

The Impact of Immigrant Business Ownership on International Trade*

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Abstract

Understanding the impact of immigrants on international trade is particularly important for Canada as it is a small open economy with a relatively large immigrant population. This paper empirically investigates the effect of immigrant business ownership on international trade in Canada using a newly developed firm-level database with detailed business ownership and trade information. The new data makes it possible to better distinguish between the effect of immigrants on lowering information cost and on product demand, and to assess the impact on both extensive and intensive margins of international trade. The results show that although the effect of immigrant-owned firms on international trade with all partner regions on average are either insignificant or small, immigrant-owned firms have a positive and significant effect on Canada's trade with the regions of origin of immigrant owners. On average, ceteris paribus, in the manufacturing sector, compared to Canadian-owned firms, immigrant-owned firms have higher probability of importing (by 6.7 percentage points) from and exporting (by 2.1 percentage points) to the immigrant owners' regions of origin. Also, conditional on being importers (exporters), immigrant-owned firms have stronger trade connections with their regions of origin, the number of products and average value per product being larger, than their Canadian-owned counterparts. The impact of immigrant business ownership is even larger in the wholesale trade sector, which highlights the role of immigrants as trade intermediaries. Among immigrant-owned firms, the owners admitted through the business, the skilled labour, or the provincial nominee categories, or the owners who had more education upon arrival are likely to have greater impacts on international trade.

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Executive Summary

Canada has a relatively large foreign-born population and its economic prosperity depends on international trade. This paper examines how these two characteristics are linked. Specifically, it investigates the effect of immigrant business ownership on international trade in Canada.

Previous studies on Canada that link immigration and international trade do so at the aggregate level. That is, they study how export and import flows between regions are effected by the stock of immigrants in those regions after controlling for other observable characteristics. These type of analyses have limited potential in identifying and measuring the channels through which immigrants can affect trade.

This paper uses the Canadian Employer-Employee Dynamics Database (CEEDD hereafter) — import-export linked data file. It combines detailed firm-level data linked to firm owner characteristics and highly disaggregated international trade data. The data makes it possible to differentiate the two channels by which immigrants can facilitate international trade: the *information* effect and the *demand* effect. The *information effect* is the impact of the immigrants' knowledge about their source countries and their co-ethnic networks. This information can reduce transaction costs and facilitate trade (both exports and imports). The *demand effect* is the immigrant demand for goods (imports) from their source countries. With the CEEDD, it is possible to use immigrant business ownership as a proxy for the information effect and use immigrant share in local population (at the census division level) as well as immigrant income as proxies for the demand effect from local immigrants. The empirical results suggest that both the information and demand effects are significant for small enterprises in Canada.

Furthermore, the detailed international trade data at the country and product level allow us to investigate the effects of immigrant business ownership on the extensive and intensive margins of international trade. The extensive margins are the probability of import and export, and the number of products imported and exported. The intensive margin is the value of imports and exports per product. The results show that the impact of immigrant business ownership is found on both extensive and intensive margins. For instance, on average, ceteris paribus, in the manufacturing sector, compared to Canadian-owned enterprises, immigrant-owned enterprises have a higher probability of importing (by 6.6 percentage points) from and exporting (by 2.1 percentage points) to the immigrant owners' regions of origin. Also, conditional on being importers (exporters), immigrant-owned firms have stronger trade connections with their regions of origin than their Canadian-owned counterparts. For instance, in manufacturing sector, the number of products imported by immigrant-owned firms from owners' regions of origin is 1.6 times larger than that by Canadian-owned firms and the average value per product is 1.8 times larger. For export, the corresponding numbers are 1.1 and 1.5, respectively.

Finally, compared to most of the micro-level data sets that only include manufacturing firms, the CEEDD includes all industries in the Canadian economy, making it possible to examine the wholesale trade sector and the role of immigrant business owners as trade intermediaries. Results from the regression analysis suggest that, compared to their Canadian-owned counterparts, immigrant-owned wholesalers trade more on both the extensive and intensive margins, and that the estimated effects in wholesaling are larger than in manufacturing.

1. Introduction

The impact of immigrants on international trade has been an important research topic for policy makers and academic researchers. This can be particularly important for Canada as it is a small open economy with a relatively large immigrant population. Gravity-equation based empirical studies, such as Rauch (1999), have shown that business and social networks can reduce transaction costs and promote bilateral trade. Rauch and Trindade (2002) further show that ethnic Chinese networks can facilitate international trade. Immigrants can play a key role in linking the source and host countries as they have knowledge about both countries (language, culture, preference, and business environment) and access to social and business networks. In addition, immigrant demand for home goods facilitates imports from their countries of origin. Empirical studies such as Gould (1994) for the United States, and Head and Ries (1998) and Wagner, Head and Ries (2002) for Canada have shown that, overall, immigrants can facilitate trade and the effect is larger on imports than on exports. Head and Ries (1998) further suggest that immigrants' contribution depends on the immigrant admission category.

Owing to data limitation, most of the empirical studies of immigrant effect on international trade use a linkage between data on immigrant characteristics and trade data at the regional or industry level. Only recently, a few studies have started to use more disaggregated data to examine the impact of immigrants on trade. For example, Ottaviano, Peri and Wright (2015) use firm-level service trade data connected with immigrant share in local labour markets to quantify the impact of immigrant on service trade. Hatzigeorgiou and Lodefalk (2016) use Swedish employer-employee matched data to examine the effect of immigrant employees on manufacturing exports.

This paper empirically investigates the effect of immigrant business ownership on international trade using detailed firm-level data linked to owner characteristics and highly disaggregated international trade data. The rich information comes from a unique data set, the Canadian Employer-Employee Dynamics Database (CEEDD hereafter) linked to firm-level import-export data. The CEEDD allows for the identification of immigrant ownership and immigrant employees within businesses, therefore making it possible to make comparisons with their Canadian-owned counterparts, as well as overcoming data limitation facing most empirical studies.¹

The analysis relies on a sample of private corporations in the CEEDD that was linked to firm-level trade information. This is because business ownership information is only available for private corporations (mostly, Canadian-controlled private corporations, CCPCs), not for publicly-traded corporations. This has placed the focus of this paper mostly on small and medium firms. However, small and medium firms may be more of relevance as they often lack financial resource and information about international markets, which makes additional information from immigrants more valuable.

Regarding firm participation in international trade, the analysis focuses on manufacturing and wholesale trade firms as these two sectors together comprise more than 75 percent of international trade. It is found that the share of immigrant-owned manufacturing firms

¹ Green, Liu, Ostrovsky and Picot (2015) discuss the development of the CEEDD and study immigrant business ownership and job creation using the CEEDD.

that import and export is below the average (Canadian-owned and immigrant-owned enterprises combined) while the share of immigrant-owned wholesalers that import and export is slightly above the average. On average, immigrant-owned importers and exporters are smaller and have higher leverage than their Canadian-owned counterparts. Regarding the composition of import source and export destination countries, the share of imports/exports with North American countries (mainly the United States) is smaller among immigrant-owned importers and exporters than their Canadian-owned counterparts. In the regression analysis, it is found that, despite the fact that immigrant-owned enterprises may not have higher probability to export or import to/from all regions, they do have higher probability to export to or import from their owners' regions of origin. This result is obtained after controlling for firm, owner and regional characteristics. Furthermore, conditional on being importers and exporters, immigrant-owned enterprises have traded more intensively. Indeed, the total value of trade, the number of products, and the average value of per product are all larger among immigrant-owned importers/exporters than Canadian-owned enterprises, and the effect is more pronounced for regions of origin of immigrant owners. These findings suggest that immigrant-owned enterprises make positive contributions to Canada's exports and imports, particularly for trade with immigrant owners' regions of origin, implying that immigrants' information on their home countries may be the cause of this positive effect. Finally, it is found that, among the immigrant-owned firms, the owners who were admitted through the business, the skilled labour, or the provincial nominee categories, and the owners who are more educated are more likely to have positive effects on international trade.

This paper contributes to the literature in three respects. First, it provides much-needed empirical evidence on the impact of immigrant business ownership (a more direct measure of immigrant participation in business) on international trade. With immigrant business ownership information together with local immigrant population, it is possible to better differentiate the two channels by which immigrants can facilitate international trade: *information* effect and *demand* effect (Mundra, 2010). The information effect is that immigrants' knowledge about their source countries and co-ethnic networks can reduce transaction cost and facilitate trade (both exports and imports). The demand effect is that immigrant demand goods from their source countries and therefore contribute to imports. As firm level data with immigrant information are scarce, immigrant network has often been approximated by the total number of immigrants, making it difficult to disentangle these two effects. In the literature, immigrant income (Mundra 2010), immigrant education (Felbermayr and Toubal, 2012), and occupation (Aleksynska and Peri 2014) are used to improve the identification of the demand and network effects. With micro-level data, it is possible to use immigrant business ownership (i.e., a direct measure of immigrant involvement in business activities) as a proxy for the information effect and use immigrant share in local population (at the census division level) as well as immigrant income as proxies for the demand effect from local immigrants. The empirical results suggest that information and demand effects are both significant for small enterprises in Canada.

Second, international trade data at the country and product level allow us to investigate the effects of immigrant business ownership on the extensive and intensive margins of international trade. Here, the extensive margins are the probability of import and export and the number of products (at the HS 6 level) and the intensive margin is the average value per product. Chaney's (2008) theory suggests that changes in variable cost affect both intensive and extensive margins of trade while changes in fixed costs only influence the extensive margins. Peri and Requena-Silvente's (2010) findings using Spanish data suggest that the effect of immigrant on exports is mainly on the extensive margin, implying

that immigrants primarily reduce the fixed costs of exports. The empirical results show that, compared to Canadian-owned small businesses, immigrant-owned businesses import and export more on both the extensive and intensive margins particularly with owners' regions of origin. These findings suggest that, after controlling for other characteristics, immigrant-owned firms have a stronger trade connection with their regions of origin that is manifested by a higher probability to import/export, more varieties of products traded and larger real values per product.

