The Relationship between Immigration and Trade in Canada: an Econometric Model

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Major Paper presented to the
Department of Economics of the University of Ottawa
in partial fulfillment of the requirements of the M.A. Degree
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Ottawa, Ontario
December 2014

Abstract

A positive relationship between immigration and trade has been found in previous studies, though the magnitude of such relationship varies among different countries under estimation. This paper intends to find the trade creation impact of immigration stock in Canada during the period of 1990 to 2012 employing an augmented gravity model. I find that there is a robust and positive relationship between immigrant stock and Canadian bilateral trade with the source countries of immigration. A 10% increase in immigration stock leads to a 1.71% increase in exports and a 2.20% increase in imports. I also find that immigrant stock has a larger import-creation impact than an export-creation impact through the preference channel of immigration. Finally, I find that the immigration impact from lower-income countries on Canadian trade is stronger than that from higher-income countries.

1. *Introduction*

It is widely acknowledged that the unprecedented strides of globalization are affecting every person and every country in various ways, one of which is the rapid increase in migration throughout the world since the turn of the 20th century. According to world population report from the United Nations[1] (2013), nearly 3.2% of the total populations in the world are international immigrants who do not live in the country where they were originally born. In the meanwhile, with remarkable developments in technology and sophisticated establishments of regional and worldwide trading agreements, there is no doubt that most economies have experienced enormous increases in trade flows of good and services. It is stated that international trade has grown from less than 6% of world gross domestic product (GDP) in the 1950s to about 25% at the end of 2007 (World Trade Organization, 2013)[2]. In light of the concurrent growth in trade flows and immigration, previous studies have tried to investigate the relationship between level of immigrants and volumes of bilateral trade (i.e. Gould, 1994; Head and Ries, 1998; Foad, 2010). It turns out that abundant empirical evidence has shown that the immigrant networks played essential roles in stimulating bilateral trade between the home and host countries of immigrants.

Canada is always a popular destination for international immigrants. In 2011, this is confirmed by the fact that roughly 20.6% of the total population in Canada was foreign-born, one of the ten highest concentrated immigrant host countries in the world (Statistics Canada, 2014). At the same time, international trade has always been one of the main foundations of the Canadian economy. Despite the trade slump during the financial crisis, trade to GDP ratio has been rising at a steady rate since the 1990s and international trade amounted to approximately 45% of GDP in 2013 (Trading Economics, 2014)[3].

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[1] United Nation Department of Economics and Social Science (DESA), Population Devision (2013) '232 million international migrants living abroad worldwide–new UN global migration statistics reveal' . Available from http://esa.un.org/unmigration/wallchart2013.htm

[2] World Trade Organization (2013) 'World trade report, 2013'. Available from http://www.wto.org/english/res_e/booksp_e/world_trade_report13_e.pdf

[3] Trading Economics (2014) 'Canada GDP growth rate'. Available from http://www.tradingeconomics.com/canada/gdp-growth

The trade-creation effect of immigration has drawn a lot of attention since the pioneering studies presented by Gould (1994) and Head and Ries (1998) who point out that controlling for the transportation costs between countries, higher level of immigration stocks is accompanied with larger trade flows. Although, the partial correlation between stock of immigration and trade flow has been underpinned by various studies on this topic as well as recent international trade theories, the extent to which immigration level can influence trade flows has not yet been demonstrated due to the economic difference between countries and regions (Lewer and Van den Berg, 2009).

Therefore, this paper aims at examining the correlation between immigration stock and trade flows in Canada by looking deeply into the question whether stock of immigrants have an impact on bilateral trade between Canada and its 157 WTO trading partners between the period of 1990 and 2012. A gravity model will be applied in this paper as the main econometric method to analyze the panel data.

The paper will be presented as follows. First of all, section 2 below will provide a conclusive review of the existing literature. In section 3, theoretical backgrounds of the standard and augmented gravity model will be discussed in detail. This is followed by a clear description of the econometric model, methodology, data source and all variables used on this paper in section 4. In addition, the following part refers to the discussion of empirical results based on the applied econometric model and tests applied to ensure the robustness of the model. Finally, the conclusion will be presented with regard to all the findings in this paper.

2. Literature Review

2.1 Previous Empirical Studies

Existing studies investigating the correlation between immigration and bilateral trade of a specific host country have all revealed a positive effect of immigration on both the imports and exports of goods and services. Most of the researches in this field focus on countries which are regarded as traditionally experienced immigrant receivers, namely the United States, Canada, Western European countries and Australia, whose cultures have developed along with the reinforcement of ethnic identity (Faustino and Peixoto, 2013).

Gould (1994) finds out that immigrant linkages have played an essential role in enhancing bilateral trade between the United States and immigrants' home countries by compiling U.S. trade data with its 47 partners. He pointed out that the immigrant linkage has always been an essential influence on US trade due to the knowledge of languages, business contacts and share of preferences.

Head and Ries (1998) employ a gravity model to evaluate the possible trade-creation impact of immigrants on international trade in Canada. A panel data set of 136 partner countries between 1980 and 1992 was used. Their research shows evidence of a positive influence of immigration on trade flows for both Canadian imports and exports, though the impact on exports is observed to be much larger than that was on imports.

Dunlevy and Hutchinson (1999) go back to study the relationship between trade and immigration back in the period of World War I when massive inflows of labour and capital were attracted to the United States. Taking into account U.S. trade and immigration data with 17 European countries, they have discovered a pro-import effect of immigration. At the same time, they point out that immigrants who share the same language and a similar economic background have placed influence of U.S. trade during the period of World War I.

Table 1 Immigration Trade Linkage: Impacts of immigration from Existing Literature

Author	Sampling	Methodology	Empirical Result Export Elasticity	Import Elasticity
Gould (1994)	United States and 47 Trading Partners, 1970-1986	Gravity model	0.02	0.01
Head and Ries (1998)	Canada and 136 trading partners 1980-1992	Gravity model	0.1	0.31
Head, Ries and Wagner (2002)	Canadian province level trade data with 150 partners 1992-1995	Gravity model	0.08	0.02
Dunlevy and Huntchinson (1999)	U.S. imports from 17 European countries 1870-1910 at five-year intervals	Gravity model	0.08	0.29
Girma and Yu (2002)	UK and 48 trading partners 1981-1993	Gravity model	0.16 (non-Commonwealth countries) Insignificant (Commonwealth countries)	0.1(non-Commonwealth countries) 0.098 (Commonwealth countries)
Rauch and Trindade (2002)	Trading data of 63 countries chosen by Frankel (1997) In 1980 & 1990	Gravity model	0.47	0.47
Bryant *et al.* (2004)	New Zealand & 179 partners 1981-2001	Gravity model	0.087	0.15
White and Tadesse (2007)	Australia and 101 partners 1989-2000	Gravity model	0.46	0.17
Foad (2010)	Europe and North America trading data In 1990 & 2000	Gravity model	-0.091 (in 1990) 0.172 (in 2000)	-0.081 (in 1990) 0.025 (in 2000)

More recently, Bryant, Genç and Law (2004) have shown evidence of a significant and positive impact of immigration stock on bilateral trade in New Zealand using trading data including 170 countries across a 20 year time span from 1981-2001. Similarly, in the study conducted by White and Tadesse (2007), the authors claim that though there is a positive linkage between immigration and trade, the magnitude of such linkage differs across various measure of trade. A summary of empirical results from previous studies is presented in Table 1.

