

EXPLORING NEW DIMENSIONS OF TRADE

by

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ABSTRACT

By extending the study of international trade to include cultural factors, this paper demonstrates that culture has a direct impact on Canadian and US bilateral trade flows with the world. Various cultural factors of Canadian and US's trading partners were examined through a gravity model to determine their impact on 1990 trade flows. The gravity model explains trade between two countries in terms of the economic size of the trading partners and the distance between them. The following cultural factors were added to this base gravity model to test their explanatory power: the stock of immigrants from the trading partner in Canada, whether the trading partner has English or French as a principal language, and each of four cultural dimensions as they were described by Geert Hofstede in his study of national differences in work related values.

This study has established that culture does have a significant impact on Canadian and US trade. Immigration, English, Hofstede's Individualism/Collectivism, and Hofstede's Uncertainty Avoidance were each found to have significant regression coefficients. Countries with immigrants in Canada trade more with Canada, and English-speaking countries trade more with both Canada and the US. Individualism / Collectivism measures how members of a society relate to one another. It appears that collectivist societies trade more with Canada and the US. Uncertainty Avoidance measures how a society and its members deal with risk and it appears that countries with lower Uncertainty Avoidance ratings (i.e. less risk averse), trade more with Canada and the US.

For the business person trying to compete internationally, cultural factors have been a concern for many years. However, this study suggests a prioritization of the cultural determinants of trade. With a greater understanding of the mechanisms through which culture impacts trade, managers can be more effective in the global marketplace.

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1.0 INTRODUCTION

Today, along the main street of cities around the world, there is the same poster advertising the same movie, produced in the US but with a view to a global market. This image captures two popular themes common to discussions about the global marketplace. First, that culture is becoming homogenous to a North American standard, and second, that international trade has become frictionless with the flow of goods and services free from constraints.

This view of the world, although popular, is of little assistance to the manager of a firm competing internationally. He or she is constantly trying to overcome business problems which arise because of culture, and is finding that traditional tariff barriers are less of a constraint than identifiable and unidentifiable non-tariff barriers.

The theories of cross-cultural management have looked extensively at the role of cultural factors on international business. Surprisingly, this is not true of the theories and models of international economics, which have largely ignored cultural factors. Cross-cultural management studies have been much more concerned with interpersonal issues, than factor endowments. However, there is a wealth of data on international trade flows which lends itself to both empirical investigation and the economic study of trade. This study is an attempt to take ideas prevalent in the cross-cultural management literature - interpersonal and cultural issues - and apply them to empirical methods used in the economic study of trade flows. By bringing together these two areas a more comprehensive understanding of trade is developed.

The effect of cultural factors on Canadian and US bilateral trade flows is reviewed with the help of an augmented gravity model. The gravity model explains bilateral trade between two countries in terms of their economic size and the distance between them. It is an econometric model which evolved out of attempts to explain empirical regularities observed in the pattern of international trade. One of its strengths is that it controls for basic economic considerations, such as the economic size of trading partners, and their relative income.

The cultural factors reviewed include Geert Hofstede's four cultural dimensions, Canada's stock of immigrants, and language, particularly English and French. Geert Hofstede (1994) provides one of the most comprehensive studies of national differences in culture. Covering over 40 countries, Hofstede uses factor analysis to assign numeric values to four cultural dimensions. In addition to Hofstede's cultural dimensions, Keith Head and John Ries (1995) have calculated the stock of immigrants from 120 different countries currently residing in Canada. These immigrants have cultural ties to their home country and their effect on Canadian trade has been measured.

Language is a core component of culture and easily measurable. The effect of both English and French on Canadian and US trade is reviewed.

Section 2 provides an overview of the economic approach to international trade analysis - international trade theory. These theories, their applicability to modern management, and their limitations are reviewed. Section 3 provides a similar analysis of the cross-cultural management approach to the study of international business. This section focuses on finding a working definition of culture and then looks at the work of Geert Hofstede in detail. Each of his four dimensions of work related values are reviewed. In section 4 the relation of culture and trade is investigated in more detail. In particular this fourth section explores the mechanisms through

which culture impacts on trade. Section 5 introduces the gravity model and presents a method of measuring the effect of culture on trade. The resulting analysis is carried out in section 6 by combining cultural factors such as immigration, language and Hofstede's four dimensions in the basic gravity model. Various hypotheses are tested and the results are reviewed in detail. The final section looks at implications for the global manager. With a more dynamic understanding of culture and trade, the global manager can adjust his or her global strategy to realize strategic advantages.

2.0 THE THEORETICAL LANDSCAPE

The economics of international trade theory has become the basis of many modern international business practices. However, there is substantial literature on cross-cultural management which deals with cultural issues in a way that literature on international trade does not. Factor Abundance theory, the foundation of much of modern international trade theory, is investigated below. In addition, its application to management theory, as well as its limitations, are summarized. Following this is a review of some of the more salient elements of cross-cultural management theory.

2.1 Factor Abundance Theory and traditional theories of international trade

Much of traditional international trade theory makes use of the ideas of comparative advantage and relative factor intensities to explain the flow of global trade. For a number of reasons, this theoretical literature has been limited in its applicability to the managers of businesses competing in the global marketplace. In its approach, the articulation of specific strategies for business has

been missing. Where related literature exists, it focuses on influencing government trade policy and helping firms with their international sourcing decisions.

Adam Smith in 1776, introduced the notion of absolute advantage to explain how free trade can be beneficial to two trading partners. In 1817 David Ricardo added to Smith's work with the idea of comparative advantage. This remains one of the key intellectual basis for arguments in support of free trade. The model consists of two countries, with two goods, and one input, labor. Ricardo demonstrated that through free trade both countries gain if their labor productivities differ, even if one country has an absolute advantage in the production of both goods (Hill 1995).

For the past 60 years the work of two Swedish economists, Eli Heckscher and Bertil Ohlin, has played a key role in international trade theory. Their model looks at relative factor endowments to explain the pattern of international trade. The Heckscher Ohlin Model predicts the following:

that a country will export that commodity which makes use of its abundant factor intensively

The model consists of two countries and two factors of production, land and labor. Thus, comparative advantage is determined by factor endowments in conjunction with the relative factor intensities of commodities (Markusen 1995).

The attraction of this theory, and to a lesser degree Ricardo's model, has been its precision in measuring the gains from trade. Unfortunately, the Heckscher Ohlin model is based on a number of constraining assumptions. These assumptions include: (i) that technologies are identical across countries, (ii) that industries experience constant returns to scale, (iii) that there is perfect

competition, (iv) that there are no factor intensity reversals, (v) that preferences are identical and homogeneous, (vi) that there is no international factor migration, and finally (vii) free trade.

Two of the most significant extensions of the Heckscher Ohlin model have been the Rybczynski and the Stolper-Samuelson theorems. The Rybczynski Theorem describes the relation between output levels and factor supplies. It states:

holding product prices fixed, an increase in the quantity of one factor will give rise to a more than proportional increase in the output of the good that uses that factor intensively and a reduction in the output of the other good.

The Stolper Samuelson Theorem connects factor prices with factor supplies. It states:

that an increase in the relative price of a good yields an increase in the real return to the factor used intensively in that good and a decrease in the real return to the other factor (Leamer 1994).

2.2 Impact of trade theory on modern management

There are two main areas where trade theory has had an impact on modern management. First, it can be used to suggest how a firm can use government lobbying as a strategic tool. Protective tariffs imposed by governments have different effects on different industries, and trade theory has helped firms outline these effects. Once recognizing how they will be affected by different policies, firms can act accordingly. Second, trade theory can be helpful in a firm's international sourcing decisions and decisions of where to locate new plant facilities.

Arguments making use of the Rybczynski and Stolper-Samuelson theorem have had a significant impact on the policy agendas of governments trying to protect the interests of different segments of the economy. The Stolper-Samuelson Theorem suggests that if free trade raises the price of a good (world prices are higher than domestic prices), the benefit will not be felt evenly among the different factors used to produce that good. The factor which is used intensively in the production of the exported good will be made better off, while the other input, or its owners, will be made worse off. This helps to explain why US garment workers opposed the North American Free Trade Agreement (NAFTA). Although free trade may, on the whole be beneficial for the US, the US garment industry could be worse off. Thus, a major implication of modern trade theory for managers and governments has been the ability of managers to understand the impact of various trade policies.

Recently, through voluntary multilateral agreements such as the General Agreement on Tariffs and Trade, and ultimately through involuntary agreements such as IMF structural adjustment programs, the policy scope of governments in controlling the flow of trade has been limited. As a result of this limiting of the policy scope of governments, there has also limiting of the range of lobbying provided to the international manager (Agmon 1989).

The second major tool provided to the international manager by modern trade theory is help in decisions of where to locate production facilities (Hill 1995). Factor Abundance theory demonstrates clearly the advantages of producing goods in countries which are relatively abundant in the factor which the good uses intensively. This is the rational for moving the production of labor intensive goods such garments to nations with abundant and inexpensive labor, such as

China. In addition, a firm's 'make or buy' decisions can be influenced by an understanding of factor abundance theory. Underlying many sourcing decisions is an understanding of factor abundance theory. Firms try to understand where the products they are trying to source can be purchased at competitive prices, and make use of arguments very similar to factor abundance theory.

Unfortunately, this application of the theory has not been as effective as one might think for a number of reasons. The relative intensity with which certain factors are used is not always clear. Factor Abundance theory is premised on a model with two countries and two factors of production. These simplifying assumptions make it difficult to extrapolate the results of the model to a world with hundreds of countries and hundreds of factors. There are a multitude of issues involved in moving production from one country to another, few of which are covered in this theory.

One of the driving assumptions of Factor Abundance theory is free trade: that the flow of goods and services is free from constraints. It does not consider transportation costs, government intervention, informational constraints, and the many other factors which constrain the international flow of goods. Two countries which would realize large gains from trade may be very far from one another, leading to prohibitive transportation costs. Similarly, without access to market information, trade is impossible. In fact, the study of international business has, to a large degree, been concerned with developing means of overcoming these obstacles.