Finally, the investigation pertaining to wholesale firms provides rare and important information on immigrants' role as trade intermediaries. Compared to most of the micro-level data sets that only include manufacturing firms (as in Hatzigeorgiou and Lodefalk, 2016), the CEEDD includes all industries in the Canadian economy, making it possible to examine another sector that contributes significantly to international trade: the wholesale trade sector. In the sample, manufacturing firms comprise 26% of small business imports from 2002 to 2012 and 55% of small business exports from 2011 to 2012 while wholesale firms account for 51% and 21% respectively. The share of international trade by wholesale trade firms is even larger among immigrant-owned firms. Recent theoretical and empirical studies, such as Ahn, Khandelwal and Wei (2011) and Tang and Zhang (2014), have discussed the importance of trade intermediaries in facilitating trade, particularly with more distant markets. With knowledge about their areas of origin, immigrants may play a significant role as intermediaries and promote trade with their areas of origin. Results from the regression analysis suggest that, compared to Canadian-owned counterparts, immigrant-owned wholesale firms also trade more on both the extensive and intensive margins and that the estimated effects are larger for wholesale firms as compared to manufacturing firms.

The rest of this paper proceeds as follows. Section 2 describes the data used in this paper and Section 3 presents overall description of the immigrant-owned and Canadian-owned businesses. Section 4 examines the role of immigrant-owned firms in international trade and compares immigrant-owned importers and exports with their Canadian-owned counterparts. Section 5 estimates the impact of immigrant business ownership on import and export on both extensive and intensive margins and section 6 provides concluding remarks.

2. Data

This paper uses a linked database between the Canadian Employer-Employee Dynamics Database (CEEDD, 2001-2012), the import data (2002-2012) and export data (2011-2012). The CEEDD is a newly- developed matched database in Statistics Canada that links several administrative tax files including individual tax files (T1), individual employment remuneration files (T4), Longitudinal immigration Database (IMDB)², and corporate (T2) and unincorporated business (T1-Business Declarations) tax files. In addition to rich information on workers and their workplace, the CEEDD contains information on business ownership (such as business owners, ownership shares, immigrant status of owners) for private corporations (mostly CCPCs), sole proprietorship,

² Longitudinal immigration database is a collection of all immigrants who arrived in Canada after 1980. It provides information for immigrants on age, gender, country of birth, education level upon landing, immigrant admission category, language ability etc. One remains in the database once being identified as an immigrant regardless of future Canadian citizenship status.

and partnership. By linking to the import and export data, the CEEDD thus provides us, for the first time, the detailed information on trade (country/product level) and firm-level ownership.

Several sample restrictions are applied to the CEEDD-trade linked database before conducting final analysis. First, public corporations (publicly traded on stock exchange) are excluded as the information on corporation ownership is only available to private corporations (not publicly traded on stock exchange). Put differently, incorporated businesses in this paper mostly refer to CCPCs which are mostly small and medium enterprises. Second, unincorporated businesses are also excluded from the final sample. This exclusion is made because incorporated firms (private corporations) account for the vast majority of trade activities. For example, in 2012, incorporated importers accounted for 84% of all linked importers between the CEEDD and the import data and 98% of all values of linked imports. With respect to export, incorporated exporters accounted for 90% and 97%, respectively. Third, only simple enterprises are included in the final sample. Simple enterprises are defined as those enterprises containing only one 9-digit business number (BN). An enterprise, a statistical unit defined by Statistics Canada, is at the top of the hierarchy of business structure which consists of enterprise, company, establishment, and location. A complex enterprise may include multiple companies and establishments, thus multiple Business Numbers (BNs). A simple enterprise is thus mostly the single company/establishment enterprise. The reason for including only simple enterprise is twofold. One is that almost all of private corporations in Canada are simple (99% in 2012). Second, business ownership information is available only at the BN level while the import and export data is at the enterprise level. Therefore, only simple enterprises are included to establish the linkage between the ownership data and the import and export data at the common enterprise level.

In the end, within the scope of all import and export activities (only merchandises) in Canada, the final sample (simple private corporations) accounted for 60% (63%) of all importers (exporters) and 15% (12%) of values of all imports (exports) in 2012. Although more likely to be small players in international trade, these firms are, nevertheless, more likely to be on the margin, and hence more of policy relevance.

The trade data is at the firm/country/product level. To simplify the analysis, the import and export data for each firm is aggregated to 9 regions based on source and destination countries. These 9 regions are: North America, Central & South America (including Mexico), Northern, Western, & Southern Europe, Eastern Europe, Africa (except North Africa), Northern Africa & Middle East, East & Southeast Asia, South Asia, and Oceania. The number of products (imported or exported, at HS6 level) and the value of imports or exports are computed for each region. The countries of birth of immigrant owners are also classified into the same 9 regions to examine the effect of immigrant business ownership on trade with their own regions of origin.³

Finally, the sample is augmented with local market information. Previous literature has suggested that local market, especially local immigrant market has the demand effect for products imported from their home countries. The local market information is constructed at the census division level where firms are located, including census population counts and mean or median income (from Census 2001, 2006, and 2011), immigrant population

³ Please refer to Appendix B for the concordance.

counts and immigrant mean or median income by source regions (from the CEEDD). This local information will help us approximate the immigrant demand effect.

3. Immigrant Business Ownership at a Glance

Two alternative definitions of immigrant-owned business are adopted in this section. A private incorporated business is defined as an “immigrant-owned” enterprise when (1) the share of this business owned by immigrants is more than Canadian owners (named as “majority-owned”); or (2) when there is at least one immigrant listed as an owner (named as “immigrant presence”). Chart 1 presents the percentage of immigrant-owned firms based on these two definitions. When using the stricter definition, majority-owned, the share of small firms that are immigrant-owned has grown steadily during the sample period, 2001-2012, from 8.8 percent in 2001 to 14.8 percent in 2012. When using immigrant presence, the share of immigrant-owned firms is only 1 percentage point higher. The difference between the two measures is small as most of the immigrant-owned firms are single-owner firms. In the remaining analysis, therefore, immigrant business ownership is defined using the “immigrant presence” criterion. Table 1 summarizes the share of immigrant-owned firms and their share in employment by industry. The share of immigrant-owned businesses ranges from 3.3 percent in mining and utility industries to close to 25 percent in transportation industry. The share of employment accounted for by immigrant-owned businesses is also lower in mining and utility industries and higher in education and health, and arts, accommodation and food industries. It is in general smaller than the share of the number of firms in most sectors except agriculture, suggesting that immigrant-owned firms are generally smaller than their Canadian-owned counterparts.

Table 2 shows the distribution of region of birth for immigrant owners among immigrant-owned firms by industry. The region of birth refers to that of principal immigrant owner who has the highest share or income among all immigrant owners. Immigrants from West Europe account for 13% of all immigrant business owners across-all-industry (last column of Table 2). However, they comprise close to 61 percent of immigrant business owners in agriculture sector and 31 percent in mining and utility. The share of East & Southeast Asian immigrants is above the across-all-industry average (last column of Table 2) in wholesale trade, retail trade, and arts, accommodation & food industries while immigrants from South Asia dominate in transportation industry.

The composition of immigrant class among immigrant business owners also differs across sectors. Table 3 summarizes the distribution of immigrant business owners by immigrant class and industry. Across all industries, immigrants admitted in the skilled labour class is the largest group, comprising 40 percent of all immigrant business owners; family class ranks second; business class⁴, which is intended to attract investment, only ranks third and refugee class ranks fourth, accounting for 11 percent of immigrant business owners. The distribution of immigrant class also varies by sectors. The share of immigrant owners admitted in the business class is above across-all-industry average in industries such as agriculture, manufacturing, wholesale trade, retail trade and art, accommodation & food industries, and lower than the average in industries such as transportation and education and health industries; the share in the skilled labour class is above the average in mining and utility, wholesale trade, professional services and education & health industries and lower in agriculture and construction industries. Immigrant owners admitted in the family

⁴ Business class include immigrants who were admitted in entrepreneurs, investors and self-employed and business categories.

and refugee classes are important participants in the construction and transportation sectors.

Table 4 presents the level of education for immigrant business owners upon arrival. Around 36 percent of immigrant business owners had high school or less and 35 percent of them received Bachelor's degree or above upon landing. Owners with high school education or less comprise the largest share in construction, manufacturing, retail trade, transportation, and arts, accommodation & food industries. Owners with Bachelor's degree and above consist of the largest share in mining and utility, wholesale, professional service, and education & health industries.

4. Immigrant-Owned Firms in International Trade

4.1 The Role of Immigrant-Owned Firms

The linkage between the CEEDD and import data (2002 to 2012) and export data (2011 and 2012) makes it possible to analyze firms' international trade activities and make comparison between Canadian-owned and immigrant-owned firms. Table 5 summarizes the distribution of international trade activities among simple enterprises by sector. The results show that both imports and exports are concentrated in two sectors: manufacturing and wholesale trade. They together account for more than 75 percent of imports and exports. The wholesale trade sector comprises 51 percent of imports and 21 of exports while the manufacturing sector accounts for 26 percent of imports and 55 percent of exports. Dominance of wholesale trade sector in imports highlights the importance of intermediaries in small firm imports. When comparing the sectoral distribution between Canadian-owned firms and immigrant-owned firms, Canadian-owned firms are similar to the general pattern but immigrant-owned firms exhibit larger dominance by the wholesale trade sector – suggesting that the role of trade intermediaries is particularly important among immigrant-owned firms. As manufacturing and wholesale trade firms dominate in international trade, the subsequent analysis will focus only on these two sectors.