2.2 Why Immigration Can Affect Bilateral Trade

It is widely agreed that the trade facilitation impact of immigration comes from two main mechanisms, namely the preference channel and the social network channel. In general, immigrants tend to bring their preferences for goods from home countries along to their new home. At the same time, the social and business connection of immigrants can reduce transaction cost of trading between the home and host countries.

The preference channel is intuitively more understandable in the sense that there might be a higher demand for goods and services from the native country if immigrants fail to find satisfactory substitutes in the new country. It is, therefore, pointed out by Foad (2010) that the preference channel through which immigration may exert influence on trade depends on the culture assimilation between the native country and host country. If there is a high level of culture similarity between the two countries, the impact of preference channel is expected to be small. The limitation of home preference effect is also argued by Genc, Gheasi, Nijkamp and Poot (2011). They state that the effect of this channel, small or large, only applies to the import flows of the host country.

On the other hand, the social network channel attracts more attention among the academics as most researchers believe that this channel will affect both imports and exports (Genc *et al.*, 2011). Blanes and Martín-Montaner (2006) point out that the effect of the network channel is two-folded. First, it is

much easier for immigrants to build up their networks with the home country based on their connections with people in the home country. Second, there is no doubt that the knowledge of the home language, culture preferences and familiarity with the business and social protocols play an important role in reducing transaction costs of trading. Therefore, in doing business, immigrants tend to face a smaller trade barrier than those who were not originally born in the country (Head, Ries and Wagner, 2002).

In addition, Foad (2010) asserts that the formation of social connection between immigrants and their contacts in the home country will drive down the transaction cost of trading. He states that the higher level of economic assimilation between home and source countries, the lower the impact the network channel will impose on exports. To be more specific, immigrants from developing countries are usually able to generate a strong impact on developed economies as little knowledge about the business environment of the developing trading partners is typically possessed by the developed world. By studying the immigrants from Middle East and North Africa (MENA) to Europe and North America, he comes to the conclusion that immigration poses a relatively stronger trade-creation effect in European host countries than in North America. The level of economic assimilation between MENA countries and North America is high, which strengthens the effect of social network channel of immigration. On the other hand, the higher degree of social assimilation drives down the incentive of importing goods and services from MENA countries.

The impact of immigration network channel on transaction cost reduction is examined by Girma and Yu (2002) by investigating the relationship between immigration and bilateral trade between the United Kingdom and its 48 partner countries. The authors point out that the effect can be separated into two categories, namely the individual specific and non-individual specific aspects. In their perspective, the individual-specific mechanism includes the personal connections between immigrants and their contacts in the home country, of which the transaction reduction effect can be regarded as ‘universal’ as individual business connections can reduce transaction costs between any two trading partners. In addition, non-individual specific mechanism can only reduce transaction cost

if immigrants can bring any additional knowledge about business environment and institutions of the home country that is currently absent in the host country. Therefore, they argue that the magnitude of transaction cost reduction will differ across various trading partners. In order to test the hypothesis that the impact of immigration network channel in Commonwealth countries is smaller than that in non-Commonwealth countries, they divide the 48 trading partners between those that are former British colonies and those that are not. They provide robust evidence to the significant trade-immigration linkage between United Kingdom and non-Commonwealth countries. At the same time, they claim that the impact of immigration from Commonwealth countries on UK exports is statistically insignificant because of the similar social and economic background between countries. Therefore, the striking finding does support their statement about non-individual specific mechanism of network channel.

Meanwhile, Rauch (2001) addresses the question whether co-ethnic networks act as means to overcome the informal trade barriers, especially weak contract enforcement in bilateral trade. He points out that the establishment of social networks across borders helps to reduce the problem of opportunism in which one side of the contract benefits from violating the agreement. In this case, members of the network will blacklist the businessman who has a bad reputation for good in order to keep a high level of trust inside the network. Therefore, mutual trust can be built up inside the transnational network which in turn provides more trading opportunities.

2.3 Determinants of Immigration Trade Creation effect

Going beyond the channels of immigration trade creation, there is no doubt that the magnitude of this effect is determined by heterogeneous set of elements (Faustino and Peixoto, 2013). First of all, Head and Ries (1998) pay their attention to the different impacts on bilateral trade that are given by immigrants with different status. They find that refugees, among all other types of immigrants, have the weakest influence on Canadian trade. One possible explanation is that refugees usually keep a relatively low level of connections with their relatives and friends in the home countries due to the

fear of being exposed. At the same time, it is argued by White and Tadesse (2010) that refugees might have stayed in third countries before they finally settled in the host one and during this period, their preferences for home goods and services might have already weakened.

White and Tadesse (2010) draw a similar conclusion that compared to non-refugee immigrants, refugees and asylum seekers exert a minimal level of influence on U.S. trade with their home countries. Meanwhile, they point out that though all types of immigrants help to offset the cultural distance between home countries and the United States, the effect of refugees turns out to be the smallest. They conclude that the limited ability of maintaining connections with home countries is the main reason refugees tend to have the least influence of attracting U.S. exports among all immigrants.

Another variable that may affect the level of trade facilitation influence of immigration is immigration policies of the host countries. Head and Ries (1998) state that incentives of entrepreneurial initiatives from immigrants may also have a positive influence on bilateral trade. Head *et al.* (2002) point out that the Canadian immigration policy has always favour entrepreneurs and immigrants who have the financial capabilities to establish their businesses in Canada. Most often, the new businesses are related to exporting and importing based on the entrepreneurs' old connections.

In addition, the importance of immigrant entrepreneurship is discussed by Light, Zhou and Kim (2002). By studying U.S. trade with 88 partners from 1908 to 1990, the authors claim that immigrant entrepreneurship increases exports to almost all non-English speaking countries. Some ethnic groups with high entrepreneurial character such as the Chinese create greater trading opportunities in the U.S. economy. The authors mentioned that because of the lack of experiences and capabilities of skilled immigrants in finding opportunities in trade, the importance of entrepreneurial immigrant group cannot be replaced by skilled immigrants.