One of these constraining factors not covered in the traditional international economics literature is culture. For decades, culture has played an important part in the study of international management. Managers of multinational corporations, and other businesses competing in the

global market place, have been mindful of the importance of cross-cultural management issues. These managers make decisions daily which impact the international flow of goods.

3.0 Cross-cultural Management Theory

There is a large literature on cross-cultural management. It plays a role in everything from the study of negotiations and human resource management to marketing and strategy. A significant portion of the literature focuses on the nuts and bolts of managing in a cross-cultural setting. Of the empirical studies done, many focus on identifying culture as a component of national differences in performance.

3.1 Management attitudes towards culture

The role of culture or national differences in values has been part of international management studies for decades. However, the importance placed on them has varied considerably. Geert Hofstede (1983, 1984), who has conducted one of the most comprehensive cross national studies in management, presents a historical analysis of the relationship between management and cultural values. The way of viewing culture in the 1950s and 60's was dominated by the "convergence hypothesis" where the dominant belief, at least in Europe and the US, was that management was something universal. Sound management was thought to be a science with concrete, universal principles true across different cultures. The rationale behind this reasoning was that if local management practices were different from these universal, and markedly western principles, it was inevitable that through the process of industrialization and economic progress, business practices would evolve to this international norm.

During the 1970s, however, this belief in the “unavoidable convergence of management practices” became less prominent. The political and business realities of the time made it clear that cultural differences would remain a dominant factor on the political and economic scene. The difficulties of the European Community in overcoming cultural differences made this most strikingly clear. During this period it became evident that these national and regional differences could be the most crucial constraint facing managers in the 1980s and beyond.

Nancy Adler (1991), who has written extensively on issues of cross-cultural management, discussed these more recent changes away from the ‘convergence hypothesis’ approach to international management. In investigating the influence of cultural diversity on multinational firms, she points out that not only are cultural differences important, but that the relative impact of culture depends on the stage of development of the firm, industry, and world economy. According to Adler, global strategies have evolved over time through four phases since the Second World War.

The first phase she describes is very similar to the convergence hypothesis discussed by Hofstede except it deals with attitudes in international product distribution. In the first phase, prominent immediately after the Second World War, multinationals regarded issues of cross-national differences as irrelevant. During this period, firms operated primarily for domestic consumption. Where foreign sales were made outside of the domestic market, the specific needs of the other society were largely ignored. It was a period marked by an overall lack of sensitivity to cultural differences. Importers and foreign distributors were responsible for adapting products to domestic needs.

The second phase resulted from increased competition which forced producers to be more conscious of the needs of foreign consumers. Here there was a shift from product to market orientation. Rather than assuming that there is only one way to approach a market, managers recognized that each foreign market must be managed differently. As production moved outside of the domestic market, culture became critical.

The third phase is where Alder sees most industries today. Different producers manufacture products which, although technologically sophisticated, are virtually identical, and face market pressures similar to those of a commodity. In these markets, which are particularly price sensitive, productivity and cost advantages are paramount and culture is perceived to be less important. As a result, market segmentation and a recognition of cultural differences is a luxury not afforded to the cost sensitive firm competing in the global marketplace.

In the fourth and final phase, low cost production is the benchmark, and firms derive their competitive advantage through a sensitivity of cultural factors. Strategic advantages can be realized through an understanding of cultural differences. Culture lies at the margin and is a factor which firms can control and exploit to gain strategic advantages.

“competitive advantage comes from strategic thinking and mass customization.... successful phase 4 firms need to know how to understand their potential clients’ needs, quickly translate them into products and services, produce those services on a least cost basis, and deliver them back to the client in an acceptable fashion.”(Adler 1991, p.10)

As the most advanced phase, this is the one that the globally competitive firm must master to be successful in the future.

3.2 Defining culture

Before proceeding in this analysis of the relation between culture and trade, a working definition of culture must be established. Language, values, and communication are characteristics often associated with culture. However, only those elements of culture relevant to the international manager are considered here.

Anthropologists have given the study of culture much attention but have yet to agree on a definition. (Child 1981). Among cross-cultural management theorists definitions also vary considerably. Nancy Adler (1991) provides a more anthropological definition, "that complex whole which includes knowledge, belief, art, law, morals, customs, and any capabilities and habits acquired by a man as a member of society". John Child (1981) defines culture as, "an expression of values, norms and habits which are shared and rooted within a nation." Geert Hofstede (1980), who's study on work related values is used throughout this study, defines culture as "the collective mental programming of the people in an environment."

Lane and Distefano (1988) and Nancy Alder (1991) have each discussed culture in terms of six basic dimensions discussed by Kluckhohn and Stredtbeck in 1961. They suggested that culture consists of a shared body of general beliefs and values, common to all humanity. These six dimensions describe the base cultural orientations of societies. It is assumed that there are only a few common human problems which cross all cultures and nations. In this sense they are the basis of culture.

First, is human nature: are people generally regarded as good, evil or mixed, and can they be changed? North Americans are often regarded as having faith in a persons ability to change. These ideas have a significant impact on the importance a society places on issues such as retraining. Furthermore, in societies where people are generally seen as evil, managers are less likely to trust their employees.

Second, is the relationship of man to nature: is man master over nature, subjugated by nature, or in harmony with nature? Western notions that man dominates nature are quite different from many other societies which see man as being in harmony with nature. Some societies see themselves as being subjugated by nature, and having very little control over their environment.

Third, is time orientation: are people oriented towards the past, present, or future? Past oriented societies feel plans should be evaluated in terms of their fit with the customs and traditions of society. Future oriented societies are concerned with how a project fits with future plans, goals, and future benefits. North Americans have often been described as being concerned with the present or near future. It is this characteristic which has led some to describe North Americans as short sighted in business planning.

Fourth, is orientation to activity: are people concerned with doing, being, or being-in-becoming? 'Doing societies' are action oriented while 'being societies' are control oriented. 'Doing societies' stress measurable accomplishments. Being societies allow ideas and events to flow spontaneously. This is an area often sighted in explanations of what motivate people in different societies. 'Doers' are often motivated by getting the most done in life while 'be-ers' are motivated by a desire to experience life.

Fifth, is relations between people: is there an orientation towards the individual or collective, teamwork or hierarchical relations? The distinction is made between people who define themselves through personal characteristics and achievements, and those who define themselves as members of clans and communities. Which is more important, the individual or the group? Individualist societies, such as many North American societies, have greater geographic mobility and their relationships tend to be less permanent. Many of the more collectivist societies such as those of south east Asia reward group harmony and loyalty.

Sixth, is peoples conception of space: how do people use physical space? What is personal and what is public space? This factor defines organizational space. Some societies are more likely than others to provide managers with private space. Others are characterized by openness, and public space.

3.3 Hofstede's Dimensions - How work values vary across cultures

Geert Hofstede (1983, 1984) examines national differences in work related values. He asks the question: how do behavior and attitudes differ among employees and managers across nations. He conducted a survey of over 160,000 managers and employees of a major US multinational, looking at work related values, across 40 and then 50 countries. In this study he accomplished what few other researchers have been able to do. First, he developed a "commonly acceptable, well defined, and empirically based terminology to describe culture". Second, he "use[d] systematically collected data about a large number of cultures, rather than just impressions" (Hofstede 1983).

From 1967 through 1971, Hofstede worked as a psychologist for IBM. While in this position, he worked on a project which involved his surveying all IBM employees across all countries in which IBM operated. In his original study, he collected 116,000 questionnaires, sufficient to provide a basis for the analysis of 40 countries. Later, data became available for an additional 10 countries. Early on it became clear that questions which related to employee values rather than attitudes showed remarkable and very stable differences between countries. As an example of attitude type questions he refers to questions such as: "how do you like your job?" or "how do you like your boss?". Value type questions referred to whether people preferred one type of boss over another, or the factors that the employee would like in the ideal job. Here values refer to an employees desires, rather than perceptions of what is happening around them.

At the heart of Hofstede's research are four dimensions he sees as being central to manager and employee work related values. These dimensions were identified through a combination of multivariate statistics (factor analysis) and theoretical reasoning. His factor analysis showed that 50 per cent of the variance in answer patterns between countries on the value questions could be explained by three factors corresponding to dimensions one and two (separated later), three, and four. These four dimensions are: Individualism/Collectivism, Power Distance, Uncertainty Avoidance, and Masculinity/Femininity. These dimensions were chosen in part because of their past use in anthropological studies of culture, and have been demonstrated to be common to all societies. Each of the four variables was assigned a value on a scale from 1 through 100.

3.3.1 Individualism / Collectivism

These two dimensions measure how individuals relate to other members of their society. In individualist societies, people are known to take care of themselves and their immediate families above all others. As a result, they generally grant the members of their societies more individual freedom. Alternately, in collectivist societies people are more concerned with the welfare of extended family, tribe or village. "Everybody is supposed to look after the interests of his or her in-group and to have no other opinions and beliefs than the opinions and beliefs of the in-group." (Hofstede 1983). The dimension is measured on a scale such that 100 represents strongly individualist societies while 1 represents strongly collectivist societies.

3.3.2 Power Distance

Through this dimension Hofstede attempted to capture how a society deals with issues of equality and inequality. People are naturally unequal in physical and intellectual endowments. Power distance measures the extent to which a society will allow these inequalities to lead to inequalities in wealth and power. Although all societies are unequal, the degree to which they are unequal is socially determined. "In organizations, the level of Power Distance is related to the degree of centralization of authority and the degree of autocratic leadership" (Hofstede 1983).

3.3.3 Uncertainty Avoidance

Uncertainty Avoidance looks at how a society handles issues of risk; some societies being more ready to accept risk than others. Societies which have a low value for Uncertainty Avoidance will

tend to accept each day as it comes and will take risks more easily. These societies also tend to be more tolerant of behavior and opinions different from their own and are not threatened by them.

Societies with high Uncertainty Avoidance, besides being risk averse in general, program the members of their societies to believe the future can be beaten. This leads to less tolerance for the unknown, foreign ideas, and actions.