Table 6 presents the shares of importers and exporters in the manufacturing and wholesale trade sectors. Around 31 percent of manufacturers and 32 percent of wholesalers have engaged in import activities over the period of 2002 to 2012. Among immigrant-owned manufacturing firms, the import participation rate, 29 percent, is slightly lower than the average (Canadian-owned and immigrant-owned combined) while the participation rate of immigrant-owned wholesalers, 33 percent, is slightly above the average. In 2011 and 2012, around 20 percent of manufacturers and 10 percent of wholesalers have exported. Among immigrant-owned firms, only 15 percent of manufacturers have exported, much lower than the average, while 11 percent of wholesalers have exported, which is slightly above the average. In 2011 and 2012, with both export and import data, firms involved in international trade can be further classified in three groups: importers only (only engaging in import activities), exporters only (only engaging in export activities), and both importer and exporters (engaging in both import and export activities, two-way-trade firms). Interestingly, around 80 percent of the exporters are also importers. Table 7 reports the share of firms in these three categories and their shares in the value of imports and exports. More than 80 percent of the two-way-trade firms are Canadian-owned. When comparing between importers or exporters only and firms engaged in both, two-way-trade firms tend to comprise larger shares in the values of imports/exports than their shares in firms, and the opposite pattern is observed for importers or exporters only, suggesting that importers/exporters only tend to be smaller than two-way-trade firms. In the manufacturing sector, there is a clear dominance of Canadian-owned two-way-trade firms, accounting for 77 percent of the value of imports

and 86 percent of exports. Canadian-owned two-way-trade firms still consist of the largest share of imports and exports in the wholesale trade sector but less dominant as Canadian-owned importers/exporters only and immigrant-owned two-way-trade firms also play a significant role. In wholesale exports, immigrant-owned exporters only also comprise a larger share of exports than their share in the number of firms.

Table 8 reports distributions of the value of imports and exports among small firms by trade source/destination region. Columns 1 and 4 summarize the regional distribution of imports and exports of all small firms (both immigrant-owned and Canadian-owned). Consistent with previous observations, imports and exports are skewed towards North America (mainly the United States), accounting for approximately 52 percent of the imports and 72 percent of the exports. The second most important trading partner region is East & Southeast Asia, accounting for 27 percent of imports and 10 percent of exports. Columns 2 and 5 present the regional distribution of imports and exports among immigrant-owned firms. Trade activities among immigrant-owned firms are observed to be less concentrated on North America, accounting for 31 percent of imports and 57 percent of exports. However, the share of imports and exports with Africa, North Africa & Middle East, East Asia & Southeast Asia, and South Asia are larger among immigrant-owned firms than those among Canadian-owned firms.

To analyze the difference between immigrant-owned and Canadian owned businesses that are engaged in international trade, the two groups are compared in several dimensions that include owner's age and gender, firm size⁵, relative productivity and leverage (debt-assets ratio)⁶, total number of products imported/exported (at the HS6 level), and value of imports/exports etc. Table 9-1 and Table 9-2 presents the results for the importers in manufacturing and wholesale industries, respectively. Column 1 summarizes the means of key variables for Canadian-owned firms, column 2 immigrant-owned firms, and column 3 all firms. Column 4 indicates whether the difference in means between immigrant-owned and Canadian-owned firms are significant at the 5% level. The results suggest that comparing to Canadian-owned importers, owners of immigrant-owned business are younger and more likely to be female (although business owners are predominantly male in both groups); immigrant-owned importers are smaller (measured by employment), less productive, and have higher leverage ratio; the number of imported products, the total value of imports and the share of imports relying on North American region are also smaller among immigrant-owned importers. This pattern holds for both manufacturing and wholesale trade sectors.

Tables 10-1 and 10-2 report the comparison between immigrant-owned and Canadian-owned exporters in manufacturing and wholesale trade sectors, respectively, using data from 2011 and 2012. The findings are similar to those found for importers. Compared to Canadian-owned manufacturing exporters, immigrant-owned manufacturing exporters sell fewer products and smaller value. However, the means of these two variables are not

⁵ Firm size measure is based on individual labor unit (ILU). It is similar to employee headcount. However, in case of a person working at multiple jobs in a particular year, the person (1 labor unit) will be allocated to multiple firms proportional to his payroll, instead of being counting multiple times.

⁶ Relative productivity is defined as the deviation of firm labor productivity from the mean (within 3-digit NAICS) at year 2001. Meanwhile, the firm labor productivity is defined as revenue divided by firm employment. The top and bottom 1% of the distribution firm labor productivity are trimmed to prevent outliers. The leverage is defined as total liabilities divided by total assets. The top and bottom 3% of the distribution of firm leverage ratio are also trimmed.

significantly different in the wholesale trade sector.

4.2 Extensive and Intensive Margins of Imports

Aggregate international trade can be further decomposed into the extensive and intensive margins to assess the relative importance of these margins. These margins can be important for understanding trade with different regions and different products as extensive margins (number of firms or products) are affected by firm and product entry and exit in different markets while intensive margin (value of international trade) indicates the size of each transaction. Recent studies (such as Bernard, Jensen, Redding and Schott, 2007 and 2009) have shown that adjustments on the extensive margins can be important driving forces of international trade and this indicates the importance of fixed costs in international trade (Lapham, 2015).

Imports by firms in Canada, for instance, can be attributable to import by immigrant-owned firms and Canadian-owned firms and they can be further decomposed into extensive and intensive margins. Based on Bernard, Jensen, Redding and Schott (2009), the value of imports from (or exports to) a region r (denoted as m_r) is the product of the number of firms trading with that region (f_r), the number of unique products traded (p_r), the density of trade (d_r) and average value of trade (\overline{m}_r). Specifically: $m_r = f_r p_r d_r \overline{m}_r$ where $d_r \equiv o_r / (f_r p_r)$. The density of trade (d_r) is defined as the number of firm-product observations with positive values (o_r) as a fraction of firm-product combinations and the average value is defined as value per firm-product traded. Here, f_r , p_r and d_r are extensive margins and \overline{m}_r is the intensive margin. f_r is regarded as the firm extensive margin and p_r the product extensive margin. As most of the firms do not trade a wide range of products, d_r is expected to be negatively correlated with f_r and p_r .

The identity that $m_r = f_r p_r d_r \overline{m}_r$ can be used to estimate the relative importance of each margin by using regression decomposition. Regression decomposition involves regressing the logarithm of each margin on the logarithm of m_r . The regression used in this paper is across different regions and years with controls for year fixed effects.⁷ Table 11 reports the results of regression decomposition separate for imports by Canadian-owned and immigrant-owned firms as well as the shares of imports accounted for by Canadian-owned and immigrant-owned firms. Similar to the results presented in Table 7, immigrant-owned firms only account for 8.4 percent of the imports in manufacturing industry. Compared to the decomposition results in Bernard, Jensen, Redding and Schott (2009) using US trade data, the contribution of intensive margin is larger in the sample used for this study (above 50 percent across all groups)⁸. When comparing between immigrant-owned and Canadian-owned firms, the contribution of firm extensive margin is smaller and that of intensive margin is larger for immigrant-owned firms. This pattern is true for both manufacturing and wholesale trade industries.

5. Empirical Analysis

⁷ The regression analysis for export is not feasible for this data set as exports are only available for two years, making the number of observations too small for a meaningful regression decomposition.

⁸ Bernard, Jensen, Redding and Schott (2009) show that the intensive margin accounts for around 20 to 40 percent of US trade.

Section 4 shows that immigrant-owned firms are less likely to import and export as compared to Canadian-owned firms and immigrant importers and exporters on average are smaller, import/export fewer products and have lower value of imports/exports. However, these differences may result from immigrant-owned firms being smaller as it is well documented in the international trade literature that exporters and importers are on average larger than firms that do not engage in international trade. Recent theoretical and empirical literature has also stressed the importance of extensive margins in international trade.⁹ At the firm level, extensive margin of international trade with a certain partner includes the probability of importing/exporting, and the number of products traded by this firm. The intensive margin can be measured by the average value per product. As shown in the decomposition regression analysis in the previous section, both extensive and intensive margins are important in explaining the variation of imports by immigrant-owned firms in Canada. However, the decomposition regression analysis is separately conducted for immigrant-owned and Canadian-owned firms. This section is to further assess the impact of immigrant business ownership on import and export and on both extensive and intensive margins at the firm level after controlling for firm and owner characteristics. The importance of decomposing imports/exports into the extensive and intensive margins is that the estimated effects of immigrant business ownership on these margins can bear implications on the degree to which immigrant networks lower the fixed or variable costs of international trade.