2.4 Different Influence of Immigration

Existing empirical studies have shown evidence of the different impacts of immigration network channels that are imposed on different commodity groups and industries. First, it is generally agreed that the link between immigration and bilateral trade is stronger for differentiated goods than that is for homogeneous goods.

Rauch (1999) classifies commodity goods into three groups: those that are traded on organized exchanges such as homogeneous products; those that are traded in reference prices; and all the other products, i.e. the differentiated products. He points out that due to asymmetric information among different markets, differentiated products are usually designed to suit their home markets and thus, are less traded across borders. As a result, the strengthened immigration-trade linkage through social networks and preference channels has a greater impact on the demand for differentiated products rather than for homogeneous ones outside home countries.

By studying the impact of ethnic Chinese networks on bilateral trade in different groups of commodities, Rauch and Trindade (2002) find that both the direct and indirect colony ties enhance trade in differentiated products more than in homogeneous ones. More specifically, linguistic ties and provision of market information through social networks are shown to promote trade in differentiated goods. This result is consistent with the one introduced by Byrant *et al.* (2004) who studied immigration linkages in New Zealand with 170 trading partners. They exclude homogeneous products when a differentiated set of products is considered. Their findings show that export-elasticity rises from 0.05 to 0.1 when agriculture products are excluded.

Furthermore, it is concluded by White and Tadesse (2010) conclude that the degree to which immigration-trade linkages might influence differentiated products is positively related to the level of information asymmetry between trading partners. In light of the above findings, it is stated that

immigration-trade linkages imposes stronger influences on consumer goods than on producer goods as the former goods are considered to be more differentiated (Gould, 1994).

In addition, a number of researches have focused on the different impacts of immigration on inter- and intra-industry trade (IIT)[4]. Recent studies tend to favour the idea that immigration contributes more to the growth in intra-industry trade than that in inter-industry trade. Blanes (2005) finds evidence supporting this statement by investigating bilateral trade in Spain during the period between 1991 and 1998. According to the result from a gravity model, he finds a positive relationship between the stock of immigration and the share of IIT in total trade. He suggests that intra-industry trade is usually associated with the exchange of differentiated goods which, in turn, is highly sensitive to reductions in transaction costs through the network channels of immigration.

To summarize, previous studies have shown a great interest in the field of immigration trade linkages. Academics that have focused on investigating the relationships on specific countries have all found evidence that immigration does impose a positive influence on bilateral trade. However, the degree and magnitude of the impact vary across different countries. As a result, an increasing number of studies have studied the possible causes of the diversification. In general, they point out that both preference and network channels play essential roles on the impacts of immigration which differ among home and host countries due to the degree of social and economic assimilation.

Therefore, in light of the theoretical background and empirical results from previous studies, this paper intend to explore further the relationship between immigration and bilateral trade by investigating Canadian trading data and immigration stock during the period between 1990 and 2012. An augmented gravity model will be used, as was done in most studies in this field.

[4] Inter-industry trade refers to the exchange of products that belong to different industries. Intra-industry trade refers to the exchange of similar goods within the same industry.

3. The Gravity Model

3.1 The Basic Gravity Model

The gravity model is the primary empirical model for economists to analyze immigration trade linkages. Introduced by Tinbergen (1962), the gravity model has been shown to render high explanatory power in describing factors that can affect international trade (Frankel, 1998).

The standard gravity model is based on Newton's formulation of 'Law of Universal Gravitation' in 1687 which states that gravitational attraction between two objects depends on the mass of these two objects and their distances between each other. Therefore, in economics, the gravity model predicts that bilateral trade between two countries is related to the economic size of the two entities and inversely correlated with the distance between them. In general, market size is measured by the GDP value of a country. In addition, it is widely agreed that two countries with large market sizes which are close to each other are likely to trade frequently with each other.

The basic gravity more is described as follows:

$$T_{ij} = A\frac{(Y_i{}^{\alpha_1} * Y_j{}^{\alpha_2})}{D_{ij}{}^{\alpha_3}} \quad (1)$$

where T_{ij} is the bilateral trade flow between country *i* and country *j*

Y_i and Y_j are GDP of trading partners country *i* and country *j* respectively

D_{ij} is the distance between country *i* and country *j*

More commonly, the gravity model is in the log-linear specification, which can be written as:

$$\ln(T_{ij})=\ln A+\alpha_1\ln(Y_i)+ \alpha_2 \ln(Y_j) -\alpha_3 D_{ij} + \varepsilon_{ij} \quad (2)$$

where ε_{ij} is the error term

3.2 The Augmented Gravity Model

Going beyond the standard gravity model, a number of researchers have expanded the model by including their own specifications and a selection of variables, which they think may also affect international trade. Head and Ries (1998) start their own model by defining the volume of imports of country *i* from its trading partner *j* as the follows:

$$m_{ij}=s_{ij}*Y_j \quad (3)$$

where s_{ij} is the share of country *j*'s product which is consumed by country *i*

Y_j is the GDP of country *j*

In addition, under the assumptions that country *i* and country *j* are fully integrated and that all traded products are symmetric differentiated products, Helpman (1984) suggests that

$$s_{ij}=(Y_i/Y_w)/\varphi_{ij} \quad (4)$$

$$\varphi_{ij}=\exp(-X^{ij}\beta) \quad (5)$$

where Y_w is the world GDP

X^{ij} is a vector of variables that might affect transaction cost of trade

φ_{ij} is the trade impediments between two trading partners

By substituting equation (4) and (5) into equation (3) and then taking natural log on both sides, the equation is as follows:

$$\ln m_{ij}=\ln(Y_iY_j/Y_w)+X^{ij}\beta \quad (6)$$

The intuition behind this equation is that bilateral trade between two trading partners is determined by the economic weights of two countries as well as the level of trade barriers. The bigger the share of world GDP carried by the two trading partners, the higher the volume of trade might take place between two countries. However, the volume of trade between two countries will be impeded by the

level of trade barriers, which depends, among other variables, or the geographic distance between two partners. In addition, it is argued by Head and Ries (1998) that countries that are highly integrated into the world tend to trade more with other countries. Therefore, in this paper, trade openness ratio which is defined by the ratio of total trade to GDP is included in the model as an indication of the level of integration.