These societies tend to be more heavily regulated as members create institutions to minimize risk. Hofstede points to three mechanisms Uncertainty Avoiding societies use to enhance security. First, they tend to make use of technologies which promote stability. Second, they tend to be litigious, using the law to control deviant behavior. Third, they are more likely to assign certain individuals as experts in order to ease the anxiety caused by uncertainty.

3.3.4 Masculinity/Femininity

This dimension deals with the division of roles between the sexes in society. The question revealed by this dimension is whether a society tries to maximize or minimize the societal division of the sexes. Masculine societies have a tendency to show a large division between the roles of men and women. In contrast, Feminine societies do not have as large a division between gender roles. In these societies the dominant values of society apply equally to both men and women.

4.0 The Relation of Trade and Culture

To understand the mechanisms through which culture will impact Canadian and US bilateral trade, culture has to be more narrowly defined. Hofstede's dimensions of difference in value orientation provides an effective framework. The mechanisms through which culture impacts on trade can also be reviewed in relation to Hofstede's work. In addition to Hofstede's dimensions, two other universal cultural factors are investigated: language, a core component of communication and immigration, a mechanism of moving cultural factors between countries.

4.1 Hofstede's Individualism/Collectivism and trade

Individualism/Collectivism describes the relationship between the individual and the collectivity. Hofstede discusses a number of characteristics of collectivist societies (Hofstede 1984) which provide insight into the mechanisms through which collectivism, as a national characteristic, would impact Canadian and US bilateral trade. One of the more intuitive explanations is that of the extended family and clan relations, characteristic of collectivist societies, which extend outside of the nation. The result is a network which, although formed to fulfill family and clan traditions, can be used to reduce information and trust constraints in international business transactions. Hofstede makes the point that in collectivist societies, "private life is invaded by organizations and clans to which one belongs" (Hofstede 1984). The use of personal relations to transfer information on business opportunities is a powerful one. International trade is constrained by the lack of trust in business relations. This lack of trust results in the need to use costly contracts and financial instruments, such letters of credit. With greater trust in business relations these costs can be minimized.

4.2 Hofstede's Uncertainty Avoidance and trade

Uncertainty avoidance, as discussed earlier, is the Hofstede dimension which describes how nations deal with uncertainty. Uncertainty, a fact of human existence, is dealt with differently across countries through the domains of technology, law, and religion. Uncertainty Avoidance is directly related to the level of anxiety in a society and how it is handled (Hofstede 1984).

In trying to understand how countries with low Uncertainty Avoidance trade more with Canada and the US, one national characteristic suggested by Hofstede stands out - tolerance. Tolerance towards foreigners, towards risk, and within the legal and bureaucratic system, will all have a positive impact on trade. Hofstede notes that countries with low Uncertainty Avoidance have a higher tolerance for ambiguity in foreigners (Hofstede 1984). Thus, the ability to accept and adapt to foreigners is a critical characteristic for a nation competing in global marketplace. Tolerance makes it easier for foreign managers working within that country to be accepted.

Countries which rank low on the Uncertainty Avoidance measure have a greater tolerance for risk. This can be a great asset in international trade as the risks associated with each transaction are greater than for domestic transactions. It could be argued that Canadian US trade has benefited from the perception of lower risk because the two cultures are more similar.

Finally, these same countries are less likely to insulate themselves from deviant behavior through laws: which can form strong barriers to trade. These laws need not relate directly to trade, but can take the form of safety standards, quality controls, environmental regulations, or general 'red tape',

each of which are commonly associated with non-tariff barriers. The lowering of tariff barriers through multilateral institutions such as the GATT has made these types of non-tariff constraints particularly important.

4.3 Power Distance & Masculinity Femininity and trade

Hofstede's Power Distance dimension measures relations of authority within a country. The dynamics of this process are internal to a country or organization. It does not pertain to foreign relations. Thus, it is unlikely that this dimension would be related to a significant change in a country's pattern of trade. Similarly, Masculinity/Femininity is a dimension which measures how a country deals with differences between the sexes. As with Power Distance, this is a system which is internal to the firm or country. It does not measure relations between domestic and foreign business persons, and would therefore not be related to a country's pattern of trade.

4.4 Immigration and trade

There have been a number of studies which have investigated the mechanisms through which immigration can impact trade flows (Gould 1994; Pyong, Gap Min 1988). In his study of Korean entrepreneurs in Atlanta, Gap Min Pyong provides an analysis of how family ties and kin ties help Korean entrepreneurs in their business activities. These include: making financial capital available, providing information on business opportunities, and transferring business know-how and experience.

In his article on immigrant ties to their home country, David Gould (1994) suggests a number of different ways immigrant links influence bilateral trade flows. His first proposition is that immigrants bring with them a preference for home country products. Preferences in the home country become biased towards the products of the immigrant country. His second proposition is that they bring valuable market information, such as contacts, which reduce transaction costs. These transaction costs are lowered in part through the immigrant's knowledge of the foreign country's language. Not only does the immigrant speak the foreign language, but others in the home country are encouraged to learn that language.¹ The immigrant with a more sophisticated understanding of the productive capabilities of the foreign country, as well as increased trust in negotiations, can also lower transaction costs. Each of these effects will be tempered by the length of stay of the immigrant, their level of education, and their language skills in the home country.

Gap Min Pyong (1988) further notes that 14% of Korean business in Atlanta in 1982 dealt with importation. One of their major advantages was their ability to take advantage of unconventional trade finance. Korean exporters would offer ethnic Koreans preferential terms of payment enabling the importer to avoid expensive forms of payment such as letters of credit. Through networks of importers and wholesalers, members of the Korean import community received preferential prices, faster deliveries, and domestic credit.

Korean multinationals in Canada make extensive use of the large Korean Canadian community. The expatriate Korean executive working in the Canadian subsidiary of a Korean company surround themselves with Korean Canadians who act as a bridge between these two cultures. Not only do Korean Canadians speak both languages, but they can provide other cultural information.

¹ The sharp increase in the number of Vancouverites studying Chinese languages has been attributed to the recent influx of Hong Kong Chinese in Vancouver.

Also, it has been suggested that the more Koreans there are in Canada, the more media attention Canada gets in Korea. This form of promotion in turn helps to foster a positive trade environment.²

4.5 Language and trade

There is a large literature on cross-cultural communication (Lane 1988). Although in most cases it is recognized that language is the dominant component of cross-cultural communication, it is seen as a blunt instrument to be used in combination with more subtle communicative tools.

Unfortunately, as a result of this view, these more subtle elements dominate this field of research.

“A source of potential problems when working across cultures is interpersonal communication. Although language is an important part of communication, communication is not simply a matter of understanding and speaking a language. Communication is broader than language.... The ability of a North American to speak three different languages still may not enable him or her to understand the issues from the viewpoint of those from another culture.”(Lane 1988, p.29)

The English language plays an important role in international business. The importance of English has been attributed to the central role of the US in the world economy, particularly in information industries. Robert Posch (1994) elaborates on this idea and suggests that English has spread as quickly as it has, because of the US's institutionalization of the free flow of information. These developments in the information age include music, film, and computer software. In essence, it is the spread of American culture which has led to a proliferation of English as a dominant commercial language. Countries wishing to export to the US have a distinct advantage if English is their commercial language.

² This information was gathered from interviews with members of Canadian business community active in Korea. They include Stephen Hayward and Euwon Kim.

5.0 BRINGING TWO THEORIES TOGETHER: A new methodology for understanding the relation of culture and trade

Factor Abundance theory is based on a number of assumptions, one of which is free trade. This assumption overlooks the many constraints there are to the international flow of goods. Culture, the focus of this study, is one of these constraints. Cross-cultural management theory has long considered the importance of cultural factors to the international manager. Geert Hofstede's four dimensions of national differences in work-related values is one of the more comprehensive quantitative analyses of culture.

As discussed earlier, 50 countries were evaluated in terms of the four Hofstede dimensions, each dimension having a numerical value assigned to it. Hofstede's dimensions will be combined with the gravity model; an empirically based model which describes trade flows as a function of the economic size of the trading partners and the distance between them.. Used extensively to test the effect of various factors on international trade flows, the gravity model is an useful means of testing the role of culture. By combining these two approaches, the effect of culture on Canadian and US bilateral trade flows can be investigated in more detail.

5.1 The gravity model

The focus of this study is the role of culture as a constraining factor in Canadian and US bilateral trade flows. The gravity model provides an effective frame for this investigation. It emerged in order to better explain certain phenomena not readily described in the theoretical trade literature. First used by Jan Timbergen and Pentti Poyhonen in the 1960s, it is an attempt to explain the observation that the size of a country seems to have an impact on trade flows. Most theoretical models are based on the assumption of constant returns to scale and homothetic preferences and predict that two countries, identical in all respects except size, will have exports as a similar proportion of their total economy. However, this is not observed in the data which shows that a country's size seems to have a significant impact on its trade flows. The gravity model grew out of some intuitive theorizing around this point.

In his study, Jan Timbergen (1962) was trying to determine the normal pattern of trade that would occur in the absence of trade impediments. He then compared model predictions to actual values, in order to determine whether countries were receiving preferential trade treatment. The model he developed also included the GNP of the exporting country, the GNP of the importing country, and the distance between them. It was assumed that there are no separate supply and demand functions for exports in the equation, and prices are not specified. Also, this is a static model with no consideration of the development of exports over time (Timbergen 1962).

Although he did not originally investigate them, Timbergen anticipated that other, non-economic variables would have explanatory power in his model.

“apart from purely economic variables it is likely that political or semi-economic factors play a part in determining the volume of trade between countries.”(Timbergen 1962)

Timbergen was primarily concerned with special trade agreements such as the British Commonwealth Preferential tariff and Benelux (Belgium Luxembourg Economic Union). He also introduced dummy variables for neighbor countries. With the exception of the British Commonwealth Preferential tariff, none of these variables were statistically significant.