Based on Chaney (2008), with CES utility function (the elasticity of substitution is denoted as $\sigma > 1$), exports from Canada, indexed by h , to region r by firms that are differentiated by labour productivity, denoted by φ , can be expressed as:

$$Y_{hr} = \begin{cases} \Gamma \times \left(\frac{G_r}{G}\right)^{(\sigma-1)/\gamma} \times \left(\frac{\theta_r}{w_h \tau_{hr}}\right)^{\sigma-1} \times \varphi^{\sigma-1} & \text{if } \varphi > \bar{\varphi}_{hr}, \text{ and} \\ 0, & \text{otherwise} \end{cases} \quad (1)$$

$$\bar{\varphi}_{hr} = \Psi \times \left(\frac{G_r}{G}\right)^{1/\gamma} \times \left(\frac{w_h \tau_{hr}}{\theta_r}\right) \times f_{hr}^{1/(\sigma-1)}$$

where Y_{hr} is exports from Canada to region r . Firm labour productivity, φ , is drawn from a Pareto distribution with shape parameter γ . Firms with productivity above the cut-off level, $\bar{\varphi}_{hr}$, will export. The cut-off productivity is determined by the output of destination region r , denoted by G_r , relative to the world output, G , the shape parameter, $\gamma > \sigma - 1$, the remoteness of region r , θ_r , wages in Canada, w_h , the variable cost of exporting to region r , τ_{hr} , the fixed cost of exporting, f_{hr} , and the elasticity of substitution. Here, Γ and Ψ can be regarded as constants. Based on the theoretical equation (1), exports to region r is determined by the output of region r relative to the world output, the remoteness of region r , wages in Canada, the variable cost of exporting to r , firm productivity, the elasticity of substitution and the shape parameter of Pareto distribution. With the fixed and variable costs of imports, conceptually, firm's decision to import can be expressed by a similar

⁹ See for instance Melitz (2003), Chaney (2008), Eaton, Eslava, Kugler, and Tybout (2008), Bernard, Eaton, Redding and Schott (2009) and Eaton, Kortum, and Kramarz (2011).

equation with output of destination market replaced by Canadian output and Canadian labour cost replaced by the labour cost of import source country.

Immigrants' knowledge about the region of origin potentially can reduce the fixed and variable costs of importing and exporting. If immigrant business ownership reduces the bilateral fixed cost, f_{hr} , it lowers the firm productivity cut-off level thus increasing the probability of importing or exporting. If immigrant business ownership reduces the bilateral variable cost of importing or exporting τ_{hr} , the influence is on both the probability of importing/exporting and the value of imports/exports.¹⁰ As discussed in Peri and Requena-Silvente (2010), the decision to import from and export to a region can be made both at the firm level and the product level. Therefore, the value of imports/exports can be further decomposed into the number of products and average value per product. The probability of importing/exporting and the number of products can be defined as the extensive margins and the average value per product, the intensive margin. The degree to which immigrant business ownership affects the probability of importing/exporting, the number of products, and the average value of imports/exports is the empirical question to be explored in the following sections.

5.1 Empirical Models

5.1.1 Probability of Importing and Exporting

The empirical analysis starts by estimating the effect of immigrant business ownership on the probability of firms importing from or exporting to different regions. The equation estimated can be specified as:

$$D_{ijct}^k = \beta_0^k + \beta_1^k IMM_{it-1} + \beta_2^k Origin_{irt-1} + \delta^k h_{it-1} + \gamma^k x_{it-1} + \lambda^k z_{crt} + v_j + v_{rt} + v_c + \varepsilon_{ijct}^k,$$

$k = M$ or X

(2)

where i indexes firms, j industries, c the census divisions where firms locate and r import source or export destination regions.

D_{ijrt}^k is a dummy variable equals to 1 if firm in industry j imports from region r ($k = M$) or exports to region r ($k = X$) in year t and equals 0 otherwise. IMM_{it-1} is an immigrant business ownership indicator that equals to 1 if firm i has at least one immigrant owner in the previous year. The lagged immigrant business ownership is used to alleviate the potential risks associated with simultaneity issue (for example, a positive demand shock that is correlated with both immigrant business ownership and import) and reverse causality (ownership change in order to import or export).¹¹ As immigrant business owner's impact on imports is likely from his/her information about the region of origin, this information effect is expected to be stronger for trade with the immigrant's region of origin. This effect has been observed in numerous studies such as Wagner, Head and Ries (2002) and Peri and Requena-Silvente (2010). To identify the effect of immigrant business

¹⁰ If immigrant networks influence multilateral fixed or variable costs, the effect enters the remoteness term θ .

¹¹ In the sample, ownership change is rarely occurred in a short period of time. Formal tests have also been conducted to check endogeneity issues. Endogeneity of immigrant ownership is found for some cases. And for those cases, lagged immigrant ownership is found to be a strong instrument.

ownership on imports from (or exports to) the owner's region of origin, an indicator of the region of origin, $Origin_{irt-1}$, is included. It equals 1 if the source/destination region r is the same as the owner's region of origin and 0 otherwise (including Canadian-owned firms).

h_{it-1} is a vector of control variables for business owners and it includes owner's gender indicator (that equals to 1 if male and 0 if female), age and a quadratic term of age to capture curvature of age effect.¹² x_{it-1} is a vector of controls for firm characteristics and it includes firm size (measured by size category), labour productivity and leverage as these variables are known as determinant of firm decision to import.¹³

As firm decision to import can also be affected by demand in the local market (for instance, Mundra, 2010), local market conditions (z_{ct}) are controlled for. The logarithm of local census population and median income are used to account for general market size and consumer purchasing power. To measure immigrant demand effect, the share of local immigrants and median immigrant income from region r in the population in census division c are also included. Introducing both immigrant business ownership and local immigrant share and income makes it possible to better distinguish between the information effect resulting from immigrant owners from the source region of imports and the demand effect arising from local immigrant population and income in the census division where firms locate. When analyzing exports, local population and immigrant share in local population are also included to capture the effects of regional production capacity and immigrant network on firm probability of exporting. Provincial (v_c), industry (NAICS 3-digit level) (v_j), regions of import and year fixed effects and the interaction of regions of import and year fixed effect (v_{rt}) are also included to account for general macroeconomic conditions, exchange rate and tariff changes, and regional trading agreements. ε_{it} is an error term.

5.1.2 Number of Products and Average Value Per Product

For a firm with positive value of imports or exports, its value, can be decomposed into two components: the number of products (denoted as n_{ijct}^k) and average value per product (\bar{y}_{ijct}^k): $y_{ijct}^k = n_{ijct}^k \bar{y}_{ijct}^k$, where $\bar{y}_{ijct}^k = y_{ijct}^k / n_{ijct}^k$, $k = M$ or X . The number of product is regarded as the product extensive margin and the average value per product is the intensive margin. Based on this decomposition, the impact of immigrant-owned firms on the number of products and average value per product can be analyzed separately. The equation estimated can be specified as:

$$\ln \omega_{ijct}^k = \beta_0^k + \beta_1^k IMM_{it-1} + \beta_2^k Origin_{irt-1} + \delta^k h_{it-1} + \gamma^k x_{it-1} + \lambda^k z_{crt} + v_j + v_{rt} + v_c + \varepsilon_{ijct}^k,$$

$k = M$ or X

(3)

Where ω_{ijct} is the number of products (n_{ijct}) or average value per product (\bar{y}_{ijct}). The set

¹² In case there are multiple owners in a firm, only the principal owner is kept who is defined as the one having the most shares or most income from the firm.

¹³ Firms are divided into five categories based on the number of employees: (1) less than or equal to 10, (2) 11 to 20, (3) 21-50, (4) 51-100, and (5) above 100. Labor productivity is measured by total revenues divided by ILU.

of explanatory variables is the same as in equation (2).

5.2 The Impact of Immigrant-Owned Firms on International Trade

5.2.1 The Effects of Immigrant-Owned Firms on Imports

This sub-section summarizes estimated effects of immigrant-owned firms on the probability of importing, the number of imported products and the value per imported product. Regression tables in the paper report the main results of interest and the full tables are provided in Appendix A. The effect of immigrant-owned firms on the probability of importing is assessed by estimating equation (2) using a linear probability model. Column 1 of Table 12 presents the overall effect of immigrant-owned manufacturing firms on import regardless of source regions of imports.¹⁴ The result suggests little difference in the probability of importing between immigrant-owned and Canadian-owned manufacturing firms. When the indicator of immigrant business ownership and that for import region being the same as immigrant owner's region of origin are both included in regression, the results suggest that the impact of immigrant-owned firms on imports is uneven (Column 2 of Table 12). The coefficient estimate for the immigrant ownership indicator is negative and significant, suggesting that compared to Canadian-owned firms, immigrant-owned firms are less likely to import from the regions that are not the owners' regions of origin. The coefficient estimate for the origin indicator is positive and significant, and larger than the coefficient estimate for the immigrant ownership indicator, indicating that immigrant-owned firms are more likely to import from the owner's regions of origin as compared to non-origin regions. Compared to Canadian-owned firms, the probability of immigrant-owned firms importing from their own regions of origin is 6.7 percentage points higher and this difference is statistically significant.¹⁵ This impact of immigrant business ownership on import from the regions of origin of immigrant owners can be translated in to an alternative productivity equivalence measure. That is, how much more productive that an average Canadian-owned firm needs to be in order to have the same probability as an average immigrant-owned firm of importing from immigrant owners' regions of origin. The estimated equivalent productivity 10.9.¹⁶ That is, an average Canadian-owned firm needs to be almost 11 times more productive to have the same probability of importing as an immigrant-owned firms. After controlling for immigrant market effects using local market conditions, this effect of immigrant business ownership is more likely from immigrants' information on the market of their origins. This finding suggests that immigrant business owners potentially can lower information barriers and the effect is comparable to that of a much higher level of productivity.

The effects of immigrant-owned firms on the number of imported products and average value per imported product are evaluated by estimating equation (3) using an ordinary least squares model. Columns 3 and 4 of Table 12 present results for the number of products imported from region r as the explained variable for manufacturing importers. Results suggest that compared to Canadian-owned importers, immigrant-owned importers import 5 percent more products from all source regions, and 59 percent more from the owner's region of origin but 6% fewer products from other regions. Column 5 and 6 present the results with average import value per product as the explained variable.

¹⁴ When estimating the overall effect, the $Origin_{irt-1}$ is not included in equation (2).

¹⁵ Control variables mentioned in Section 5.1 are included in the regressions. Their coefficient estimates are reported and discussed in Appendix A.

¹⁶ This is calculated from $\text{Exp}((\beta_1^M + \beta_2^M)/\gamma_p^M)$, where γ_p^M is the coefficient estimate for labour productivity. Full set of regression results are available in Table A2.

