persistent for the traditional/secular-rational indicator of cultural distance in model 1 as no significant relationship between the second variable of cultural distance; survival/self-expression was observed. As indicators of common language, common border and if the trading partner is landlocked is added to the model (displayed in Model 2), traditional/secular-rational is only significant at the 0.1 level. And the effect is smaller; for every 1 unit increase in traditional/secular-rational distance, trade decreases with -11.3 percent compared to -14.8 percent in model 1.

Model 3 shows similar presence of a significant relationship between traditional/secular-rational values and exports. The relationship is still negative and significant at a 0.5 level. The negative coefficient here is larger than for the total trade; 1 unit increase in distance between Sweden and the trading partners in traditional/secular-rational values decrease exports from Sweden with 15 percent. Further analyzing the results by using a 90% confidence interval we find significant results for the other dimension of cultural distance SELFSURV or survival/self-expression in model 3. Interestingly, the variable which is significant at the 0.1 level is positive as opposed to the negative effect of traditional/secular-rational values in the same model, which could indicate a two-folded relation between cultural distance and exports in Sweden. This is interpreted as for a 1 unit increase in the Swedish cultural distance exports increase with 16.1 percent.

Model 5 and 6 uses log of total import to Sweden as dependent variable. In this case, no significant results could be found for any of the cultural distance parameters. Noted is however that, though not significant, SELFSURV has a negative sign as opposed to the other models.

4.2. Additional results

Starting with the gravity variables in all models tested Swedish GDP has a positive effect on trade at the highest significance level 0.001. The GDP of the trading partner is also positive and highly significant to trade, exports and imports. These results are in line with the theory that high-income economies engage more in trade with other high-income economies.
The geographical distance is also significant for the model showing a strong negative effect. Having a common border has a positive effect on total trade and exports. In this case, only border via land is considered with Denmark included due to the direct link via the Öresund bridge since 2000. Having a common border seems to have a positive effect on trade in model 2 and 4 where total trade and exports are dependent variables, although for imports it is not significant. The effect of having a common border is high, increasing total trade with about 75.2 percent in total trade and 85.5 percent in exports. Additionally, sharing a common language, in this case any of the Scandinavian languages or having English as a national language has no significant effect on trade which is a little bit surprising. Shared language has a positive effect at the 0.1 level for exports. According to the results Sweden’s total trade and exports are mostly directed towards countries in the sample that have access to the sea, hence are not landlocked. Being landlocked decreases the trade with about 40.9 percent and exports with 41.9 percent at a 0.5 significance level.
5. **Discussion**

The purpose of this thesis has been to establish a link between cultural distance and trade in Sweden and to investigate, given such a link was found, if the relationship was positive-cultural distance increase trade, or negative, cultural distance decrease trade. The core model of total trade showed that cultural distance has a significant effect on total trade and this effect is more prevalent in exports rather than imports where no significant results were obtained. The empirical results presented in previous section show that there is a link between Swedish trade and cultural distance. The results show a mixed effect on dependent variables. There is a negative effect of traditional/secular-rational values on total manufactured trade and on exports. And a positive effect of survival/self-expression distance on exports. Two auxiliary

In the theory section of this thesis two core hypotheses were formulated. The main hypothesis expected cultural distance to affect trade negatively through acting as a barrier caused by uncertainty and a lack of understanding of the actions taken by the other party leading to increased risks. Hence, there is an expectation that companies engaging in trade prefer partners where risks and uncertainties are low and that cultural familiarity reduces the risks. The alternative hypothesis; that cultural distances increase trade may be explained Smith and Ricardo’s theories of comparative and absolute advantages where countries specialise at what they are good at and export the surplus while importing goods that that the country is inferior at producing. This link between positive effects on trade and cultural distance and comparative advantage has also been discussed by Lankhuizen and de Groot (2014). Another, support for the alternative hypothesis, presented by Linders et al. (2005) is that when the cultural distance is large companies may prefer to use trade as an alternative to other types of partnerships, such as foreign direct investments (FDI) where the company establish a subsidiary in the foreign country. Engaging in FDI is generally implying higher risks for the investing country and as risks are something companies try to reduce; exports and imports is seen as a safer option. Hence, this might lead to cultural distance having a positive effect on trade. The results in previous section shows mixed results for the cultural distance variables’ effect on trade, however, there is a stronger support for the main hypothesis; that cultural distance reduces trade. Mainly, this analysis will focus on the results significant at a 0.5 level or less but as a control the empirical results also display significance at a 0.1 level. Expectedly, GDP for both Sweden and its counterparts were highly significant in all models as well as geographical distance, which is well founded in the theoretical background of the gravity model first used in economic research by Tinbergen (1962).