Recently, the gravity model developed by Timbergen and Poyhonen, was augmented in a number of ways. Jonathan Eaton and Akiko Tamura (1994) used a modified gravity model, incorporating factor endowments to analyze Japanese and US bilateral trade flows and direct foreign investment. Their sample included 100 countries over the period of 1985 through 1990. The new country characteristics they considered included population, income, the land labor ratio, the average level of education, and region. They found that the features of a country associated with more trade with either the US or Japan were also associated with more direct foreign investment (Eaton 1994).

John McCallum (McCallum 1994) used an augmented gravity model to estimate the relative effect of interprovincial and national trade barriers. He estimated the expected level of trade flows between Canadian provinces and US states from the actual flow between provinces in the absence of the national boarder. He was able to determine that provinces trade about twenty times as much with each other compared to US states of similar size and distance. The implication being that national boarders act as a major impediment to the free flow of goods.

Keith Head and John Ries (Head and Ries 1995), used an augmented gravity model to look at the effect of immigration on Canadian bilateral trade flows. They hypothesized that immigrants

expand trade with their country of origin due to superior knowledge of, or preferential access to, market opportunities. Through their work they determined that a 10% increase in immigrants is associated with a 1% increase in Canadian exports to the immigrants' home country. The same increase in immigrants had a larger, 3% increase in imports from the immigrants home country.

5.2 Method

In many ways this analysis follows the lead of Keith Head and John Ries, and will use their immigration data. However, the scope of non-economic, cultural variables is expanded. It will use Hofstede's four dimensions, Head and Ries' immigration data, and language. This method has two advantages. First, it has made possible the testing of culture-related factors while controlling for economic variables. Second, it results in individual coefficients for each factor, coefficients which can be tested for statistical significance.

Four distinct data sets with Canadian and US bilateral trade flows are included³. These four data sets are: Canadian imports to the world, Canadian exports to the world, US imports to the world, and US exports to the world. In each of the four models, Canadian and US imports and exports are the dependent variables. In total there are 119 countries for each data set.

For each of the 119 countries studied, the following data has been collected: (i) 1990 GDP, (ii) distance to Canada or the US, (iii) 1990 GDP per capita, (iv) number of immigrants in Canada (only used for two Canadian data sets), (v) does the country have English or French as a principle

³ A maximum of 119 nations has been used. As few as 45 data points were available for some independent variables.

language⁴, and (vi) its score for each of Hofstede's four dimensions. For a full breakdown of the data used refer to Appendix I.

A series of least squares, multiple regressions were conducted on each of the four data sets. The first regression for each was an attempt to replicate the basic gravity model. Thus, this first regression included the economic size of the trading partners (GDP), the distance between them, and their average income (GDP per capita). Following this, the seven cultural factors were systematically added to the model. In each case, a new regression was run. Where variables were deemed to be insignificant, they were dropped from the model. In the end, a model was developed for each of the four data sets, fitting the data to the greatest extent possible.

The results of this analysis will provide information about the pattern of trade for Canada and the US. Hofstede's dimensions can be used to provide two types of information. First, is the cultural characteristics of countries which trade with Canada and the US. As an example, we would expect countries that are collectivist to trade more with Canada and the US than individualist countries. By taking the Hofstede dimensions in their raw form, this analysis provides information on the cultural preferences of Canada and the US.

Four new variables were created to investigate cultural difference as a factor influencing bilateral trade flows. Do Canada and the US trade more with countries that are culturally similar to them? One would expect that the more similar a country is to the US or Canada culturally, the more likely they are to trade with them. A derivative variable, cultural distance, was created to deal with this issue. This cultural distance variable is discussed in more detail below.

⁴ French was used only for the Canadian data.

6.0 EMPIRICAL ANALYSIS

This section addresses whether factors related to culture have an impact on the bilateral trade flows of the US and Canada after controlling for the economic size, income and distance of the trading partners.

Although the method of analysis may be unique, the results are not surprising to students of international management who have long seen the direct impact of culture on the 'bottom line' of their firm's performance. A more interesting result of this analysis is the relative importance of different cultural factors in influencing trade flows. Not only is a firm's strategic planning around culture important, but through the results of this analysis the more salient elements of culture can be targeted.

6.1 Data sources

Of countries used, the most significant exclusions were Canada, the US, and Japan. They were found to be outliers. Both Canada and the US are each others largest trading partners and Japan is the second largest trading partner for both. For a complete list of countries included in this study refer to Appendix 1.

The dependent variable is:

Canadian/US Imports and Exports - Taken from the 1990 World Trade Database, Canadian imports are provided by country of origin in nominal US\$,000.

The following is a review of each of the independent variables.

I Basic gravity equation variables:

Distance to Canada - Taken from PC Globe, this is the distance in miles from the country's capital city to Toronto. As was discussed previously, distance is assumed to act as a surrogate for transportation costs in the basic gravity model. Toronto was used as the destination for both US and Canadian trade. Although an applicable destination for the North East of Canada and the US, the Southern US and Western Canada will have significant advantages with regard to trading with South America and Asia respectively.

GDP - This data was taken from the Penn World Tables and are measured in US\$,000. As noted previously, this measure is a central component of most gravity equation applications. As a measure of the economic size of the trading partner, GDP is limited in that it tells nothing of the products included.

GDP per capita - This data was taken from Penn World Tables and are measured in US\$,000. This variable is commonly used as a basic measure of the relative income or level of industrialization of a nation. Again, it is a very broad measure and cannot be easily interpreted.

II Culture related variables:

Stock of Immigrants in Canada - Immigration is one of a number of non-traditional variables to be added to this model. Computed by Keith Head and John Ries (1995) using 1981, 1986, and 1991 Population Census', this is an estimate of the total number of immigrants from the origin country who arrived in Canada since 1970.

English and French - This is a dummy variable which is 1 if the origin country has English as one of its principle languages and 0 if not. The same hold for the French variable. This information was obtained from PC Globe and countries were classified based on whether their official or principle language was English or French. Thus, it is measuring whether English or French is the language of commerce. French is only considered for the Canadian data.

Hofstede's Dimensions - Each of Hofstede's four dimensions were included in the data set. For each dimension, Individualism/Collectivism, Power Distance, Uncertainty Avoidance, and Masculinity/Femininity, Hofstede assigned a value between 1 and 100. 100 represents a high degree of individualism, large Power Distance, high Uncertainty Avoidance, and largely Masculine societies respectively.

Hofstede's Cultural Distance - For both the US and Canadian data sets, a 'cultural distance' variable was created for each country, for each of the four Hofstede dimensions. This new variable is the absolute difference between the home country's (US or Canada) dimension value and that of each other country in the data set. As an example, in the Canadian data, both El Salvador with a

Masculinity value of 40 and Colombia with a Masculinity value of 64 will both have Cultural Distance values of 12 as the Canadian Masculinity value is 52. In a sense El Salvador and Colombia are 12 units of cultural distance away from Canada.

6.2 Checking assumptions

In this study there are a total of four dependent variables, one for each of the four data sets, and ten independent variables. The dependent variables, Canadian imports, Canadian exports, US imports, and US exports were all clearly positively skewed. In order to resolve this problem their natural logs were taken. In each instance the logarithmic transformation resolved the problem.

The three independent variables common to gravity equations, GDP, distance, and GDP per capita were also severely positively skewed. Once again the resolution of this problem was to take the natural log. The Canadian stock of immigrants was the only culture-related variable which had to be transformed. It showed a positive skew and so its natural log was taken. The remaining independent variables, Language and Hofstede's Dimensions, are normally distributed in their natural form and no transformation was necessary.

6.3 Hypotheses

The following hypotheses have been tested in the analysis.

- I. That immigration has a significant impact on Canadian bilateral trade flows after controlling for the economic size, income, and distance of the trading partner.

II. That language (English and/or French) has a significant impact on US and Canadian bilateral trade flows after controlling for the economic size, income, and distance of the trading partner.

III. That each of Hofstede's four cultural dimensions has a significant impact on US and Canadian bilateral trade flows after controlling for the economic size, income, and distance of the trading partner.

IV. That cultural distance as measured by the absolute difference between the dimensions of the trading countries has a significant impact on US and Canadian bilateral trade flows after controlling for the economic size, income, and distance of the trading partner.

In addition to testing these individual hypotheses, it is the purpose of this study to determine which mix of cultural variables most accurately describes the data. This 'best fit' model will also be used to shed some light on the relationship between culture and trade.

6.4 Results

Each of the four data sets, Canadian and US imports and exports, have been reviewed through a series of regressions. First, the basic gravity equation was tested. This included the independent variables, GDP, distance, and GDP per capita. To this model other explanatory variables were added to test their ability to explain variation in the trade data.

6.4.1 Effects of factors on Canadian import data (see: table 1)

The data set containing information on Canadian imports included as many as 90 countries for most regressions but only 45 for those that involved Hofstede's dimensions. The natural log of Canadian imports was the independent variable. Systematically, culture-related independent variables were added to the model.

The first model (see: regression #1, table 1) was the application of the basic gravity model. Here, the independent variables were the natural logs of Canada's trading partner's GDP per capita, distance to Canada, and GDP. In total 91 observations were used. The coefficients for GDP and GDP per capita were large, positive, and significant (p-values of 0.000). Thus, controlling for each of the other variables in the model, Canada imports more from countries with large economies as measured by GDP, and more from high income countries as measured by GDP per capita. The coefficient for distance was negative as expected; the further the country is from Canada the less that country trades with Canada after controlling for GDP and GDP per capita. The distance variable also proved to be statistically significant at the 95% level with a p-value of 0.0026. This basic model explains 73.5% of the variation in Canadian imports, as measured by R^2_{adj} .

The second model (see: regression #2, table 1) augmented the basic gravity equation with the immigration variable created by Keith Head and John Ries (1995). Although the coefficient's sign was positive as expected, it is insignificant at the 90% level. In the third model (see: regression #3, table 1), the dummy variables for English and French were added to the base model which now also included immigration. Although both English and French have large positive coefficients, only English is significant at the 95% confidence level. The p-values for English and French are 0.017

and 0.268 respectively. This suggests that, after controlling for the components of the base gravity equation as well as immigration, English does have an impact on Canadian imports while French does not. The explanatory power of the model is improved through the addition of these two variables, but not by much. R^2_{adj} increases by 1.4%. In the regressions which followed, the French dummy variable was removed because of its apparent ineffectiveness.