The results suggest that compared to Canadian-owned importers, the average value per imported product for immigrant-owned importers is 20 percent higher for all imports, 80 percent higher for imports from immigrant owners' regions of origin, and only 7 percent higher for imports from other regions. For the product extensive margin and the intensive margin, the productivity measure of the effects of immigrant business ownership are equivalent to 6.7 and 3.4 times higher labor productivity, respectively.

Columns 7 to 12 of Table 12 reports the results for wholesale trade industry. Compared to Canadian-owned wholesalers, immigrant-owned wholesalers are less likely to import on average by 0.8 percentage points (Column 7). When differentiating between imports from immigrant owners' regions of origin and other regions (Column 8), compared to Canadian-owned wholesalers, immigrant-owned wholesalers are less likely to import from other regions by 3 percentage points but more likely to import from immigrant owners' regions of origin by 13 percentage points. The estimated effect on imports from the regions of birth of immigrant owners for immigrant-owned wholesale trade firms is twice as large as that for immigrant-owned manufacturing firms. This impact is equivalent to 94.7 times higher labour productivity for an average Canadian-owned firm. Columns 9 and 10 summarize the results for the number of imported products. The results suggest that there is little difference in the number of products imported between immigrant-owned and Canadian-owned importers in wholesale industry on average. However, immigrant-owned wholesalers import 20% fewer products from other regions and 56% more products from their owners' regions of origin. This magnitude is comparable to immigrant-owned manufacturing importers. Columns 11 and 12 report the results for the average value per imported product. The results indicate that compared to Canadian-owned counterparts, the average value per imported product for immigrant-owned importers in wholesale industry is 51 percent higher on average for all imports, 15 percent higher for imports from other regions and 180 percent higher for imports from immigrant owners' regions of origin. Compared to the estimated effects for manufacturing firms, these results suggest that immigrant-owned firms in wholesale industry have larger effects on the firm extensive margin (probability of importing) and the intensive margin (average value per imported product) than those in manufacturing industry.¹⁷ The effects of immigrant business ownership on the number of products and average value are equivalent to respectively 22.9 and 6.2 times higher productivity for an average Canadian-owned firm.¹⁸

5.2.2 The Effects of Immigrant-Owned Firms on Exports

The effects of immigrant business ownership on the extensive and intensive margins of exports can also be quantified using the export data for 2011 and 2012. Columns 1 and 2 of Table 13 report the impact of immigrant business ownership on the export decision of manufacturing firms. The estimated effect in column 1 suggests that the probability of exporting for immigrant-owned firms is not significantly different from that of Canadian-

¹⁷ Same regressions are also run for other sectors as well. The finding that immigrant business ownership has a positive and larger impact on trade with their own regions of origin is also found for other sectors. Meanwhile, the import data is available for years 2002 to 2012 and export only for 2011 and 2012. To be consistent between import and export data, import regressions are also run for only 2011 and 2012 and the results are also consistent to what are reported in the main text. All these additional results are available from authors upon request.

¹⁸ The results are based on estimated coefficients reported in Table A4.

owned firms for exports to all regions on average. However, after distinguishing export to immigrant owners' regions of origin from to other regions, the results in column 2 show that the probability of immigrant-owned firms to export to immigrant owners' region of birth is higher by 2.2 percentage points and the probability of exporting to other regions is 0.4 percentage points lower than Canadian-owned firms. In terms of the number of exported products, results suggest that the number of products exported to all regions by immigrant-owned exporters is not significantly different from their Canadian-owned counterparts on average but immigrant-owned exporters export 9.7 percent more products to immigrant owners' regions of origin (Columns 3 and 4). On the intensive margin, the results suggest that the average value per exported product by immigrant-owned exporters is 27 percent higher on average for all exports, 51 percent higher for exports to immigrant owners' region of origin and 24 percent higher to other regions than that by Canadian-owned exporters (Columns 5 and 6). The effect of immigrant business ownership respectively on the probability of exporting, number of products, and average export value are equivalent to 4.8, 1.8 and 2.6 times higher of productivity of an average Canadian-owned firm.¹⁹

Column 7 to 12 of Table 13 summarize the results for wholesale trade industry. Immigrant-owned wholesalers are more likely to export by 0.8 percentage points than their Canadian-owned counterparts regardless of export destinations (Column 7). They also more likely export to immigrant owners' regions of origin than Canadian-owned wholesalers, 6 percentage points more (Column 8). This estimated effect is larger than that for immigrant-owned manufacturing firms. Results in columns 9 and 10 indicate that, compared to Canadian-owned exporters in wholesale industry, immigrant-owned exporters export slight more products regardless of destinations on average (around 5 percent) but they export 24 percent more products to their owners' regions of origin. On the intensive margin, the average value per exported product by immigrant-owned exporters is on average 71 percent higher on all exports, 164 percent higher for exports to their owners' regions of origin, and 44 percent higher to other regions, compared to their Canadian-owned counterparts (Columns 11 and 12). The impact of immigrant business ownership respectively on the probability of exporting, number of products, and average value of exports are equivalent to 1808, 17.2, and 11.6 times higher of productivity for an average Canadian-owned firms.²⁰ The extraordinarily large estimated equivalent productivity measure seems too large to believe. Possibly it could result from 1) Wholesalers are less likely to participate in export compared to manufactures (Table 6); 2) the explanatory power of the export regression of wholesalers on the extensive margins are not as strong as those for manufacturers as R^2 is smaller. Meanwhile, the estimated productivity effect is also smaller compared to manufacturers (Table A8); (3) the labor productivity dispersion in the wholesale trade sector is much larger than in manufacturers.²¹

Compared to the estimated effects for manufacturing firms, these results suggest that immigrant-owned firms in wholesale industry have larger effects than those in manufacturing industry on all three export margins: both firm and product extensive margins (probability of exporting and number of exported products), and the intensive margin (average value per exported product).

¹⁹ The results are based on estimated coefficients reported in Table A6.

²⁰ The results are based on estimated coefficients reported in Table A8

²¹ The standard deviation of labor productivity for wholesalers is more than 3 times larger than for manufacturers.

Although the magnitude of the effects of immigrant business ownership on the three margins cannot be compared directly, an indirect comparison can be made using the equivalent productivity measure discussed above. For both manufacturing and wholesale trade sectors, the equivalent productivity change is the largest for the probability of importing and exporting. As the immigrant demand effect has been accounted for by including local market conditions, the effect of immigrant business ownership likely results from the information effect. Based on international trade theories with heterogeneous firms (Melitz, 2003) and extensive empirical evidence, in the presence of fixed and variable costs of exporting (and importing), exporters (and importers) are more productive than firms that are not engaged in international trade. Large equivalent productivity difference suggests that knowledge about regions of origin can lower the fixed and variable costs, making it possible for smaller and less productive immigrant-owned firms to import/export. As the effect on probability of importing/exporting is the largest, this also indicates that immigrant information effect is particularly important in lowering firm fixed cost of importing/exporting. These findings are in line with those in Peri and Requena-Silvente (2010). For the manufacturing sector, the equivalent productivity difference is smaller for exports than imports. This may suggest that the productivity threshold for manufacturing exports is higher. Larger immigrant effect on imports than on exports is consistent with findings in Head and Ries (1998) and Head, Ries and Wagner (2002). In this paper, it should be noted that as immigrant demand effect has been accounted for, this finding suggests that the larger effect on import than export may have causes other than immigrant demand effect. Finally, the equivalent productivity difference is larger for the wholesale trade sector than in manufacturing, and the equivalent productivity on the probability of exporting and average value of exports are larger than the two corresponding margins in wholesale imports. This may suggest an important role of immigrants as intermediaries in international trade and particularly in facilitating exports. This will warrant further investigation in immigrants' role in the wholesale trade sector.

Coefficient estimates for firm characteristics, owner characteristics and local market controls are reported in Appendix A. Briefly speaking, firm size and labour productivity are positively related to the extensive and intensive margins of imports and exports. Younger owners are more likely to engage with trade and the average value per product is also larger for younger owners than older owners but the effect is not linear. This age effect is also more pronouncing for import of manufacturing firms and export of wholesale firms. Male owners generally have a positive effect on trade. For instance, compared to female owners, firms with male owners are more likely to import in manufacturing industry and export in the wholesale industry. Meanwhile, the average value of product is also higher for both importers and exporters with male owners in the wholesale industry. There is in general a positive effect on import of local market size (measured by census division population) and immigrant share, implying a market demand effect. Interestingly, there is also a positive effect of immigrant share on export in the wholesale industry. This may suggest information spillover within the community.

5.3 Characteristics of Immigrant-Owned Firms

This sub-section sets out to investigate the characteristics of immigrant-owned firms and how these characteristics affect immigrant-owned firms' international trade behaviour: probability of importing and exporting, the number of traded products and average value per product. The equations estimated are similar to equations (2) and (3) discussed above except that the indicators of immigrant-owned businesses (IMM_{it-1}) and importing

from/exporting to immigrant owners' regions of origin ($origin_{irt-1}$) are further differentiated by source region. These regions are: North America, Northern, Western & Southern Europe, Eastern Europe, North Africa & Middle East, East & Southeast Asia, South Asia, Central & South America & Africa (excluding North) & Oceania.²² Controls for immigrant owners' education level upon landing and immigration admission class are also included to examine whether involvement in international trade is related to immigrant owners' characteristics. Other firm, owner and local market condition controls are also included here.