4. Empirical Method

4.1 Model Specification

The two gravity models under estimation in this paper are as follows:

$$lnExport_{ijt} = \beta_0 + \beta_1 lnImmistock_{ijt} + \beta_2 Tropenness_{jt} + \beta_3 \frac{(Y_{it} * Y_{jt})}{Y_{wt}} + \beta_4 Distance_{ij} + \sum_{k=1}^{K} \delta_k Z_{ijkt} + \tau_{ijt} \quad (7)$$

$$lnImport_{ijt} = \beta_0 + \beta_1 lnImmistock_{ijt} + \beta_2 Tropenness_{ijt} + \beta_3 \frac{(Y_{it} * Y_{jt})}{Y_{wt}} + \beta_4 Distance_{ij} + \sum_{k=1}^{K} \delta_k Z_{ijkt} + \omega_{ijt} \quad (8)$$

where

$Export_{ijt}$ is the volume of exports between country *i* and *j* in a given year *t*, here country *i* is Canada and country *j* is Canada's trading partner, *j*;

$Import_{ijt}$ is the volume of imports between country *i* and *j* in a given year *t*, here country *i* is Canada and country *j* is Canada's trading partner, *j*;

$Immistock_{ijt}$ is the immigration stock from Country *j* to country *i* in a given year *t*, here country *i* is Canada and country *j* is Canada's trading partner, *j*;

$Tropenness_{jt}$ is the trade openness of Canada's trading partner, country *j* in a given year *t*;

$\frac{(Y_{it} * Y_{jt})}{Y_{wt}}$ is the economic weights, Y_{it} is the GDP of Canada in a given year *t* and Y_{jt} is the GDP of Canada's trading country *j* at given year *t*, Y_{wt} is the world's GDP at year *t*;

$Distance_{ij}$ is the geographic distance between Canada in miles, country *i* and trading partner, country *j*, here country *i* is Canada and country *j* is Canada's trading partner, *j*;

Z_{ijkt} are the dummy variables for sharing the same language, sharing border and years;

τ_{ijt} and ω_{ijt} are the error terms.

This paper follows the econometric approach used by Head and Ries (1998) who employed an augmented gravity model to examine the relationship between immigration and bilateral trade between Canada and 136 trading partners during 1980 and 1992. Unlike Head and Ries (1998), I do not take into account the explanatory variable, relative price between Canada and its trading partners in this model. Unlike the explanatory variables like immigration stock, country GDP values, distance, the variable relative price is not included in the basic gravity model to determine trade flow. As a result, although many studies in this field do include relative price as a control variable, other researchers i.e. Girma and Yu (2002) and Bryant *et al.* (2004) do not include relative price between countries. Also, the measurement of relative prices is inconsistent among the different studies. Head and Ries (1998) apply the ratio of exchange rate between two trading partners as a measure of relative price, while Dunlevy and Hutchinson (1999) use the ratio of U.S. imports relative to U.S. consumer price index (CPI) which is adjusted for tariff and other transaction costs. Due to the difficulty of obtaining accurate information of data on relative prices between countries over 23 years, I exclude that variable even though it is considered in the study of Head and Ries (1998).

4.2 Variable Description

Two dependent variables are under estimation in this paper, namely imports and exports. As the primary interest of the model is to find out the relationship between immigration and bilateral trade

between Canada and its trading partners, immigration stock is, without doubt, a crucial independent variable in this gravity model. The other independent variables are: economic weights of countries measured by relative GDPs, trade openness, distance between countries and three groups of dummy variables: namely a language dummy, a border dummy and time dummies. The definitions and sources of the variables are presented in Table 2.

Although large variations in the formulations of the gravity model exist in the empirical studies, there remain some common features of the model that are shared in almost all studies. Most importantly, the dependent variables of the gravity model always fall into the category of trade variables. In this paper, trade variables of both exports and imports are the dependent variables that will be explained separately. The reason behind the separation in measurement is that immigration may have different effects on exports and imports due to the distinguished impacts of preference and network channel in previous literature (Gould, 1994; Head and Ries, 1998).

As in previous studies, the stock of immigrants is applied in this paper as the primary measure of immigration instead of other measures such as the flow of immigration. According to the World Bank (2014), international migrants are defined as those who usually live in a country that is different from the one in which they were not born. Immigration stock, therefore, represents the cumulated inflow of international migrants within a certain period of time.

Generally speaking, immigrants are permitted to live in Canada under two circumstances, namely Temporary Foreign Worker Program (TFWs) and the Permanent Immigrant Program (Beine and Coulombe, 2014). Under the requirements of TFWs, a foreign worker has to hold a valid working visa in order to stay in Canada legally on a temporary basis. Instead of being granted to stay in Canada temporarily, permanent immigrants have the right to stay indefinitely in the country. The Permanent Immigrant Program operates through three classes, the economic, family reunification, and refugee. Applicants who are qualified under the economic class, in general, obtain certain

professional skills or a high level of educational background so as to participate in the long-run development of the Canadian economy (Beine and Coulombe, 2014). In this paper, I examine the impacts of both temporary foreign workers and immigrants with permanent residence status on Canadian trade.

Table 2: List of variables in this paper and source of data

Name of variable	Description	Source
Exports	The natural log of real Canadian export data with 157 trading partners during the period between 1990-2012 measured in U.S. dollars	WTO Statistics Database
Imports	The natural log of real Canadian import data with 157 trading partners during the period between 1990-2012 measured in U.S. dollars	WTO Statistics Database
Immigration stock	The natural log of the stock of immigration during the period between 1990-2012 measured in person	Citizenship and Immigration Canada Data collected by Beine and Coulombe (2014)
Economic weight (GDPs)	The natural log of $(GDP_{foreign}*GDP_{Canada})/GDP_{World}$	World Bank Indicator Database
Distance	The natural log of distance between Canada and one objective country measured in miles	http://www.distancefromto.net
Trade openness	The natural log of trade-to-GDP ratio (Exports + Imports)/GDP during the period between 1990-2012	World Bank Indicator Database
Language dummy	Dummy variable whether the objective country is either a French or an English speaking country	
Border dummy	Dummy variable whether the trading partner is United States	

As discussed in section 3.2, economic weights of both trading partners as well as trade openness ratio are included in the model. Both control variables of economic weights and trade openness are expected to have positive impacts on bilateral trade.

With regard to trade barriers that may exist between two partners, geographic distance between two trading partners and a language dummy are included in this paper. As data of country-specific trade barriers such as tariff and quotas are usually hard to collect, distance is always an effective proxy of trade barrier in the gravity model. It is pointed out by Head *et al.* (2002) that "natural" trade barriers including transaction costs, product responsiveness and market familiarity are all highly correlated with distance. Therefore, the distance between two trading partners is expected to impose a negative impact on bilateral trade. At the same time, a common language dummy is incorporated in this paper so as to take into account the cultural similarities between countries.

In addition, countries tend to trade more aggressively with neighbors sharing the same border due to lower transaction cost and cultural assimilation (Lewer and Van den berg, 2009). Therefore, a border dummy is always included in previous studies to estimate the trade volume of neighboring countries. As mentioned by Head and Ries (1998), in the gravity model concerning Canadian trade, the adjacency dummy is set to measure solely the trade with the United States, which is the largest trading partner of Canada.