The fourth model involved an investigation of the four Hofstede dimensions. The base model that included immigration and English was augmented with these four new variables (see: regression #4, table 1). The coefficient for Power Distance was negative, yet insignificant with a p-value of 0.25; and the coefficient for Masculinity/Femininity, although positive, was also insignificant with a p-value of 0.93.

The coefficients for Individualism/Collectivism and Uncertainty Avoidance were small, negative, and significant at the 99% confidence level. This suggests that after controlling for the variables of the base gravity model, as well as English and immigration, Canada imports more from collectivist societies and less uncertainty avoiding countries. In the final model chosen (see: regression #5, table 1) with this data set, both Power Distance and Masculinity/Femininity were removed because of their inability to add explanatory power to the model. The choice of independent variables included the base gravity model, GDP, distance, and GDP per capita. It also includes English, immigration, Individualism/Collectivism, and Uncertainty Avoidance. In this final model, all independent variables were significant at 90% confident except distance and English.

When the Hofstede dimensions are added in regression 4, there is a large increase in the explanatory power of the model. The R^2_{adj} moves from 74.0% to 81.7%. However, there are only

45 observations for Hofstede's dimensions while in the previous model without the Hofstede dimensions, there were 90. To ensure that the increased explanatory power was not a result of the reduced sample size, the basic gravity model was run again with the same sample as that used in regression #4 (see: regression 6, table 1). In this regression, with a smaller sample size, the model explained about the same amount of the data as was explained by the basic gravity model with the larger sample size. Thus with the addition of the four cultural variables, the explanatory power of the model increases from an R^2_{adj} of 73% to 82%.

6.4.2 Effects of factors on Canadian export data (see: table 2)

In this analysis, a similar process was used. As with the data on Canadian imports, the Canadian export data contained between 45 and 90 observations. Here the dependent variable was the natural log of Canadian exports.

The first step in the analysis of this data was to set the benchmark gravity model with GDP, distance, and GDP per capita. As with Canadian imports, this basic form of the gravity model is very effective in explaining Canada's bilateral trade flows. This model (see: regression #1, table 2) was able to explain 77% of the variation in the data as described by the R^2_{adj} statistic. The coefficients for GDP and GDP per capita were both positive and significant at the 99% confidence level. As before, this suggests that after controlling for distance, and each other, the GDP and GDP per capita of Canada's trading partners is positively related to Canada's trade with that country. The coefficient for distance is negative, supporting the intuitive conclusion that distance acts as a constraint to Canadian exports.

When immigration is added to this base model (see: regression #2, table 2) the coefficient is positive, but insignificant with a p-value of 0.661. The ability of a country to speak English or French (see: regression #3, table 2) has a similar effect on Canadian exports as it did on Canadian imports. Only the English variable is significant, with a p-value of 0.069. The addition of these three new variables has little effect on the explanatory power of the model with the R^2 increasing by 0.4% (R^2_{adj} actually decreased). The fourth model (see: regression #4, table 2) excluded French but included Hofstede's four dimensions. In this case as in the data for Canadian imports, only Individualism/Collectivism and Uncertainty avoidance were significant (p-values 0.067 and 0.001 respectively). Thus, these results suggest that Canada exports more to Collectivist and less Uncertainty Avoiding countries, after adjusting for the basic gravity model, immigration and English.

The final model (see: regression #5, table 2), like that for Canadian imports, included the basic gravity model as well as immigration, English, Individualism/Collectivism, and Uncertainty Avoidance. Each of these variables is significant, with the exception of immigration, English, and distance. Like Canadian imports, culture-related variables add to the explanatory power of the basic gravity model. The basic gravity model was run with the same number of data points as are available for the optimal model (see: regression #6, table 2). Here, the explanatory power of the model was 73.4%, compared to 83.2% for the model which included immigration, English, Individualism / Collectivism, and Uncertainty Avoidance.

In the series of regressions on Canadian import data, the smaller sample, using only the countries covered in Hofstede's survey, had a similar R squared as that of the full sample. However, the coefficient for distance becomes insignificant with Hofstede's smaller sample. The combined

effects of falling R squared and insignificant distance coefficient was investigated through a closer look at the two samples.

The most striking difference between the two samples is that Hofstede did not collect data on small economies. The mean imports of the countries excluded from the smaller sampling was \$US 578,000, compared to \$US 39,900,000 for the countries covered by Hofstede. There is not much difference in the average distance between samplings. The difference between the income of nations in the two samples is large. The mean GDP per capita of the Hofstede sample is over three times that of those not included by Hofstede's group of countries.

There are a number of conclusions one can draw from these observations. The insignificant distance variable on the smaller Hofstede data suggests that distance is a constraint mainly felt by smaller countries. Also it is clear that Individualism/Collectivism and Uncertainty Avoidance plays a much more important role in Canadian bilateral trade with our larger, higher income, trading partners than distance

6.4.3 Effects of factors on US import and export trade data (see: tables 3 & 4)

In the study of US import and export data, a similar method of model selection and analysis was used. The basic gravity model resulted in GDP, distance and GDP per capita being significant, as was the case with the Canadian data. Here the basic model was able to explain more of the variation in exports than in imports as measured by the R^2_{adj} values which were 75.8% and 71.1% respectively.

As noted before, the data used in this analysis did not contain a variable for immigration or French. The English variable was significant at the 99% confidence level for both US imports and exports. This model was able to explain 80.5% of the variation in US export data and 75.5% of the variation in US import data.

Out of this analysis it has become evident that US imports are particularly sensitive to the English variable. By looking at the four coefficients for English across all four data sets (regression #2 in each case), it appears that a country having English as a primary language will have a greater impact on trade with the US than on trade with Canada. Coefficients for English are greater in the US for both imports and exports. Also, it appears that English plays a more important role in determining imports than exports.

Once again, both Individualism/Collectivism and Uncertainty Avoidance had negative, significant coefficients in the analysis of US trade data. The final model chosen included the variables of the basic gravity model, English, Individualism/Collectivism, and Uncertainty Avoidance. The explanatory power of the model for imports was quite strong with 81.3% of the variation in the data explained, as measured by the R^2_{adj} . However, the model for US exports was not nearly as effective in describing the variation in the data. Here the R^2_{adj} was 68.9%, lower than for the basic model. Clearly the drop in sample size had a large effect on the relative performance of the model. The basic model with a larger sample explained 75.8% of the variation, while the smaller sample included in Hofstede's study explained only 55.9%.

6.5 Geographic distance or cultural distance?

In the process of analyzing these models, it became clear that there is a degree of colinearity between distance and Hofstede's four cultural variables. Referring back to the Canadian import data set, the p-value for distance jumps from 0.004 in regression #3 to 0.486 in regression #4, after the Hofstede variables are added. In addition, immigration which was not significant in regression #1 became significant by regression #4. Similar characteristics were observed with each of the other three data sets. Despite the apparent colinearity of these variables, as measured by the variance inflation factors which do not rise above 3, for each of the independent variables in all regressions. The colinearity of these variables suggests that, in the basic gravity equation, distance has captured cultural factors. Perhaps cultural distance is a more effective measure.

By looking at the values assigned to Hofstede's dimensions in their raw form we have been able to evaluate the cultural characteristics of the nation. A greater number of collectivist countries appear to trade more with Canada and the US than individualist countries. However, much of the literature on cross-cultural management has been concerned with overcoming the cultural gaps between countries; that is, dealing with cultural differences. Does Canada trade more with China because it is highly collectivist or does it trade more with China because the cultures are similar in some basic way?

With the colinearity observed between cultural values and distance, it is worth asking whether physical distance is in fact a proxy for cultural distance. To solve this problem the independent variable cultural distance was created. It is the absolute value of the difference between the Canadian or US value for the dimension and the value of the trading partner.

The results for this are provided in tables #1 through #4. The final two regressions are useful in comparing the relative importance of Hofstede's cultural dimension and the derived cultural distance variable. Each of the four sets of regressions produce similar results. As with the basic Hofstede dimensions discussed earlier, Individualism/Collectivism and Uncertainty Avoidance variables were the only significant coefficients generated when measured as cultural distance. However, in the case of Individualism, the coefficient switched signs, becoming positive. This is not surprising as both Canada and the US have high ratings for this dimension, at 80 and 91 respectively. For countries with very low Individualism ratings, the absolute value of the difference and the true value will be very similar except for sign. The results for the difference in Uncertainty Avoidance are less intuitive. The coefficient is negative and significant with p values between 0 and 0.072 for the four data sets. However, both Canada and the US have moderate Hofstede dimension values, at 48 and 46 respectively. It would be reasonable to interpret these results as suggesting that the more similar a country's rating on Uncertainty Avoidance is like that of Canada or the US, the more their bilateral trade with Canada and the US. This implies that countries which perceive risk in ways similar to Canada and the US will trade more with them.

On the whole, although cultural distance does appear helpful in explaining Canadian and US bilateral trade, it is less effective than the raw Hofstede dimensions. The model which used the raw Hofstede dimensions was able to explain more of the variation in the data as measured by the R^2_{adj} than the model with cultural distance.

Although the significance of the individual coefficients is not as strong as expected, the cultural distance variables were reviewed through a test of nested models. For each of the four data sets,

the basic gravity model with only GDP, GDP per capita, and distance was compared to a model which included all four cultural-distance variables. The F statistic for US import data and Canadian export data is 5.08 and 12.05 which corresponds to a 99% confidence level. The F statistic for Canadian imports and US exports is 2.08 and 2.784 corresponding to a 90% confidence level. Thus, cultural distance as it has been measured here does explain a significant portion of Canadian and US trade.