5.3.1 Characteristics of Immigrant-Owned Importers

Table 14 summarizes results for estimating equations (2) and (3) using the subsample of immigrant-owned firms in the manufacturing sector. Compared to firms owned by immigrants from North America (mostly the United States) importing from other regions, immigrant-owned firms are more likely to import from their regions of origin (Column 1).²³ This own-region effect is true across all regions and largest for firms owned by immigrants from Northern, Western & Southern Europe. Similar to the results in column 1, the coefficient estimates for imports from immigrant owner's region of origin is positive and significant across all regions for the product margin and intensive margin (the average value per imported product)(Columns 2 and 3). Interestingly, the own-region effect is not uniform across margins. For instance, firms owned by immigrants from North America has the highest likelihood of importing from their own regions of origin while firms owned by immigrants from Eastern Europe has the lowest (Column 1). However, conditional on being importers, firms owned by immigrants from Eastern Europe imported more products from their own region of origin than those owned by North American immigrants (Column 2). The average value per imported product is also higher for import from own region of origin by the former than the latter (Column 3). With respect to education level, firms owned by immigrant with bachelor degree and above have larger effects on all three margins of imports, compared to firms owned by immigrant with high school or less upon landing (base group). With respect to immigration admission category, firms owned by immigrants who were admitted in the business and in the provincial nominee program have wide-spread positive effects on all three margins of imports, compared to those owned by immigrants admitted in the family class (base group).

The results for immigrants-owned firms in wholesale trade sector are summarized in Table 15. Like immigrant-owned manufacturers, immigrant-owned wholesalers are also more likely to import from their own regions of origin; import more products and the average value per imported product is also higher from their own regions of origin. This own-region effects are positive and significant across all regions. The effects of immigrant owners on the extensive and intensive margins in general are larger for wholesalers as compared to manufacturers. Unlike immigrant-owned manufacturers, the impacts of immigrant owners' education level and immigration admission categories on imports are very much indifferent among immigrant-owned wholesalers.

²² The 7 regions are regrouped from the 9 regions previously defined due to confidentiality.

²³ The estimated effect is computed by summing up β_1 and β_2 . In unreported results, the coefficient estimates for immigrant owner's region of birth are in general insignificant while the coefficient estimates for the indicators of imports from owner's region of origin is positive and significant for all regions, suggesting that immigrants are more likely to import from their own regions of origin and this effect is positive across all regions.

5.3.2 Characteristics of Immigrant-Owned Exporters

Table 16 presents the results for the subsample of immigrant-owned manufacturing firms on the export side. As indicated in columns 1 and 3, immigrant owners from all regions have positive and significant effect of exports to their own regions of origin on the firm extensive margin (the probability of exporting) and the intensive margin (average value per product). However, the effect on the number of export products is insignificant across almost all regions (column 2). Moreover, the immigrant-owned firms whose owners from North American region have the largest effect on the firm extensive margin. However, conditional on being immigrant exporters, its effect on the intensive margin is not the largest.

In addition, immigrant-owned firms whose owners are admitted through the skilled labour or business categories are more likely to export as compared to those through the family category.²⁴ Results in column 2 suggest that immigrant owners from provincial nominee and other programs export more products, compared to those from family category. Compared to those with high school degree, immigrant-owned firms whose owners have bachelor degree and above are more likely to export and export more products, although significantly only at 10% level for the latter. However, its effect on the intensive margin is not significantly different from those with high school diploma or less.

Table 17 summarizes the results for immigrant-owned wholesalers. These results indicate immigrant owners from all regions except from Northern, Southern and Western Europe are more likely to export to their own regions of origin. Immigrant owners from Eastern Europe, East and Southeast Asia, South Asia, Latin America, Africa and Oceania also have positive and significant effect on the intensive margin. However, estimated coefficients in column 2 suggest that the effect on the number of products exported to immigrants' regions of origin is not significantly different across regions. Immigrant owners admitted from skilled labour and business classes are more likely to export and export more products as compared to immigrant owners from family class. Immigrant owners with a bachelor degree or above are also more likely to export.

Coefficient estimates for control variables are reported in tables in Appendix A and summarized here. In general, firm size and productivity are positively related to the extensive and intensive margins. Immigrant-owned manufacturers with younger owners are more likely to import and import more products. There is a positive effect of local immigrant share on imports for immigrant-owned firms in both manufacturing and wholesale industries. Interestingly, there is also a positive effect of local immigrant share on exports for immigrant-owned firms in wholesale industry.

6. Conclusion

This paper uses a novel linked database that connects Canadian Employer-Employee Dynamics database with data on imports and exports to investigate the impact of immigrant business ownership on international trade for small enterprises. It is observed that over the sample period, 2001 to 2012, the share of immigrant-owned enterprises has grown steadily. Immigrants from East & Southeast Asia and South Asia account for 45 percent of immigrant business owners; immigrants admitted in family, skill labour and business classes consist of 80 percent, and immigrants with more than high school education upon landing comprises around 64 percent. In general, immigrant-owned

²⁴ Note that the skilled labor and business categories are grouped together for export due to confidentiality.

enterprises are found to have lower value of import/export and fewer number of products than their Canadian-owned counterparts. Immigrant-owned importers and exporters are also on average smaller, less productive and have higher leverage than their Canadian-owned counterparts.

After controlling for differences in firm and owner characteristics, and local market conditions, the results of regression analysis suggest that the probability of importing/exporting, number of products and average value by immigrant-owned firms from/to all regions on average are either insignificantly different or slightly different from those by Canadian-owned firms. When differentiating between immigrant owners' regions of origin and other regions, the findings indicate significant positive effect toward the owners' regions of origin. Compared to Canadian-owned firms, immigrant-owned firms are more likely to import from and export to their regions of origin. They also import/export more products from/to their regions of origin with higher average value per product. Interestingly, the estimated effect of immigrant business ownership for wholesale trade firms, considered as intermediaries in international trade, are larger than manufacturing firms. The empirical results suggest a positive impact of immigrant business ownership on both extensive and intensive margins of international trade. The effects are bilateral (between Canada and the regions of immigrants' origin) and larger for wholesale trade firms. When estimating the effect of immigrant business ownership, demand effects are also accounted for by including local population, immigrant share, and median incomes. In general, the results also suggest a positive demand effect.

The finding of positive bilateral effect of immigrant business ownership after controlling for demand conditions suggests that immigrants contribute to lowering bilateral trade cost, possibly through their knowledge and networks both in Canada and in their regions of origin. As the effects are significant both on the extensive and intensive margins, the results suggest that the information effect influences both fixed and variable costs of international trade. The productivity changes equivalent to the effects of immigrant business ownership suggest a larger effect on the probability of importing and exporting, indicating that the information carried by immigrant business owners may be particularly important for lowering the fixed costs of importing/exporting. Finally, larger effect for immigrant-owned enterprises in the wholesale trade sector as compared to manufacturing firms highlights the importance of immigrant-owned enterprises as intermediaries in international trade.

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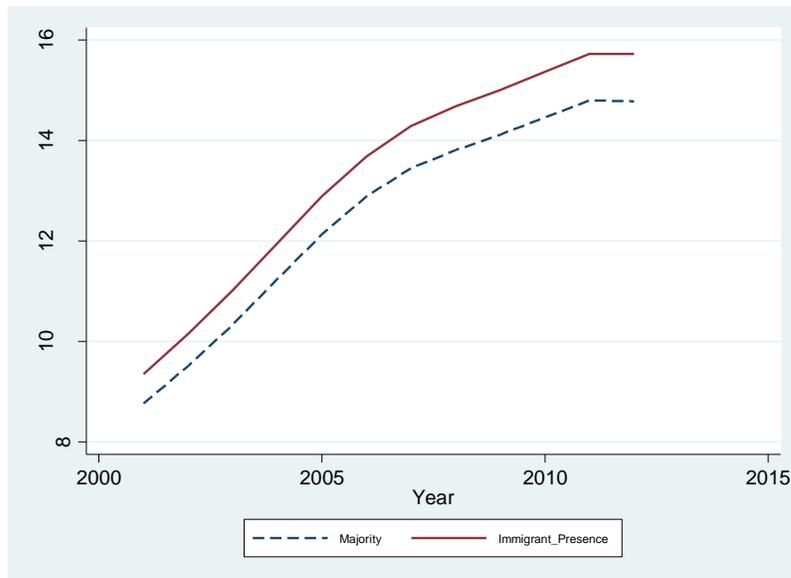
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Tables and Figures

Chart 1: Share of Immigrant-Owned Enterprises, 2001-2012



Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 1: Share of Immigrant-Owned Enterprises by Sector, 2001-2012

Sector	Share in Small Enterprises	Share in Employment
Agriculture	4.38	6.58
Mining And Utility	3.34	2.77
Construction	9.68	5.10
Manufacturing	12.93	8.00
Wholesale	18.47	10.02
Retail	18.80	8.95
Transportation	24.78	6.67
Professional Service	10.97	10.00
Education and Health	19.07	14.31
Arts, Accommodation, Food	24.01	15.36
Other Service	14.34	10.17

Unit: %

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 2: Distribution of Immigrant-owned Enterprises by Sector and owners' Region of Birth, 2001-2012 (%)

	Agriculture	Mining and Utility	Construction	Manufacturing	Wholesale	Retail	Transportation	Professional Service	Education and Health	Arts, Accommodation, Food	Other Service	Ave
North America	7.86	13.89	2.91	3.35	1.96	1.7	0.83	4.45	4.17	2.29	1.71	3.2
South America	2.51	6.48	6.4	5.59	3.74	2.95	4.56	5.33	4.37	2.86	6.66	4.7
Western Europe	60.87	30.56	6.4	17.95	9.58	6.58	3.38	15.68	12.52	10.63	10.13	13.1
Eastern Europe	4.35	12.04	20.15	14.66	8.31	6.39	20.83	13.5	11.48	4.63	11.94	12.3
Africa	1.51	2.78	2.03	3.71	3.67	4.26	2.07	5.45	17.13	2.61	3.41	4.8
North Africa & Middle East	2.01	8.33	16.12	13.6	15.21	22.58	6.57	12.14	13.2	16.36	17.45	14.1
East & Southeast Asia	10.37	16.67	15.21	27.55	44.61	33.26	5.13	27.56	22.47	44.39	31.04	27.7
South Asia	8.86	4.63	17.44	12.54	12.33	21.74	56	14.43	13.44	15.63	16.29	19
Oceania	1.67	4.63	1.53	1.06	0.58	0.56	0.63	1.46	1.2	0.6	1.38	1.1
AVE	6.58	2.77	5.10	8.00	10.02	8.95	6.67	10.00	14.31	15.36	10.17	