The general conclusion to the results is that there are evidence that cultural distance may be influencing trade to some extent. These results may be important for policy makers, who seek to increase trade, to find suitable implications to handle the effects of cultural distance. This, by overbridging the uncertainties that are related to not fully understanding a trading partner’s culture in order to develop and establish partnerships in trade. One would assume that this is important, as Sweden is a small country which is heavily dependent on international trade for prosperity and growth and a strong promoter of free trade.
Further looking at the empirical results from previous chapter there is a significant effect on the traditional/secular-rational distance. The effect is negative which is interpreted as Sweden values to trade with countries which value and emphasise independence and have less beliefs in authority. This is to some part reflected in the relatively flat Swedish company structure that emphasises consensus rather than authority (Global Business Culture, n.d.). Sweden is considered to be one of the most secular nations of the countries covered in the WVS dataset. Being a highly secular-rational culture indicates that the society puts less emphasis on religious beliefs and authority and traditional family values. This alongside with its Scandinavian neighbours, Germany and Latvia, at least in the earliest waves. However, in wave 5 and 6 Japan is the closest country culturally when it comes to secularisation. This variable is partly related to religious beliefs and based on questions whether the respondents are asked if God has an important role in their life. As several other studies include dummy variables that represents shared religion between the trading countries, often with significant results. This could explain why there is a significant result for the traditional/secular-rational variable as well even though it does not represent shared religious beliefs but rather religiosity. Looking at Sweden’s biggest trading partners from figure 2; Germany, the Nordic countries, the Netherlands, China, Russia and Japan all score rather high on the traditional/secular-rational values. Hence, this result is quite expected.

When relaxing the strictness of the significance level from 0.05 to 0.1 there is also evidence for the SELFSURV variable to be significant in the case where Sweden’s exports act as the dependent variable. This can be interpreted as Sweden’s exports is increasing as the cultural distance is larger, meaning exports are directed to countries that are not similar to Sweden when it comes to values concerning acceptance towards the LGTB community, abortion, divorce and suicide. Perhaps, this is as a substitution to engaging in Foreign Direct Investment in countries that are very different culturally. Looking at the table over Sweden’s major export partners and the culture map one of the evident countries that is far from Sweden culturally is China with a mean distance of 3.13. Although China has been one of the major receivers of Swedish exports during all waves at the least 14th biggest (wave 2 and 3) and 10th biggest in wave 6 the country is very far when it comes to survival/self-expression values. A similar pattern, although not as extreme as the distance to China are countries such as Poland, Russia and Japan. The contradicting effect of the two cultural variables is interesting. Perhaps, cultural distances’ effect on trade is depending on what type of values are concerned. While some differences in values makes trade hard, others may be less significant or even positive and enhance business or perhaps countries that are very distant in terms of survival/self-expression have an attractive market from a Swedish perspective that overshadows cultural differences. For example, China which has experienced growth and is seen as an upcoming market but is culturally far from Sweden with regards to survival/self-expression, is still one of the bigger trading partners to Sweden.