Table 1 - Results of analysis on Canadian import data

Ind. Variable	Coefficient / P-Value / Stdev							
Regression	1	2	3	4	5	6-small	7-small	8*
constant	-13.5 0 3.159	-12.2 0 3.217	-11.49 0 3.148	-17.9 0 2.921	-18.6 0 2.84	-19.2 0 2.878	-17.383 0 2.95	-19.31 0 3.816
ln GDP / capita	0.9273 0 0.1689	0.8243 0 0.1797	0.8165 0 0.1753	1.2821 0 0.2063	1.3488 0 0.1964	1.1851 0 0.1744	1.2949 0 0.204	1.402 0 0.2400
ln distance	- 0.7554 0.026 0.3341	-0.7206 0.033 0.3323	-1.0041 0.004 0.3423	-0.2082 0.486 0.2954	-0.1801 0.522 0.2783	0.1453 0.637 0.3052	-0.1958 0.474 0.2709	-0.1143 0.747 0.3516
ln GDP	0.900 0 0.0934	0.7804 0 0.1166	0.8761 0 0.1208	0.7935 0 0.1305	0.7495 0 0.1125	0.6849 0 0.1108	0.8275 0 0.1101	0.7096 0 0.1126
ln imm. stock		0.1508 0.141 0.1016	0.1224 0.244 0.1043	0.15807 0.087 0.0899	0.1512 0.097 0.0889			
English			0.7987 0.017 0.3281	0.1329 0.730 0.3825	0.1407 0.657 0.3138			
French			0.5194 0.268 0.4661					
Power Distance				-0.0094 0.254 0.00817			-0.0082 0.327 0.00832	-0.0172 0.142 0.01147
Individualism Collectivism				-0.0244 0.007 0.00844	-0.0190 0.008 0.0068		-0.0213 0.014 0.00823	0.02165 0.027 0.0094
Masculinity/ Femininity				0.00070 0.926 0.0075			0.00421 0.505 0.00626	-0.0016 0.914 0.01458
Uncertainty Avoidance				-0.0199 0.001 0.0056	-0.0197 0.001 0.00547		-0.0217 0 0.00515	-0.0203 0.057 0.0104
R squared	74.4%	73.9%	75.8%	85.4%	84.8%	74.8%	83.9%	79.1%
R sq - adj.	73.5%	72.6%	74.0%	81.7%	82.0%	73%	80.9%	75.1%
Std. err.	1.369	1.358	1.323	0.7239	0.7175	0.8783	0.7394	0.8432

* Hofstede's dimensions are measured as the absolute difference

Table 2 - Results of analysis on Canadian export data

Ind. Variable	Coefficient / P-Value / Stdev							
Regression	1	2	3	4	5	6small	7-small	8
constant	-3.839 0.115 2.413	-3.276 0.191 2.484	-2.789 0.259 2.452	-5.269 0.039 2.455	-5.263 0.031 2.353	-6.187 0.011 2.326	-5.178 0.037 2.399	-4.876 0.086 2.765
ln GDP / capita	0.6254 0 0.1293	0.5967 0 0.1395	0.5852 0 0.1371	0.7891 0 0.1734	0.7925 0 0.1627	0.6792 0 0.1409	0.8154 0 0.1659	0.9748 0 0.1739
ln distance	-0.537 0.041 0.2588	-0.5249 0.047 0.26	-0.6641 0.017 0.2728	-0.2172 0.387 0.2482	-0.2608 0.265 0.2306	-0.0123 0.961 0.2467	-0.2644 0.238 0.2203	-0.4362 0.095 0.2548
ln GDP	0.800 0 0.0717	0.7593 0 0.09226	0.83053 0 0.09767	0.7059 0 0.1096	0.73111 0 0.0932	0.67387 0 0.08959	0.74926 0 0.08949	0.67255 0 0.08161
ln imm. stock		0.03459 0.661 0.07852	-0.0298 0.719 0.08253	0.08124 0.290 0.07553	0.08271 0.268 0.07362			
English			0.4820 0.069 0.2613	-0.0949 0.769 0.3214	0.0116 0.965 0.26			
French			-0.357 0.323 0.3588					
Power Distance				0.00016 0.982 0.00687			0.00064 0.925 0.0067	-0.0127 0.134 0.00831
Individualism Collectivism				-0.0134 0.067 0.007	-0.0142 0.016 0.00563		-0.0129 0.062 0.00669	0.02181 0.003 0.0068
Masculinity/ Femininity				0.00373 0.559 0.00632			0.00364 0.479 0.00509	-0.0104 0.334 0.01057
Uncertainty Avoidance				-0.0177 0.001 0.00471	-0.0173 0.001 0.00454		-0.0175 0 0.00419	-0.0283 0.001 0.0075
R squared	77.0%	76.0%	77.4%	83.3%	83.2%	73.4%	82.8%	82.2%
R sq - adj.	76.3%	74.8%	75.7%	79.1%	80.0%	71.5%	79.5%	78.9%
Std. err.	1.051	1.052	1.033	0.6082	0.5945	0.7099	0.6013	0.6110

* Hofstede's dimensions are measured as the absolute difference

Table 3 - Results of analysis on US import data

Ind. Variable	Coefficient / P-Value / Stdev						
Regression	1	2	3	4	5-small	6-small	7
constant	-3.434 0.283 3.177	-1.995 0.514 3.042	-6.178 0.016 2.437	-6.166 0.014 2.385	-3.905 0.174 2.821	-6.220 0.013 2.373	-7.816 0.006 2.648
ln GDP / capita	0.7508 0 0.1703	0.6858 0 0.1642	1.0847 0 0.175	1.0964 0 0.168	0.5991 0.001 0.1727	1.0898 0 0.1667	1.3023 0 0.1737
ln distance	-0.6232 0.068 0.3375	-0.9565 0.006 0.3373	-0.1541 0.535 0.2459	-0.2614 0.268 0.2323	0.1168 0.699 0.300	-0.1660 0.452 0.2181	-0.3101 0.189 0.2315
ln GDP	0.88734 0 0.09395	0.97538 0 0.09415	0.7983 0 0.1025	0.85998 0 0.08561	0.6645 0 0.1088	0.80373 0 0.08863	0.70273 0 0.08218
English		1.0966 0.001 0.3175	-0.0354 0.912 0.3196	0.2234 0.396 0.2601			
French		0.1966 0.650 0.4321					
Power			0.00047 0.945 0.00679			0.00044 0.947 0.00669	-0.0039 0.645 0.00859
Individualism/Collectivism			-0.0308 0 0.00704	-0.0327 0 0.0057		-0.0310 0 0.0066	0.03678 0 0.0067
Masculinity/Femininity			0.00873 0.173 0.00627			0.00833 0.107 0.00504	-0.0153 0.026 0.0066
Uncertainty Avoidance			-0.0209 0 0.00470	-0.0198 0 0.00463		-0.0207 0 0.00415	-0.0322 0 0.00722
R squared	72.0%	75.5%	84.8%	83.9%	64.5%	84.8%	83.7%
R sq - adj.	71.1%	74.1%	81.3%	81.3%	61.9%	81.8%	80.5%
Std. err.	1.386	1.313	0.6026	0.6021	0.8605	0.5943	0.6149

* Hofstede's dimensions are measured as the absolute difference

Table 4 - Results of analysis on US export data

Ind. Variable	Coefficient / P-Value / Stdev						
Regression	1	2	3	4	5-small	6-small	7
constant	2.94 0.271 2.655	4.319 0.085 2.476	0.241 0.933 2.826	0.482 0.857 2.667	2.345 0.379 2.635	0.934 0.747 2.872	0.417 0.898 3.228
ln GDP / capita	0.8494 0 0.1423	0.7453 0 0.1337	1.0071 0 0.1999	0.9826 0 0.1836	0.6178 0 0.1596	0.9319 0 0.1986	1.0246 0 0.2091
ln distance	-1.1634 0 0.2823	-1.2785 0 0.2746	-0.8082 0.007 0.2806	-0.8085 0.003 0.2579	-0.3925 0.168 0.2794	-0.5583 0.041 0.2638	-0.6342 0.031 0.2822
ln GDP	0.74618 0 0.07824	0.76641 0 0.07659	0.7234 0 0.1185	0.73700 0 0.09584	0.5510 0 0.1015	0.5985 0 0.1072	0.5589 0 0.1002
English		0.6792 0.01 0.2581	0.7912 0.037 0.3653	0.7151 0.016 0.2843			
French		-0.8896 0.013 0.3518	0.2565 0.65 0.5613				
Power			0.00489 0.546 0.00802			0.0063 0.440 0.00811	-0.0014 0.893 0.01045
Individualism/Collectivism			-0.0204 0.019 0.00830	-0.0225 0.001 0.0064		-0.0146 0.076 0.008	0.01938 0.023 0.00818
Masculinity/Femininity			-0.0027 0.719 0.0074			0.00682 0.27 0.0061	-0.0145 0.078 0.00804
Uncertainty Avoidance			-0.0091 0.100 0.00538	-0.0093 0.081 0.00515		-0.0139 0.009 0.005	-0.0163 0.072 0.00878
R squared	76.6%	80.5%	73.8%	73.2%	58.9%	70.2%	67.7%
R sq - adj.	75.8%	79.4%	67.0%	68.9%	55.9%	64.4%	61.6%
Std. err.	1.160	1.070	0.6950	0.6747	0.8039	0.7199	0.7504

* Hofstede's dimensions are measured as the absolute difference

6.6 Summary of results / hypothesis tests

At the outset of this discussion, a series of hypotheses were put forth. Although the method of analysis has been detailed, it would be worthwhile to explicitly state the results of this analysis in reference to the original objectives of this study. Each of the seven culture related variables were to be tested independently to determine their effect on Canadian and US bilateral trade.

The Basic Gravity Model - For each of the Canadian and US data sets, the coefficient for GDP and GDP per capita were significant at a 99% confidence level. This suggests that both Canada and the US trade more with countries with high GDPs and GDPs per capita, after controlling for distance and each other. These variables could be considered surrogates for the size of the economy, the level of industrialization, and transportation costs.

The coefficient for distance was not as robust. In the basic gravity model, the coefficient for distance was significant at a 95% confidence level for each regression, except for US imports where it was significant at a 90% confidence level. This suggests that both Canada and the US trade more with countries which are closer after controlling for GDP and GDP per capita of the trading partner. However, further analysis of cultural factors indicates that distance has been acting as a surrogate for cultural factors.