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 3: Distribution of Immigrant-Owned Enterprises by Sector and owners' Immigration Class 2001-2012

Unite: %

Sector	Family Class	Skilled Workers	Business Class	Provincial Nominee	Economic Class	Refugees	Others
Agriculture	25.04	20.03	47.08	1.34	0.17	4.51	1.84
Mining and Utility	32.41	45.37	11.11	1.85	0.93	6.48	1.85
Construction	36.53	27	10.36	0.82	0.5	16.55	8.25
Manufacturing	26.84	38.61	15.77	0.47	0.47	12.89	4.94
Wholesale	19.64	41.81	26.54	0.48	0.41	6.9	4.22
Retail	26.84	37.3	16.93	0.67	0.49	12.01	5.76
Transportation	49.27	20.34	2.92	0.72	0.23	19.45	7.08
Professional Service	24.97	49.94	12.06	0.63	0.57	8.1	3.73
Education and Health	23.59	50.9	8.3	8.3	0.64	8.86	3.01
Arts, Accommodation, Food	29.82	32.48	15.92	0.87	0.5	13.58	6.84
Other Service	31.85	32.13	10.82	0.66	0.71	17.13	6.7
AVE	28.8	39.7	13.5	0.9	0.5	11.4	5.1

Note: business class includes immigrants who were admitted in entrepreneurs, self-employed, investors, and business and other business categories. Economic class includes those who were admitted in live-in caregivers and Canadian experience categories. Others include all other categories that have not been specified.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 4: Distribution of Immigrant-Owned Enterprises by Sector and Owners' Level of Education upon Landing, 2001-2012

Sector	High School or Less	Some Post High School	Bachelor And Above
Agriculture	40.76	45.93	13.27
Mining And Utility	30.19	32.1	37.61
Construction	47.71	31.64	20.62
Manufacturing	39.61	36.08	24.24
Wholesale	31.73	32.36	35.9
Retail	39.77	28.31	31.86
Transportation	52.23	28.72	19.03
Professional Service	26.57	27.81	45.58
Education And Health	19.9	19.14	60.93
Arts, Accommodation, Food	49.02	29.31	21.64
Other Service	49.5	32.43	18.02
Ave	36.35	29.08	34.53

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 5: Distribution of Imports and Exports by Sector

Sector	<u>Imports</u>			<u>Exports</u>		
	All firms	Immigrant-owned	Canadian-owned	All firms	Immigrant-owned	Canadian-owned
Agriculture	1.05	1.25	1.03	4.10	2.39	4.38
Mining And Utility	0.44	0.55	0.43	0.95	1.74	0.82
Construction	2.14	1.06	2.27	1.90	0.61	2.11
Manufacturing	25.99	20.30	26.67	55.34	39.33	57.91
Wholesale	51.18	60.45	50.06	21.06	39.74	18.05
Retail	10.72	8.84	10.94	1.53	5.98	0.81
Transportation	2.05	1.50	2.12	2.59	2.60	2.59
Professional Service	5.05	4.52	5.12	11.80	6.91	12.58
Education and Health	0.13	0.19	0.12	0.06	0.12	0.05
Arts, Accommodation, Food	0.30	0.37	0.29	0.22	0.27	0.21
Other Service	0.96	0.97	0.95	0.45	0.32	0.47

Unit: % Notes: Shares of imports are based on 2002 to 2012 and exports 2011 and 2012.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 6: Import or Export Participation Rates

Sector	Import participation rate of all firms	Import participation of Immigrant-owned firms	Export participation rate of all firms	Export participation of Immigrant-owned firms
Manufacturing	30.64	28.56	20.04	14.76
Wholesale	31.54	32.88	10.42	10.58

Notes: Shares of firms that import are based on 2002 to 2012 and shares of firms that export are based on 2011 and 2012.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 7: Shares of Importers/Exporters only and Two-Way-trade Firms in Imports/Exports

Sector	Importers only Immigrant-owned		Importers and Exporters Immigrant-owned		Importers only Canadian-owned		Importers and Exporters Canadian-owned	
	Firms	Imports	Firms	Imports	Firms	Imports	Firms	Imports
Manufacturing	7.4	1.3	5.9	7.7	43.1	13.9	43.6	77
Wholesale	15.4	7.1	4.4	6	60.9	40.5	19.3	46.4
	Exporters only Immigrant-owned		Importers and Exporters Immigrant-owned		Exporters only Canadian-owned		Importers and Exporters Canadian-owned	
	Firms	Exports	Firms	Exports	Firms	Exports	Firms	Exports
Manufacturing	2.4	0.3	9.8	9.6	15.5	4.6	72.4	85.6
Wholesale	6.9	9.6	14.6	16.5	14.6	14.2	63.8	59.7

Notes: 1. "Firms": shares in the numbers of importers/exporters; "Imports/Exports": shares in the value of imports/exports. 2. Based on 2011 and 2012. 3. Importers only refer to firms who engage in import only; exporters only refer to firms who engage in export only; importer and exporters (two-way-trade) refer to firms who engage in both import and export.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 8: Distribution of Imports and Exports by trade Regions

	Imports			Export		
	All firms (1)	Immigrant-owned (2)	Canadian-owned (3)	All firms (4)	Immigrant-owned (5)	Canadian-owned (6)
North America	51.75	30.53	54.44	72.43	56.83	75.04
South America	4.60	3.22	4.78	3.58	3.59	3.58
Western Europe	11.67	11.26	11.73	6.55	5.39	6.74
Eastern Europe	0.83	1.41	0.75	2.04	2.04	2.06
Africa	0.33	0.67	0.28	0.98	2.12	0.79
North Africa & Middle East	1.34	3.55	1.06	2.14	4.59	1.73
East & Southeast Asia	26.63	44.04	24.42	10.37	21.91	8.44
South Asia	2.16	4.07	1.92	0.65	2.56	0.33
Oceania	0.68	1.24	0.61	1.26	1.07	1.29

Notes: 1. Units: %. 2. Distribution of imports is based on 2002 to 2012 and exports 2011 and 2012.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 9-1: Comparison between Canadian-Owned and Immigrant-Owned Importers, 2002-2012 -- Manufacturing Sector

Variables		Canadian-owned importers	Immigrant-owned importers	Combined	Significantly Diff at the 5% Level
		(1)	(2)	(3)	(4)
Owner's Age	N	163,179	22,731	185,910	
	Mean	54.000	48.087	53.277	
	se	0.029	0.061	0.027	Yes
Male Owner	N	163,192	22,731	185,923	
	Mean	0.843	0.787	0.836	
	se	0.001	0.003	0.001	Yes
Number of Employees	N	150,344	20,146	170,490	
	Mean	38.368	23.650	36.628	
	se	0.216	0.383	0.196	Yes
Relative Productivity	N	148,108	19,854	167,962	
	Mean	0.128	-0.022	0.110	
	se	0.002	0.005	0.002	Yes
Leverage	N	161,838	22,418	184,256	
	Mean	0.752	0.914	0.772	
	se	0.002	0.005	0.002	Yes
Number of Imported Products	N	163,192	22,731	185,923	
	Mean	12.113	10.220	11.882	
	se	0.048	0.109	0.045	Yes
Total Value of Imports	N	163,192	22,731	185,923	
	Mean	712.046	469.139	682.348	
	se	8.832	16.704	8.019	Yes
Share of Imports from NA	N	163,189	22,731	185,920	
	Mean	0.681	0.490	0.658	
	se	0.001	0.003	0.001	Yes

Notes: 1. Value of imports are in thousands of dollars.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 9-2: Comparison between Canadian-Owned and Immigrant-Owned Importers, 2002-2012 – Wholesale Trade Sector

Variables		Canadian-owned importers	Immigrant-owned importers	Combined	Significantly Diff at the 5% Level
		(1)	(2)	(3)	(4)
Owner's Age	N	185,102	45,029	230,131	
	Mean	53.781	47.012	52.457	Yes
	se	0.026	0.045	0.024	
Male Owner	N	185,123	45,034	230,157	
	Mean	0.824	0.738	0.807	Yes
	se	0.001	0.002	0.001	
Number of Employees	N	157,797	34,382	192,179	
	Mean	17.740	9.257	16.222	Yes
	se	0.107	0.118	0.090	
Relative Productivity	N	148,337	32,181	180,518	
	Mean	0.038	-0.284	-0.019	Yes
	se	0.002	0.006	0.002	
Leverage	N	182,862	43,810	226,672	
	Mean	0.777	1.126	0.844	Yes
	se	0.002	0.005	0.002	
Number of Imported Products	N	185,123	45,034	230,157	
	Mean	19.457	13.803	18.351	Yes
	se	0.077	0.111	0.066	
Total Value of Imports	N	185,123	45,034	230,157	
	Mean	1178.021	705.290	1085.523	Yes
	se	12.252	11.746	10.127	
Share of Imports from NA	N	185,120	45,031	230,151	
	Mean	0.585	0.241	0.518	Yes
	se	0.001	0.002	0.001	