In order to account for the problem of endogeneity, time fixed effects are included into the model to control for macroeconomic movements overtime. In this paper, I do not include country fixed effects into the model due to the consideration that one explanatory variable, distance, which is constant over time, already picks up the fixed effect of Canada's trading partners.

4.3 Econometric Methodology

A panel data framework is used to analyze the trade creation effect of international migration in Canada within the time span of 23 years. The advantage of using a panel data approach is recognized in various studies. One advantage is that country heterogeneity might be ignored if the econometric model only uses cross sectional data or pooled OLS specifications (Bussiere and Schnatz, 2009). It is stated by Baltagi (2005) that panel data controls for heterogeneity which might provide biased results. At the same time, Baltagi argues that a panel framework provides more degree of freedom and reduces the possibility of multi-collinearity among explanatory variables in the econometric model.

4.3.1 Robustness checks

Two analyses are provided in order to ensure the robustness of estimation. The first method involves the introduction of dynamic effects by including lagged dependent variables of exports and imports into the model as new explanatory variables. This robustness check was considered by a lot of researchers studying the trade creation impact of immigration, including Gould (1994), Head and Ries (1998) and Lewer and Van den Berg (2008). As stated by Head and Ries (1998), the new explanatory variables will control for some slow-moving and unmeasured effects of trade patterns and, therefore, help to provide more robust estimation of immigration stock.

A second approach used by Lewer and Van den Berg (2009) is to check the robustness of the relationship by dropping the major trading partners. They point out that the overall relationship between immigration and bilateral trade might be unevenly affected by countries depending on the volume of bilateral trade. The empirical results might be largely influenced by the trade and immigration data of some major trading partners and countries with high volume of migrants settling in Canada as their permanent residence. Therefore, a regression model excluding some of the main trading partners of Canada, as well as the main source countries of Canadian immigration will be estimated. It is expected that, by excluding the most influential countries, the estimation of the

immigration trade relationship will be more accurate. The countries excluded from the total sample of observations are the United States, China, the United Kingdom, Japan, Mexico and South Korea. According to statements from Statistics Canada[5] in 2012, the excluded countries are on the list of largest Top 10 trading partners of Canada. Also, apart from Japan and Mexico, all the other countries are the most concentrated home nations of immigration.

4.3.2 Classification tests

Furthermore, in order to thoroughly understand the relationship between immigration and bilateral trade, two subgroup estimations are provided. Firstly, the separate trade creation impacts of immigrants from countries with different income levels will be studied in detail.

It is widely agreed by academics that immigrants from different countries of origin bring diverse trade creation impacts to their host countries. Head *et al.* (2002) point out that immigrants from developed countries are likely to have a lower trade impact than those from developing countries. They believe that the Canadian business and legal environment highly resemble those of other high-income economies, while both the market framework and infrastructure differ significantly from those in low income economies.

In order to find out the impact of immigrants from different origins, the 157 countries under consideration are divided into four groups, namely high income, upper-middle income, lower-middle income and low income economies. The classification of countries is based on World Bank's estimation of gross national income (GNP) per capita. The number of countries in each group from high-income economies to low income economies are 53, 38, 38 and 29 respectively. The impact of

[5] Statistics Canada (2012) 'International Trade'. Accessed on Oct 20, 2014. Available from http://www.statcan.gc.ca/pub/12-581-x/2012000/it-ci-eng.htm

immigration stock on exports and imports from low income countries is expected to be larger and more significant than that from high-income countries.

According to the second sub-grouping, all countries under consideration are divided based on different continents/ regional groups, namely Asia, Africa, America, Europe and Oceania. It is pointed out by Head and Ries (1998) that the coefficients of regional immigration stock vary widely among different continents due to the diverse impacts of immigration on trade. Apart from the general classification, this paper pays more attention to Eastern Asian countries and regions, such as China, Hong Kong, Macao, South Korea, Mongolia and Japan due to their growing importance in trade-immigration linkages with Canada. Moreover, the American countries are divided into subgroups, namely the Caribbean, South America and Central America. The subgroup of North America is omitted as the only North American trading partner of Canada which is the United States, for which the trade creation impact is calculated through the border dummy.

4.4 Data

This paper relies on the annual data from 157 countries and regions that maintain a trading partnership with Canada during the period 1990-2012. A list of all countries included in this paper is shown in Appendix 1. Unbalanced trading data is incorporated in the econometric model due to data availability and changes in the political world especially during the early 1990s. Excluding all the missing values in the dataset, there are 3,235 observations in total.

All countries and regions taken into account in this paper are WTO member countries. The consideration behind the sampling involves the following points. First of all, almost all major trading nations including Russia have already joined WTO. By taking into account WTO countries, it is certain that no major economic entity has been left out of the sample. At the same time, data availability is necessary in the estimation of the empirical model. Generally speaking, during the period from 1990-2012, most foreign migrants who settled down in Canada are from WTO member countries. Since Canada tends to trade more with WTO members, non-membership countries are

eliminated in this paper in order to avoid missing trade and immigration data. However, this sampling is most likely to result in the exclusion of some least developed countries, small countries and regions with low levels of trade.

There are currently 160 members in World Trade Organization while data from 157 countries are used in this paper. Apart from Canada, the two omitted countries and regions are Taiwan (Chinese Taipei) and Vanuatu. The reason for excluding Taiwan is due to missing data on the trade openness ratio and on economic weights in World Bank Indicator Database. It is explained by the World Bank[6] (2014) that Taiwan is not listed as a separate country in the Database, while the economic data of Taiwan are not included either in the Chinese dataset. Furthermore, this paper considers only WTO members that are source countries of legal immigrants who came into Canada during the period from 1990 and 2012. As a result, Vanuatu is excluded as there is no record of migration inflow from Vanuatu during the period under consideration.

Merchandise imports and exports data are employed in this paper to examine Canadian trade performances. The data is sourced from WTO Statistics Database and all values are presented in U.S. dollars. In addition, data on GDP and trade openness ratio of each country is taken from the World Bank Indicator Database and valued in U.S. dollars as well. The dataset of immigration stock in Canada with 1990 as the base year is converted from interprovincial migration data used by Beine and Coulombe (2014) by adding up annual inflows of immigration in each province in Canada. The The data applied by Beine and Coulombe (2014) is available in Statistics Canada CANSIM database. Due to data availability, the dataset does not consider the outflow of both temporary and permanent immigration inflow during the examined period. The geographic distance term between Canada and its trading partner is represented by the aerial distance (in miles) between two capital cities. The data is taken online from *measure distance between cities.* All variables except the dummies are in the forms of natural logarithms.

[6] World Bank Helpdesk (2014) 'where is your information on Taiwan'. Available from https://datahelpdesk.worldbank.org/knowledgebase/articles/114933-where-are-your-data-on-taiwan

The language dummy equals to one if Canada and its trading partner share the same official language. Therefore, in this case, immigrants from either English or French speaking countries are considered to speak the same language as the Canadians. It is expected that sharing the same language will have a positive impact on bilateral trade. To be more specific, Canada should trade more with wither English-speaking or French-speaking countries.