Immigration - The stock of a country's immigrants was only used for the Canadian data.

Although the coefficient was positive and models gained explanatory power when it was included, in general it was not significant. Thus, the hypothesis that immigration has a positive impact on Canadian trade flows can be rejected at the 90% confidence level.

Language (English and French) - The hypothesis that English and French has an impact on Canadian and US bilateral trade flows was tested with each of the four data sets. In each instance, these variables were included with the basic gravity model and in the case of the Canadian data, with immigration. When controlling for GDP, GDP per capita, distance, French, and in the case of Canada, immigration, the coefficient for English was significant at the 90% confidence level in each data set. In these same models, a country's ability to speak French was not significant. This suggests that, after controlling for the variables mentioned above, Canada and US trade more with countries that speak English. Further analyses with the four Hofstede variables provided evidence that some of the variation thought to be captured by English is more effectively captured by other measures of culture.

Power distance - The coefficient for Hofstede's measure of Power Distance was clearly insignificant and the hypothesis that it has an impact on the bilateral trade flows of Canada and the US can be rejected.

Individualism/Collectivism - The coefficient for Individualism / Collectivism, the Hofstede variable which measures the degree of collectivity in a society, was found to be significant at the 95% confidence level in each model. The hypothesis that Canada and the US trade more with collectivist countries after controlling for GDP, GDP per capita, distance, English (in the case of Canada), and immigration can be accepted.

Masculinity/Femininity - The coefficient for Hofstede's measure of Masculinity/Femininity was clearly insignificant and the hypothesis that it has an impact on the bilateral trade flows of Canada and the US can be rejected for each of the models tested.

Uncertainty Avoidance - The coefficient for Uncertainty Avoidance was found to be significant at the 90% confidence level in each model. The hypothesis that Canada and the US trade more with countries that are low on the Uncertainty Avoidance scale after controlling for GDP, GDP per capita, distance, English (in the case of Canada), and immigration can be accepted.

6.7 The relation of Immigration and Individualism\Collectivism

In sections 4.1 and 4.4, the relation of Individualism/Collectivism and Immigration to trade was discussed. It was explained that collectivism increases trade through the use of family and kin ties across borders. This is very similar to the mechanism through which immigrants are able to increase trade with their country of origin. Therefore one might expect to see interaction between the two variables. That is, the immigration effect would be complemented by a country being highly collectivist; the idea being that, once abroad, individuals from collectivist countries would be more likely to maintain ties with their home country than would individuals emigrating from individualist countries. The reverse would also be expected. That is, the effects of collectivism would be heightened by a country having a large number of immigrants from that country in Canada.

To test this effect a variable was created which is the product of immigration and the individualism rating. If the type of interaction described above did occur, this new derivative variable should

have a significant coefficient. For both imports and exports it was not significant with P-values above 0.5 for both imports and exports.

This suggests that the two variables act independently. Possibly, immigrants maintain relations with their home country regardless of their tendency to individualism or collectivism. This is not surprising as emigration is a stress which forces people to act in ways which they may not at home. Also, one of the mechanisms of immigrations is a shift in domestic preferences. This suggests that collectivist networks operate separately from emigration. The ties which collectivist societies form outside their country move beyond the emigration of their citizens. However, in general it is difficult to interpret these results because of the high degree of colinearity of the derivative variable with immigration and Individualism/Collectivism.

6.8 Interpreting coefficients

Each of the independent variables, with the exception of Hofstede's four dimensions and language, were taken on a log scale. Because the dependent variable, trade, is also on the log scale, GDP, GDP per capita, immigrants, and distance can be interpreted as elasticities. That is, every 1% increase in the independent variable leads to a $\beta\%$ increase in imports or exports, where β is the regression coefficient for that variable. Hofstede's four dimension variables, not taken on a log scale, can be interpreted such that every X increase in the Hofstede variable leads to an increase in imports or exports by a factor of e to the exponent $\beta \cdot X$.

To demonstrate the sensitivity of the model to changes in the independent variables, Table 5 shows how regression #5 of the series of regressions on Canadian imports, reacts to changes in GDP per capita and Uncertainty Avoidance. The model is:

$$\ln \text{Imports} = -18.6 + 1.349 \ln \text{GDP_cap} - 0.18 \ln \text{Distance} + 0.7495 \ln \text{GDP} + 0.1512 \ln \text{Immigration} + 0.1407 \text{English} - 0.019 \text{Individualism} - 0.0197 \text{Uncertainty}$$

It was chosen as the best fitting model based on its R^2_{adj} . In the first row, the table shows the predicted imports for Hong Kong, Germany, and Korea. Other cells show the predicted exports of each country to Canada if they had the Uncertainty Avoidance or GDP per capita characteristics of the other countries.

Table 5 - Sensitivity of regression coefficients

Predicted Canadian Imports (\$ million)			
(unadjusted predicted value)	Hong Kong (\$2,315)	Germany (\$3,166)	Korea (\$533)
Uncertainty Avoidance of Hong Kong	**	6,434	1,607
GDP per capita of Hong Kong	**	2,979	1,457
Uncertainty Avoidance of Germany	1,139	**	790
GDP per capita of Germany	2,461	**	1,549
Uncertainty Avoidance of Korea	768	2,135	**
GDP per capita of Korea	847	1,090	**

Germany's Uncertainty Avoidance and Individualism/Collectivism values of 65 and 67 respectively are not favorable to trade as predicted by the model. If it had the Uncertainty Avoidance characteristics of Hong Kong which are 29 and 25 respectively, its exports to Canada as predicted

by the model would be \$6.4 billion, over double its predicted exports to Canada with an Uncertainty Avoidance rating of 65.

Table 6 also shows the sensitivity of model predictions to changes in GDP per capita. South Korea's predicted exports to Canada were \$533 million, significantly lower than its actual 1990 exports of \$1.935 billion. This was due in large part to both its low GDP per capita, and the importance placed on GDP per capita by the model. Korea's GDP per capita is \$8,271 per year compared to Hong Kong, which has a GDP per capita of \$17,431 per year. If Korea had the GDP per capita of Hong Kong, as shown in table 6, its predicted exports to Canada would increase from \$533 million to \$1.46 billion.

6.9 The relative impact of factors

In order to review the relative effect of variables modeled, their regression coefficients were standardized. The resulting 'beta weights' are provided below. Each was calculated from the 'best fit' model for each of the four data sets.

Table 6 - Standardized regression coefficients

	Canadian Imports	Canadian Exports	US Imports	US Exports
ln GDP per capita	0.3692	0.21688	0.306	0.2674
ln Distance	-0.06986	-0.1012	0.1009	-0.309
ln GDP	0.1175	0.1146	0.122	0.105
ln Stock of Immigrants	0.01873	0.01024	**	**
English	0.06154	0.005	0.096	0.301
Individualism / Collectivism	-0.00018	-0.00013	-0.0003	0.000213
Uncertainty Avoidance	-0.00015	-0.00013	-0.00015	0.00007

These results suggest that the number of standard deviation changes in the dependent variable is more with one standard deviation increase in the economic variables than with one standard deviation increase in the cultural variables.⁵

7.0 IMPLICATIONS FOR THE GLOBAL MANAGER

Cultural understanding has been a key component of the cross-cultural management literature. The basic premise is, that to be effective in international business transactions, managers must be well informed of the cultural idiosyncrasies of the country he or she is dealing with. John Child (1981) suggests that the study of cross-cultural management has not gone far enough in investigating

⁵ Standardized regression coefficients are calculated in the following way:

$$b_k^* = b_k (S_k / S_y)$$

where: b_k^* = standardized regression coefficient for independent variable k

b_k = regression coefficient for independent variable k

S_k = standard deviation of k

S_y = standard deviation of Y

which subcomponents of culture are relevant to the international manager. Nancy Adler in her interpretation of the role of culture in the development of industries suggests that, for mature industries, culture lies at the margin, separating successful and unsuccessful international firms (Adler 1991). A simple understanding of the cultural norms of a society is insufficient. The global manager must be aware of which elements of national culture are important, and how to deal with cultural differences.

Which components of culture are important to international trade? Through an analysis of Hofstede's dimensions of culture and their relation to Canadian and US bilateral trade, the more salient elements of national culture have been identified. More importantly, these elements are different in the US and Canada, suggesting different strategic approaches.

This analysis, particularly that portion that makes use of Hofstede's dimensions, is well suited to the foreign manager attempting to improve their trade with Canada and the US. This may seem counter intuitive as the data set is comprised of the cultural characteristics of other countries.

However, each data point for each country relates to Canada or the US. Thus, there is significantly more information about the trade of these two countries than for the many covered in the data.

7.1 Elements of culture which play a smaller part

An important result of this study is the identification of cultural factors which do not appear to have an effect on Canadian and US bilateral trade flows. Managers with limited time and resources would benefit from a prioritization. The independent variables, French, Masculinity / Femininity, and Power Distance would be low on the list of priority considerations for managers using this study as a benchmark.

The coefficient for whether a country speaks French did not appear significant. However, there are not many countries which have French as the dominant language. Although this result would be expected for the US, a large portion of Canadian manufacturing and importing occurs in Quebec.

Masculinity / Femininity was one of the Hofstede dimensions which did not appear to have any impact on Canadian and US bilateral trade. This dimension attempts to capture the natural fact that there are two genders and that biological differences are sometimes reflected in the social activities of the sexes. As was discussed earlier in Hofstede's research, certain activities are seen as masculine and others as feminine, and the dimension is a continuum between these two poles. The more masculine or feminine a country is appears to have little impact on Canadian and US trade. As this dimension only deals with which of the sexes perform different roles the impact on trade is negligible. Business persons trying to develop trade ties with Canada and the US need not focus too much attention on the gender roles specific to their country. Canadian and US importers and exporters do not seem to be concerned.