Notably is also that the effect of cultural distance is reduced when additional variables are added to the model. In the first case, using the log of total trade as dependent variable traditional/secular-rational values are significant at a 0.5 level, but in model 2 the additional variables included lowers the coefficients from -14.8 to -10.8 and the results are only
significant at the 0.1 level. These results are similar to the ones presented by Cyrus (2012) where a negative effect of cultural distance was found when only including the basic gravity variables and turning insignificant when additional variables are added. In the export models none of the two cultural distance variables are significant once the dummy variables are added. Hence, cultural distance influence total trade to a lower extent and does not influence exports once the factors representing common language, shared border and the trading partner being landlocked are included. This thesis shows that GDP of both parties in trade is important to the amount of goods traded. The geographical distance is also very important to consider in this types of studies as it serves as a barrier to trade. Concerning the three additional dummy variables used there is evidence of a shared land border having positive effects on trade. This indicates a strong trade partnership between Sweden and its neighbouring countries; Norway, Denmark and Finland. This positive relationship is more significant in the case of Swedish exports than total trade and there is no evidence of a shared border having any significance regarding imports. Perhaps, this is due to the products produced in Sweden are attractive also in neighbouring countries as tastes are similar. Shared language is not proven to have a significant effect on total trade but is significant at a 0.1 level for exports. Hence, Sweden chose to export more to countries where they can communicate with a common language. Countries that are English speaking at a national level is included in the definition of a shared language.

The method for this thesis has been the Gravity model, which is commonly used in these types of studies. The data used is unbalanced which means that there were missing data for some countries in some waves, either in trade data or in cultural distance. This would have been impossible to prevent as cultural variables from the WVS is not available for all countries all waves. The data used in this thesis has been to some extent limited to its availability, which might have some effects on the results. For example, trading data exist from several databases: e.g. World Bank, UNCTAD stat, Statistics Sweden and IMF statistics. However, the datasets concerning trade by counterpart for all years and for all partners was found to be limited. In this thesis, the distance is simply measured in kilometres between capital cities, using the great circle formula. However, this measure may be misleading as it does not calculate for the actual routes that shipments of goods might have to take.

There are some limitations to the study in terms of the data used. This study has focused on the trade in goods but Sweden has also a large and growing percentage of trade in services, which could provide for interesting further studies. As mentioned earlier, existing studies on cultural distance and trade have discovered some mixed results in the past but is in favour of the hypothesis that cultural distance reduces trade, which some evidence in this thesis shows as well. The mixed results could be caused by a non-linear relationship between cultural distance and trade as shown by Lankhuizen and de Groot (2014).

The results presented in this thesis can serve as a basis of evidence and motivation for bridging cultural distances, especially in the traditional/secular-rational dimension where a significant negative effect was found in the core model as well is the model controlled for cultural familiarity and the additional segregated export model. As doing so one could
possibly increase trade and further economic development. Being aware of the part that cultural distance play in Swedish trade can serve as a first step in establishing policies that creates a better understanding which in turn could increase trade. Businesses can be more careful with actions taken abroad and study the potential trading partner’s culture closely, being mindful of the fact that culture matters in a trading partnership. Especially firms operating in the export sector as the results are of higher significance in exports than in imports.
6. Conclusion

This thesis aimed to investigate the possible effect that cultural distance may have on Swedish international trade by using WVS data on cultural values for the years 1990-2014 divided into five periods denoted by WVS as waves. The sample included 344 observations of cultural distance and Swedish trade as well as interpreting the effects of exports and imports of manufactured products separately. Regression results using random effects modelling discovers a negative and significant at 0.5 level effect for traditional/secular-rational values and total trade for the basic gravity variables; log of GDP for Sweden and country j and geographical distance. This indicates that cultural distance reduces trade which supports the main hypothesis. However, once variables measuring cultural familiarity such as shared language and dummy variables of common border and landlocked (for country j) is included the cultural distance is significant but at a 0.1 level. A similar result was reported for models where log of Swedish total export was used as dependent variable. Differences Traditional/secular-rational values was initially significant but once dummy variables was included the cultural distance lost its significance. Interestingly the opposite effect was found on distances in survival/self-expression where a positive effect on exports was found. There are several potential explanations to why cultural distance might have a positive effect on trade: comparative advantage or the unwillingness to invest in closer partnerships due to the uncertainties. As for the generalisation of the results it could be assumed that similar countries may experience similar results as the result is in line with some of the previous studies, however this should be further investigated before drawing any strong conclusion. For example there is a possibility that Sweden’s major trading partners for example Germany and Norway have inflated the result to some extent, which may be specific to Sweden as a country. The generalisation could be suggested as a subject for further studies. Additionally, there are several interesting directions for future studies. The model can be adjusted slightly and include other countries and thus increasing the number of observations, and taking other cultural values into account or controlling for other factors such as level of technology or foreign direct investment. One could also continue by dividing the dependent variable of trade into industry sectors.