As United States is the only country that shares a common border with Canada, the border dummy is equal to one only when then trading partner under consideration is the United States. As Canada's most important trading partner, the coefficient of the dummy variable is expected to be positive and both economically and statistically significant as well. Finally, a time dummy is included to control for macroeconomic movements among the period under estimation.

5. Empirical Results

5.1 General Results

The OLS estimators of all explanatory variables including time fixed effects for the total sample are presented in Table 3. All coefficients are statistically significant at the 1% significance level. At the same time, all coefficient estimates in this paper are consistent with the assumptions made in the literature in which immigration stock, economic weights and trade openness ratio impose positive impacts on imports and exports, while distance has a negative impact on bilateral trade.

In terms of the variable of primary interest in this paper, the immigration stock, the results suggest that a 10% increase in immigration stock will lead to a 1.7% increase in exports and 2.2% increase in imports. This result is consistent with the one found by Head and Ries (1998), though they reached a slightly smaller coefficient for exports and a larger one for imports. In their study, a 10% increase in

immigration stock will generate a 1.3% and 3.9% increase in exports and imports respectively. Firstly, one possible explanation for the larger coefficient for imports may be that the supply of exotic products and services from immigrants' home countries must be relatively more readily available in the Canadian market now than it was back in the 1980s and 1990s, the period investigated by Head and Ries (1998). The scarce supply of home products can induce a high demand for imported home goods which, subsequently generates a higher volume of imports. In addition, the higher export-creation impact found in this paper might be due to the more efficient network channel of immigrants. With the progress of technologies, it is much more convenient than it used to be to contact friends, families and business partners back in home countries in a more direct way, such as online chats and e-conference. As shown in previous studies, the more efficient the network channel of immigration, the larger the impact it will impose on transaction cost reduction (Rauch and Trindade, 2002).

It is worthwhile noticing that the import elasticity of immigration stock is higher than export elasticity, which means that the import–enhancing impact of immigration is greater than the export-enhancing impact in Canada. This finding is consistent with the one found in the study of Head and Ries (1998) with an even bigger difference in coefficients. One plausible explanation can be provided by considering the two trade creation mechanisms of immigration. While the network channel helps to reduce transaction costs of trade which facilitates both exports and imports, the preference channel only helps to increase imports through higher demand for goods and services from home country. Head and Ries (1998) also point out that for immigrants with the same preference as native Canadians; it is still easier to set up import businesses than export businesses.

As mentioned in section 3.2, the coefficient of the economic weights for trade should be equal to one in theory (Head and Ries, 1998). According to the empirical findings in this paper, the elasticity of economic weights for exports and imports are 0.931 and 1.155 respectively, which are close to the theoretical value of one. The positive relationship between the trade openness ratio and Canadian trade indicates that Canada is more likely to trade with countries with high trade to GDP ratios.

Furthermore, the statistically significant and negative relationship between trade and distance confirms that distance is one of the main trade barriers between countries. The farther away two trading partners locate, the higher the transportation cost will be. Therefore, Canada is more likely to trade with countries that are geographically close.

Table 3 OLS estimation of immigration stock impact on bilateral trade

Explanatory Variables	Dependent variables	
	Exports	Imports
Immigration Stock	0.172*** (0.012)	0.219*** (0.019)
Economic Weights	0.931*** (0.010)	1.155*** (0.016)
Trade Openness	0.305*** (0.032)	0.796*** (0.058)
Distance	-1.351*** (0.053)	-1.748*** (0.043)
Common Language(English & French)	0.574*** (0.041)	0.384*** (0.069)
Sharing Border	0.630*** (0.118)	-0.949*** (0.167)
Time dummies	yes	yes
Constant	7.298*** (0.493)	3.494*** (0.171)
R^2	0.869	0.754
Observations	3235	3235

Notes. * p<0.05, ** p<0.01, *** p<0.001. Heteroskedasticity-consistent robust standard errors in parentheses.

In terms of the dummy variables, the language dummy is included to capture the cultural influence of trade. As expected, the coefficient of common official language is positive, meaning that Canada tends to trade more with countries of which the official language is either English or French. In

addition, the adjacency dummy is added to measure the bilateral trade between the United States and Canada. The coefficients of the border dummy are statistically significant at 1% level. However, the coefficient for imports is negative which is opposite from what is expected. The same negative sign is found in the study by Head and Ries (1998), in which case the coefficients of the border dummy for both exports and imports were both negative. According to their explanation, the negative sign might result from the underestimation of effective distance between the two countries (Head and Ries, 1998).

To conclude, the findings in Table 3 suggest that immigration generates a positive and significant impact on Canadian trade. Furthermore, Canada tends to trade more with countries with a larger economic size as well as with more globally integrated economies. Besides, distance is an important trade barrier which impedes trade between Canada and its trading partners.

5.2 Robustness Checks

Table 4 presents the empirical results after adding the lagged dependent variables into the regression models. The same robustness check is conducted by Head and Ries (1998). Apart from the coefficients for the border dummy, all other coefficients are significant at 1% level. The coefficients of immigration stock for exports and imports are still statistically significant at the 1% significance level suggesting a robust trade creation effect of immigration stock. Although the magnitude of immigration impact on trade shrinks a little compared to the coefficients before adding the lagged variables, a 10% increase in immigration stock is still able to generate a 1.1% increase in exports and 1.2% increase in imports. This result is consistent with the finding in the study of Head and Ries (1998) who find significant but smaller elasticity for both imports and exports. At the same time, the coefficients of the lagged dependent variables are positive and statistically significant indicating that the past trend in trade does have large impacts on future values.

Table 4 OLS estimation including lagged dependent variables

Explanatory Variables	Dependent variables	
	Exports	Imports
Lagged Exports	0.450*** (0.029)	
Lagged Imports		0.609*** (0.025)
Immigration Stock	0.113*** (0.011)	0.115*** (0.016)
Economic Weights	0.523*** (0.028)	0.467*** (0.032)
Trade Openness	0.177*** (0.028)	0.325*** (0.050)
Distance	-0.773*** (0.057)	-0.711*** (0.076)
Common Language(English & French)	0.332*** (0.038)	0.157*** (0.051)
Time dummies	0.350*** (0.180)	-0.312 (0.289)
Constant	3.846*** (0.439)	1.000 (0.637)
Overall R^2	0.919	0.870
Observations	3234	3234

Notes. * p<0.05, ** p<0.01, *** p<0.001. Heteroskedasticity-consistent robust standard errors in parentheses.