Power Distance was the second Hofstede dimension whose coefficient did not appear to be significant. This is the dimension which deals with human inequality; how a society deals with hierarchical relations within organizations. The nature of these relations does not appear to have an impact on Canadian and US trade, and therefore should not be a major concern to the international manager.

7.2 Cross-cultural communication: the role of Uncertainty Avoidance and English

Out of this study a number of different areas of cross-national management stand out as particularly important to Canadian and US trade. In the broadest sense, one of these areas could be included under the umbrella of 'cross-cultural communication'. Two variables related to cross-cultural communication are English and Uncertainty Avoidance. However, cross-cultural communication is a broad concept. The part that is relevant here relates to language and the degree of cultural adaptation which is effective and necessary to promote trade.

English was found to have a highly significant coefficient with each of the four data sets. From the standpoint of the manager trying to do business with Canada and the US, there is clearly an advantage to speaking English. More importantly, it appears that the payoff for speaking English is greater for trade with the US than it is with Canada. The coefficient for imports to the US is much larger than that for Canadian imports, 1.0966 for the US and 0.7987 for Canada.

Uncertainty Avoidance was also found to be significant in each of the four models. As was discussed earlier, this dimension could affect trade through a number of national characteristics. Some of these characteristics include the tendency of low Uncertainty Avoiding countries; to be

more accommodating of foreigners, to have fewer regulations (i.e. less bureaucratic), and to be more risk taking.

This result has two possible implications: one for the North American manager doing business abroad, and one for the foreign manager doing business in Canada and the US. The foreign manager trying to develop trade ties with North America should be conscious that North American business people seem affected by these factors and can take steps to limit their effect. Being accommodating of foreigners, limiting bureaucracy, and having a willingness to take risks appears to pay off in trade with North America.

North American managers would benefit from anticipating the degree to which their operations will be affected by Uncertainty Avoiding trading partners. For those countries which are Uncertainty Avoiding, the international manager may try to be more adaptive in his or her behavior, as high Uncertainty Avoiding countries tend to be less receptive of foreign behavior. Being aware of a foreign partners likely tolerance of risk could be very beneficial in the negotiating process.

7.3 Networks: The role of Individualism/Collectivism and Immigration

Two variables which had significant coefficients in this analysis were immigration and Individualism / Collectivism. For Canada, the number of immigrants from a country seems to have an impact on Canadian bilateral trade. As was described above, the mechanism through which this variable has an impact is in part the network of people who spread information on market opportunities. In a similar fashion, Hofstede's Individualism / Collectivism dimension suggests that more collectivist countries trade more with both Canada and the US. Collectivism widens the

range of family and clan ties, increasing networks which can act as conduits of market information and increase trust in international transactions.

For the international manager, being conscious of and taking advantage of these networks can be an extremely effective tool. These networks through which immigration and Individualism / Collectivism work are very similar. For example, the North American manager seeking to improve business ties abroad can achieve substantive benefits from making contacts through emigrants and members of family clans from the country with which they are trying to do business.⁶

8.0 CONCLUSION

There are many factors that affect international trade which lay outside the control of the international manager. These dimensions of trade go beyond economic considerations to include factors more commonly associated with culture. With the fall of traditional trade barriers these cultural barriers to trade lay at the margin of success for firms competing internationally.

Managers must identify the important elements of culture and develop techniques to deal with them.

The gravity equation made it possible for this study to measure the relative impact of cultural factors while controlling for economic considerations. Language, immigration, and two of Hofstede's cultural dimensions, Individualism/Collectivism and Uncertainty Avoidance, were

⁶ In an interview with Jim Gemmell, of BC Hydro's international division, he said that they have been involved in projects which were the direct result of contacts made with the assistance of Indian Canadian members of their staff. He added that they have benefited from the goodwill Canada has generated through the Indian Canadian community. A good example of how business people can benefit from immigrant networks is his having the opportunity to participate in an Indian trade mission with then Environment Minister Moe Siddhota, a Canadian of Indian ancestry.

found to have a statistically significant impact on Canadian and US trade flows with the world. In the case of the Hofstede dimensions these results were derived from 1990 trade data and 1970 cultural measures. Despite this difference in the age of the data, the impact of culture on trade was large. With more recent measures of culture these results may be even more pronounced.

Although applicable to all managers, these findings are of particular interest to the foreign manager trying to do business in Canada and the US. In a sense, it outlines North American cultural preferences. More importantly, this work has meshed two theoretical disciplines: international trade theory and cross-cultural management theory. In conclusion, this method increases our understanding of Canadian and US trade patterns.

APPENDIX 1 - COUNTRY LIST

BASE COUNTRIES	HOFSTEDE COUNTRIES			
	POWER DISTANCE	INDIVIDUALISM/ COLLECTIVISM	MASCULINITY/ FEMININITY	UNCERTAINTY AVOIDANCE
1 "ALGERIA"				
2 "ANGOLA"				
3 "BURUNDI"				
4 "CAMEROON"				
5 "CENTRAL AFR.R."				
6 "EGYPT"				
7 "ETHIOPIA"				
8 "GAMBIA"				
9 "GHANA"				
10 "GUINEA"				
11 "IVORY COAST"				
12 "KENYA"				
13 "LIBERIA"				
14 "MADAGASCAR"				
15 "MALAWI"				
16 "MALI"				
17 "MAURITANIA"				
18 "MAURITIUS"				
19 "MOROCCO"				
20 "MOZAMBIQUE"				
21 "NIGER"				
22 "NIGERIA"				
23 "REUNION"				
24 "RWANDA"				
25 "SENEGAL"				
26 "SIERRA LEONE"				
27 "SOUTH AFRICA"	49	65	63	49
28 "TANZANIA"				
29 "TUNISIA"				
30 "UGANDA"				
31 "ZAIRE"				
32 "ZAMBIA"				
33 "ZIMBABWE"				
34 "BAHAMAS"				
35 "BARBADOS"				
36 "BELIZE"				
37 "COSTA RICA"	35	15	21	86
38 "DOMINICAN REP."				
39 "EL SALVADOR"	66	19	40	94
40 "GUATEMALA"	95	6	37	101
41 "HAITI"				
42 "HONDURAS"				
43 "JAMAICA"	45	39	68	13
44 "MEXICO"	81	30	69	82
45 "NICARAGUA"				
46 "PANAMA"	95	11	44	86
47 "ST.KITTS&NEVIS"				

BASE COUNTRIES	-----HOFSTEDE COUNTRIES-----			
	POWER DISTANCE	INDIVIDUALISM/ COLLECTIVISM	MASCULINITY/ FEMININITY	UNCERTAINTY AVOIDANCE
48 "TRINIDAD&TOBAGO"				
49 "ARGENTINA"	49	46	56	86
50 "BOLIVIA"				
51 "BRAZIL"	69	38	49	76
52 "CHILE"	63	23	28	86
53 "COLOMBIA"	67	13	64	80
54 "ECUADOR"	78	8	63	67
55 "PARAGUAY"				
56 "PERU"	64	16	42	87
57 "SURINAME"				
58 "URUGUAY"	61	36	38	100
59 "VENEZUELA"	81	12	73	76
60 "BAHRAIN"				
61 "BANGLADESH"				
62 "CHINA"				
63 "HONG KONG"	68	25	57	29
64 "INDIA"	77	48	56	40
65 "INDONESIA"	78	14	46	48
66 "IRAN"	58	41	43	59
67 "IRAQ"				
68 "ISRAEL"	13	54	47	81
69 "JORDAN"				
70 "KOREA, REP."	60	18	39	85
71 "KUWAIT"				
72 "LAOS"				
73 "MALAYSIA"				
74 "MYANMAR"				
75 "NEPAL"				
76 "OMAN"				
77 "PAKISTAN"	55	14	50	70
78 "PHILIPPINES"	94	32	64	44
79 "QATAR"				
80 "SAUDI ARABIA"				
81 "SINGAPORE"	74	20	48	8
82 "SRI LANKA"				
83 "TAIWAN"	58	17	45	69
84 "THAILAND"	64	20	34	64
85 "UNITED ARAB E."				
86 "YEMEN"				
87 "AUSTRIA"	11	55	79	70
88 "BULGARIA"				
89 "CYPRUS"				
90 "CZECHOSLOVAKIA"				
91 "DENMARK"	18	74	16	23
92 "FINLAND"	33	63	26	59
93 "FRANCE"	68	71	43	86
94 "GERMANY, EAST"				

BASE COUNTRIES		-----HOFSTEDE COUNTRIES-----			
	POWER DISTANCE	INDIVIDUALISM/ COLLECTIVISM	MASCULINITY/ FEMININITY	UNCERTAINTY AVOIDANCE	
95 "GERMANY, WEST"	35	67	66	65	
96 "GREECE"	60	35	57	112	
97 "HUNGARY"					
98 "ICELAND"					
99 "IRELAND"	28	70	68	35	
100 "ITALY"	50	76	70	75	
101 "MALTA"					
102 "NETHERLANDS"	38	80	14	53	
103 "NORWAY"	31	69	8	50	
104 "POLAND"					
105 "PORTUGAL"	63	27	31	104	
106 "ROMANIA"					
107 "SPAIN"	57	51	42	86	
108 "SWEDEN"	31	71	5	29	
109 "SWITZERLAND"	34	68	70	58	
110 "TURKEY"	66	37	45	85	
111 "U.K."	35	89	66	35	
112 "U.S.S.R."					
113 "YUGOSLAVIA"	76	27	21	88	
114 "AUSTRALIA"	36	90	61	51	
115 "FIJI"					
116 "NEW ZEALAND"	22	79	58	49	
117 "PAPUA N.GUINEA"					
118 "SOLOMON IS."					
119 "GUINEA-BISS"					

APPENDIX 2 - OUTLIERS

Each of the four data sets had a group of outliers removed. For the Canadian import data, Reunion with imports of \$US 1000 and Central African Republic with imports of \$US 4000 were removed.

For the Canadian export data, Laos with exports of \$US13,000 and Reunion with exports of \$US15,000 were removed as outliers. Iran was removed from the US imports data set because of low imports, \$US 7170. For the US export data no outliers were identified.

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