An interesting issue to study further could be the positive effect of cultural distance in Survival/Self-expression and trade and whether this is due to being more reluctant to invest more closely in culturally different countries and settle for just exporting to avoid uncertainties and risks. The same goes with the theory whether companies are reluctant to invest in countries that are culturally distant and instead choose the less risky option of imports and exports.
7. Bibliography


World Value Survey (2008)

**Statistic data sources**


Appendix A

<p>| Table 7: WVS Variables for the Construction of Cultural Distance Dimensions |</p>
<table>
<thead>
<tr>
<th>WVS Variables (Label):</th>
<th>Factor</th>
<th>Question Asked:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeling of happiness</td>
<td>Survival/Self-Expression</td>
<td>Taken all things together would you say that you are 1 very happy, 2 Quite happy, 3 not very happy, 4 not at all happy</td>
</tr>
<tr>
<td>Most people can be trusted</td>
<td>Survival/Self-Expression</td>
<td>Generally speaking, do you think most people can be trusted or do you have to be careful when dealing with people?</td>
</tr>
<tr>
<td>Future changes: Greater respect for authority</td>
<td>Traditional/Secular-rational</td>
<td>Please tell me if greater respect for authority were to happen, whether you think it would be a good thing, a bad thing, or don’t you mind?</td>
</tr>
<tr>
<td>Political action: signing a petition</td>
<td>Survival/Self-Expression</td>
<td>Please tell me whether you have done any of these things, whether you might do it or would never under any circumstances do it: Signing a petition</td>
</tr>
<tr>
<td>How important is God in your life</td>
<td>Traditional/Secular-rational</td>
<td>Scale 1 (not at all important) to 10(very important)</td>
</tr>
<tr>
<td>Justifiable: homosexuality</td>
<td>Survival/Self-Expression Traditional/Secular-rational</td>
<td>Can homosexuality be justified, never justified or somewhere in between?</td>
</tr>
<tr>
<td>Justifiable: abortion</td>
<td>Survival/Self-Expression Traditional/Secular-rational</td>
<td>Can abortion be justified, never justified or somewhere in between</td>
</tr>
<tr>
<td>How proud of nationality</td>
<td>Traditional/Secular-rational</td>
<td>How proud are you of your nationality? 1 very proud, 2 Quite proud, 3 not very proud, 4 not at all proud</td>
</tr>
<tr>
<td>Post-Materialist index 4-item</td>
<td>Survival/Self-Expression</td>
<td>If you had to choose, which one of the things would you say is most important?</td>
</tr>
<tr>
<td>Autonomy Index</td>
<td>Traditional/Secular-rational</td>
<td>Mentioning of “obedience” and “religious faith” and not mentioning of “independence” and “determination, perseverance” on the question “Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important?”</td>
</tr>
</tbody>
</table>

The scoring on these questions provides the information to determine where on the Traditional/Secular-rational and Survival/Self-Expression scales the respondent falls. An average country score is then calculated. Traditional values emphasize high importance of God, importance for children to learn obedience and religious faith than independence and determination, that abortion and homosexuality can never be justified, a strong sense of national pride and respondents have high respect for authority. On the other side of the spectra Secular-rational values emphasize the opposite. Similarly, Respondents scoring high on survival values tend to prioritize physical and economic security over self-expression, answer that they are not very happy or not at all happy, think that abortion and homosexuality can never be justified and that people generally cannot be trusted nor have they or would never sign a petition. Self-expression values emphasize the opposite.
In the regression wave 2-6 were used spanning the years 1990-2014. Due to lack of trade data the following countries has not been included in the regressions: Puerto Rico, Kosovo, Northern Ireland, Northern Cyprus and Palestine.

Additional cultural distance has been calculated as the average between previous wave and following wave in cases where data existed. Observations with more than one consecutive year of missing cultural values have been left blank in the dataset.