After obtaining the coefficients of immigration stock and of the lagged trade variables, Head and Ries (1998) find the long run impact of immigration stock on trade through the equation β/ (1-δ),

where β is the coefficient of immigration stock and δ is the coefficient of the lagged dependent variable. Therefore, the implied long run elasticity of immigration stock for exports and imports are 0.205 and 0.294 respectively. In other words, in the long run, a 10% increase in immigration stock will impose an increase in exports by 2.05% and an increase in imports by 2.94%. It should be pointed out that the predicted long-run impact of immigration on both exports and imports are higher than the values found using OLS data between the period from 1990 and 2012 in Canada.

Table 5 OLS estimation of immigration stock excluding outliers

Explanatory Variables	Dependent variables	
	Exports	Imports
Immigration Stock	0.171***	0.218***
	(0.012)	(0.020)
Economic Weights	0.924***	1.154***
	(0.011)	(0.017)
Trade Openness	0.321***	0.804***
	(0.033)	(0.059)
Distance	-1.392***	-1.780***
	(0.057)	(0.089)
Common Language(English & French)	0.594***	0.423***
	(0.042)	(0.072)
Time dummies	yes	yes
Constant	7.729***	3.744***
	(0.511)	(0.903)
Overall R^2	0.837	0.713
Observations	3097	3097

Notes. * p<0.05, ** p<0.01, *** p<0.001. Heteroskedasticity-consistent robust standard errors in parentheses.

In addition, in order to ensure a consistent trade-creation impact among all observed countries, I conduct a robustness check by excluding the major Canadian trading partners: United States, China, United Kingdom, Japan, South Korea and Mexico. This robustness check is suggested by Lewer and Van den Berg (2009), in their study of 16 OECD countries, where they exclude three major outliers including United States, China and Mexico.

As shown in Table 5, all explanatory variables are still statistically significant at 1% significance level. Overall, there is no remarkable change in economic significance as well. The coefficients of immigration for exports and imports are slightly smaller compared to the values in Table 3. Therefore, it is plausible to suggest that the positive relationship between immigration stock and bilateral trade is consistent among all countries under estimation.

5.3 Dividing the countries by income level

Table 6 presents the coefficients for immigration stock on trade of countries with different level of income. Only the result of the variable of primary interest is listed in the table below. Such test is not included in Head and Ries (1998) but is taken into account in the study of Head *et al.* (2002) in which they try to explore the immigration and trade on the provincial level.

Table 6 OLS estimates for immigration stock by income level specification

Immigration Stock	Exports	Imports
High-income Countries	0.104*** (0.017)	0.00124 (0.024)
Upper-middle-income countries	0.091*** (0.026)	0.0035 (0.050)
Lower-middle-income countries	0.143*** (0.029)	0.349*** (0.038)
Low-income countries	0.178*** (0.035)	0.481*** (0.071)

Notes. * p<0.05, ** p<0.01, *** p<0.001. Heteroskedasticity-consistent robust standard errors in parentheses. All explanatory variables and dummies are included in the model but excluded in this table for simplicity.

As it is shown in Table 6, the results accord greatly with expectation. The impact of immigration stock of lower-income countries on trade is much more significant than that of higher income economies, both economically and statistically. The empirical results accord with the expectation that the trade creation impact of immigration is stronger as the home countries of immigrants get poorer.

All coefficients of immigration stock on exports and imports are positive and significant at 1% level for both lower-middle-income economies and low-income economies. The coefficients of low-income economies for the two independent variables are slightly larger than those of lower-middle-income economies, indicating that immigrants from low-income economies play the most essential role in trade creation among immigrants from all countries. A 10% increase in immigration stock from low income countries will lead to increases in exports and imports by 1.8% and 4.2% respectively. The trade facilitating impact is also strong for lower-middle-income economies in that a 10% increase in immigration stock generates a 1.4% increase in exports and 3.5% increase in imports. It is worthwhile noticing that the impact of trade creation on immigration stock from lower-income economies on imports is more remarkable than that is on exports. One possible explanation behind this is that most lower-income economies are African and Asian countries, in which lifestyles and habits are distinct from those of Canada. Therefore, the preference channel of the immigration trade enhancing impact is stronger in this case. Immigrants from those countries have a high demand for goods and services from their own home countries, which in term enhance Canadian imports from those countries.

In contrast, the impact of immigrants from high-income and upper-middle-income economies is much smaller, not to mention that only some of the coefficients are statistically significant even at 10% level. For the high-income countries, the coefficient of immigration stock is statistically significant at 1% level for exports. A 10% increase in immigration stock will induce a 1.0% increase in exports. The impact of immigrants from upper-middle-income economies is even smaller. Only the coefficient for exports is statistically significant, but a 10% increase in immigration stock will only

generate a 0.9% increase in exports. The immigration impact on imports from high-income and upper-middle-income economies is both economically and statistically insignificant. It is, therefore, plausible to suggest that the effect of the preference channel of immigration is minimal as immigrants from those countries are more likely to share the same life pattern as the local communities.

In a word, the empirical results are consistent with those drawn by Head *et al.* (2002) who find out that the trade facilitating impact of immigration from developing countries is larger than that from developed countries. Therefore, it is reasonable to suggest that immigrants from countries with a different economic and social background will provide a stronger impact on trade in the host countries.

5.4 Regional Classification

By dividing Canadian trading partners into separate continents, it is obvious that the trade creation impacts of immigrants from different continents vary greatly, as shown in Table 7. Only the coefficients of immigration stock are presented in the table. This result accords with the finding in Head and Ries (1998) in their study of the trade creation impact of immigration based on regional dimensions.

The coefficients of Caribbean and European immigrations for exports and imports are both significant at the 1% level. However, the relationship between immigration stock from these two regions and trade is negative, which indicates that immigrants from European nations and Caribbean countries fail to improve bilateral trade between Canada and their home economies. It is relatively understandable that the results for European countries are consistent with the idea that immigrants from similar social and economic backgrounds impose a small, even null trade facilitating impact in the host country. The negative impact of Caribbean immigrants is harder to explain. One plausible

reason might be that most of the Caribbean countries included in the model are high income or upper-middle income economies, of which immigrants are expected to have a smaller impact on trade (Foad, 2010).

Table 7 OLS estimates for immigration stock by region of origin

Immigration Stock	Exports	Imports
Africa	0.251***	0.082
	(0.030)	(0.059)
South America	0.239***	0.196
	(0.044)	(0.144)
Caribbean	-0.179***	-0.320***
	(0.032)	(0.092)
Central America	-0.106*	-0.039*
	(0.053)	(0.073)
Asia	-0.010	0.182***
	(0.022)	(0.046)
East Asia	0.429***	0.303*
	(0.126)	(0.129)
Europe	-0.056***	-0.045***
	(0.016)	(0.019)
Ocean	0.288	0.233
	(0.239)	(0.265)

Notes. * p<0.05, ** p<0.01, *** p<0.001. Heteroskedasticity-consistent robust standard errors in parentheses. All explanatory variables and dummies are included in the model but excluded in this table for simplicity.

In terms of export-creation impact of immigration, immigrants originally from Africa, South America, East Asia all impose positive and economically and statistically significant impact on exports, while a negative relationship between immigration from Caribbean countries on exports is observed. Although the overall impact of Asian immigrants on exports is small, negative and statistically insignificant, East Asian immigration plays an important role on Canadian exports. According to Table 7, a 10% increase in immigration stock from East Asia countries will increase Canadian exports by 4.3%. This elasticity alone is much higher than the overall elasticity of immigration on exports stated in Table 3. One plausible cause behind this huge impact is the

Canadian immigration policy. As mentioned by Head *et al.* (2002), Canadian immigration policy tends to favour potential immigrants with sufficient business and financial background, who, in term, will help to booster the Canadian economy, especially exports. It is observed over time that bilateral trade with some East Asia countries and regions, such as Hong Kong, China and South Korea, has grown remarkably in accordance with the growth of immigration from the countries (Head *et al.*, 2002). Furthermore, the coefficients for immigration stock in Africa and South America are both economically significant as well. A 10% increase in immigration stock from African and South American countries will increase Canadian exports by 2.5% and 2.4% respectively.

However, only immigrants from Asia and Easter Asia have a positive and statistically significant impact on Canadian imports. A 10% increase in immigration stock from Asian countries will lead to a 1.8% increase in Canadian imports. The significant impact can be explained through the distinct lifestyle between Canada and Asian countries which in term generate high demands for goods and services from immigrants' home countries. Nevertheless, according to Table 7, the relationship between immigration stock from Caribbean and Central America countries and imports is negative. In this case, the demand of immigrants from those countries for home products is low as there appears to be relatively sufficient supply of home products and services due to the close distances between Canada and their home countries.

6. Conclusion

There is no doubt that international migration and trade are two crucial elements in the progress of globalization. In general, it is believed that the process of immigration has a trade facilitating impact on the home country as well as the host country of immigrants. As Canada is one of the most concentrated immigration destinations, it is, therefore, important to capture the underlying impact of

international migration on the Canadian economy. This paper is dedicated to finding out the importance of immigrant inflows on Canadian imports and exports. It is my hope that the empirical results in this paper may provide further useful information for policy makers. This study takes into account Canadian trade data with 157 trading partners during the period between 1990 and 2012. An augmented gravity model is built with immigration stock as its primary explanatory variable. Panel data analysis is the main econometric tools employed in the study.

The empirical result reveals that immigrant inflow has a positive and significant impact on both exports and imports in Canada. A 10% increase in immigration stock will raise exports and imports by 1.72% and 2.19% respectively. The impact of immigrant inflow on imports is larger than it is on exports. Such finding is consistent with the previous study of the Canadian economy provided by Head and Ries (1998). This paper also intends to check the robustness of the model by adding lagged dependent variables and by dropping major Canadian trading partners which can be treated as outliers in the model. The results of the robustness check show no significant variation before and after the modifications of the model. Therefore, the positive relationship between immigration stock and Canadian bilateral trade with partners is quite robust.

Two classification tests are also included in the paper to provide further insight of the trade creation impact of immigration. First, all countries under estimation are divided into four groups according to their income level measured by GNP per capita. The results uncovered in this paper are highly consistent with the theoretical expectation that immigrants from lower-income economies with distinct cultural and economic background with the host country generally have a larger trade facilitating impact on their host countries. On the other hand, immigrants coming from similar social and economic environment have a very small impact on trade.

Finally, mixed results are found by classifying countries into different continents of origins. The most striking finding is that immigrant inflows from East Asia countries have the largest positive and

statistically significant impact on both exports and imports in Canada. However, immigrants from European and Caribbean countries impose small but negative impacts on Canadian trade.

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Appendix

Appendix A List of 157 WTO countries

Albania*	Indonesia*	Samoa
Angola*	Ireland*	Saudi Arabia, Kingdom of
Antigua and Barbuda*	Israel*	Senegal*
Argentina*	Italy*	Sierra Leone*
Armenia	Ecuador *	Singapore*
Australia*	Egypt *	Slovak Republic
Austria*	El Salvador*	Slovenia
Bahrain, Kingdom of *	Jamaica*	Solomon Islands
Bangladesh*	Japan*	South Africa
Barbados*	Jordan*	Spain*
Belgium	Kenya*	Sri Lanka*
Belize*	Kyrgyz Republic	Suriname*
Benin	Lao People's Democratic	Swaziland
Bolivia, Plurinational State of	Republic*	Sweden*
Botswana*	Korea, Republic of *	Switzerland*
Brazil*	Kuwait, the State of *	Tajikistan
Brunei Darussalam	Latvia	Tanzania
Bulgaria*	Lesotho	Thailand*
Burkina Faso*	Liechtenstein	Togo*
Burundi	Lithuania	Tonga
Cabo Verde	Luxembourg	Trinidad and Tobago*
Cambodia	Macao, China*	
Cameroon*	Madagascar*	
Central African Republic	Malawi*	
Chad	Malaysia*	
Chile*	Maldives	

China*
Colombia*
Congo
Costa Rica*
Côte d'Ivoire
Croatia*
Cuba*
Cyprus *
Czech Republic
Democratic Republic of the Congo
Denmark*
Djibouti
Dominica*
Dominican Republic*
El Salvador*
Estonia
Fiji*
Finland*
France*
Gabon*
The Gambia*
Georgia
Germany
Ghana*
Greece*
Grenada*
Guatemala*
Guinea*
Guinea-Bissau
Guyana*
Haiti*
Honduras*
Hong Kong, China*
Hungary*
Iceland*
India*
Mali*
Malta*
Mauritania*
Mauritius*
Mexico*
Moldova, Republic of
Mongolia*
Montenegro
Morocco*
Mozambique*
Myanmar*
Namibia
Nepal*
Netherlands*
New Zealand*
Nicaragua*
Niger
Nigeria*
Norway*
Oman
Pakistan*
Panama*
Papua New Guinea*
Paraguay*
Peru*
Philippines*
Poland*
Portugal*
Qatar*
Romania*
Russian Federation
Rwanda
Saint Kitts and Nevis*
Saint Lucia*
Saint Vincent & the Grenadines*
Tunisia*
Turkey*
Uganda*
Ukraine
United Arab Emirates*
United Kingdom*
United States of America*
Uruguay*
Venezuela, Bolivarian Republic of *
Viet Nam*
Yemen*
Zambia
Zimbabwe*

*refers to countries with data for the full periods