Note: Value of imports are in thousands of dollars.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 10-1: Comparison between Canadian-Owned and Immigrant-Owned Exporters, 2011 and 2012 -- Manufacturing Sector

Variables		Canadian-owned exporters	Immigrant-owned exporters	Combined	Significantly Diff at the 5% Level
		(1)	(2)	(3)	(4)
Owner's Age	N	18,438	2,568	21,006	
	Mean	56.954	51.068	56.234	
	se	0.086	0.178	0.079	Yes
Male Owner	N	18,438	2,568	21,006	
	Mean	0.843	0.783	0.836	
	se	0.003	0.008	0.003	Yes
Number of Employees	N	17,114	2,368	19,482	
	Mean	48.797	32.726	46.843	
	se	0.788	1.627	0.721	Yes
Relative Productivity	N	16,882	2,336	19,218	
	Mean	0.200	0.083	0.186	
	se	0.005	0.016	0.005	Yes
Leverage	N	18,278	2,546	20,824	
	Mean	0.727	0.821	0.738	
	se	0.005	0.016	0.005	Yes
Number of Exported Products	N	18,438	2,568	21,006	
	Mean	5.202	4.765	5.149	
	se	0.060	0.146	0.055	Yes
Total Value of Exports	N	18,438	2,568	21,006	
	Mean	2311.407	1811.853	2250.336	
	se	75.665	148.776	68.868	Yes
Share of Exports from NA	N	18,435	2,568	21,003	
	Mean	0.795	0.730	0.787	
	se	0.003	0.008	0.002	Yes

Notes: 1. Value of imports are in thousands of dollars.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 10-2: Comparison between Canadian-Owned and Immigrant-Owned Exporters, 2011 and 2012 – Wholesale Trade Sector

Variables		Canadian	Immigrant	Combined	Significantly Diff at the 5% Level
		(1)	(2)	(3)	(4)
Owner's Age	N	10,187	2,793	12,980	
	Mean	56.334	49.662	54.898	Yes
	se	0.113	0.188	0.101	
Male Owner	N	10,187	2,793	12,980	
	Mean	0.839	0.754	0.820	Yes
	se	0.004	0.008	0.003	
Number of Employees	N	9,008	2,322	11,330	
	Mean	30.515	14.556	27.244	Yes
	se	0.719	0.632	0.589	
Relative Productivity	N	8,018	1,978	9,996	
	Mean	0.228	0.015	0.186	Yes
	se	0.009	0.021	0.008	
Leverage	N	10,083	2,748	12,831	
	Mean	0.718	0.947	0.767	Yes
	se	0.006	0.018	0.006	
Number of Exported Products	N	10,187	2,793	12,980	
	Mean	3.908	3.618	3.846	NO
	se	0.067	0.144	0.061	
Total Value of Exports	N	10,187	2,793	12,980	
	Mean	1304.268	1683.160	1385.797	NO
	se	88.797	207.984	82.830	
Share of Exports from NA	N	10,186	2,792	12,978	
	Mean	0.657	0.333	0.587	Yes
	se	0.004	0.009	0.004	

Notes: 1. Value of imports are in thousands of dollars.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 11: Decomposition of Imports

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

	Manufacturing				Wholesale			
	Canadian Owned		Immigrant-Owned		Canadian Owned		Immigrant-Owned	
Share in Imports	91.60%		8.40%		87.32%		12.68%	
Regression Decomposition								
	Coef.	se	Coef.	se	Coef.	se	Coef.	se
Firm Extensive Margin	0.507	0.017 ^a	0.462	0.016 ^a	0.503	0.015 ^a	0.467	0.011 ^a
Product Extensive Margin	0.371	0.003 ^a	0.375	0.008 ^a	0.373	0.003 ^a	0.378	0.005 ^a
Density	-0.399	0.031 ^a	-0.407	0.025 ^a	-0.376	0.029 ^a	-0.394	0.021 ^a
Intensive Margin	0.522	0.015 ^a	0.571	0.017 ^a	0.501	0.013 ^a	0.549	0.013 ^a

Notes: 1. ^a p<0.01. Year fixed effects are included.

Table 12: Impact of Immigrant-Owned Firms on Imports

VARIABLES	Manufacturing											
	Probability of Importing				Number of Products				Average Value Per Product			
	(1)		(2)		(3)		(4)		(5)		(6)	
	coef	se	coef	se	coef	se	coef	se	coef	se	coef	se
Immigrant-Owned in t-1	0.001	0.002	-0.010	0.002 ^a	0.051	0.013 ^a	-0.062	0.014 ^a	0.182	0.023 ^a	0.070	0.025 ^a
Imports from the Region of Birth			0.077	0.003 ^a			0.523	0.026 ^a			0.521	0.041 ^a
Combined Effect			0.067	0.003 ^a			0.461	0.025 ^a			0.591	0.039 ^a
Observations	3,385,529		3,385,529		359,288		359,288		359,288		359,288	
R-squared	0.229		0.230		0.265		0.269		0.128		0.129	

VARIABLES	Wholesale											
	(7)		(8)		(9)		(10)		(11)		(12)	
	coef	se	coef	se	coef	se	coef	se	coef	se	coef	se
Immigrant-Owned in t-1	-0.008	0.002 ^a	-0.030	0.002 ^a	-0.017	0.014	-0.218	0.015 ^a	0.414	0.024 ^a	0.147	0.027 ^a
Imports from the Region of Birth			0.162	0.003 ^a			0.666	0.021 ^a			0.883	0.032 ^a
Combined Effect			0.132	0.003 ^a			0.448	0.020 ^a			1.030	0.030 ^a
Observations	3,936,163		3,936,163		487,909		487,909		487,909		487,909	
R-squared	0.191		0.196		0.174		0.183		0.135		0.140	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and imports from the region of birth. 5. Control variables for firm, owner and local market characteristics are included and their coefficient estimates are reported in Appendix A.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 13: Impact of Immigrant-Owned Firms on Exports

Manufacturing												
VARIABLES	Probability to Export				Number of Products				Average Value Per Product			
	(1)		(2)		(3)		(4)		(5)		(6)	
	coef	se	coef	se	coef	se	coef	se	coef	se	coef	se
Immigrant-Owned in t-1	-0.000	0.002	-0.004	0.002 ^b	-0.015	0.025	-0.034	0.025	0.241	0.047 ^a	0.212	0.049 ^a
Exports to the Region of Birth			0.025	0.002 ^a			0.126	0.037 ^a			0.200	0.088 ^b
Combined Effect			0.022	0.003 ^a			0.092	0.041 ^b			0.412	0.089 ^a
Observations	585844		585844		35715		35715		35715		35715	
R-squared	0.173		0.173		0.193		0.193		0.214		0.215	
Wholesale												
VARIABLES	(7)		(8)		(9)		(10)		(11)		(12)	
	coef	se	coef	se	coef	se	coef	se	coef	se	coef	se
	Immigrant-Owned in t-1	0.008	0.001 ^a	-0.000	0.001	0.055	0.024 ^b	-0.012	0.026	0.542	0.061 ^a	0.366
Exports from the Region of Birth			0.060	0.002 ^a			0.228	0.034 ^a			0.607	0.083 ^a
Combined Effect			0.060	0.003 ^a			0.216	0.034 ^a			0.972	0.081 ^a
Observations	679686		679686		18527		18527		18527		18527	
R-squared	0.060		0.063		0.062		0.065		0.157		0.160	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and exports to the region of birth. 5. Control variables for firm, owner and local characteristics are included and their coefficient estimates are reported in Appendix A.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 14: Characteristics of Immigrant-Owned firms and imports in Manufacturing industry

VARIABLES	Probability of Importing		Number of Products		Average Value Per Product	
	(1)	(2)	(3)	(4)	(5)	(6)
	coef	se	coef	se	coef	se
Combined Effect						
Imports from the Region of Birth:						
N. America	0.159	0.020 ^a	0.359	0.092 ^a	0.162	0.163
N.S.W. Europe	0.108	0.012 ^a	0.333	0.077 ^a	0.416	0.158 ^a
E. Europe	0.029	0.010 ^a	0.479	0.132 ^a	1.310	0.267 ^a
N. Africa and Middle East	0.038	0.010 ^a	0.738	0.129 ^a	0.948	0.267 ^a
E. and SE. Asia	0.083	0.011 ^a	0.469	0.076 ^a	0.608	0.156 ^a
S. Asia	0.051	0.011 ^a	0.497	0.114 ^a	0.606	0.240 ^b
S. America, Africa and Oceania	0.033	0.011 ^a	0.442	0.138 ^a	0.466	0.240 ^c
Immigrant Class (family class as reference):						
Skilled Labour	0.000	0.003	0.021	0.029	-0.054	0.054
Business	0.018	0.005 ^a	0.094	0.039 ^b	0.151	0.071 ^b
Provincial Nominee	0.031	0.017 ^c	0.157	0.085 ^c	0.463	0.190 ^b
Economic	0.004	0.017	-0.124	0.151	0.425	0.211 ^b
Refugee	0.004	0.004	0.079	0.041 ^c	-0.141	0.076 ^c
Others	-0.012	0.005 ^b	-0.132	0.049 ^a	-0.035	0.104
Immigrant Education upon Arrival (high school or less as reference):						
Some post high school	0.004	0.003	0.018	0.027	-0.082	0.051
Bachelor and Above	0.025	0.004 ^c	0.096	0.029 ^a	0.138	0.055 ^b
Observations	427,959		41,524		41,524	
R-squared	0.204		0.241		0.126	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" reports the sum of the estimated effect of immigrant-owned firms and imports from the region of birth by region. 5. Control variables for firm, owner and local market characteristics are included and their coefficient estimates are reported in Appendix A. Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 15: Characteristics of Immigrant-Owned firms and imports in wholesale industry

VARIABLES	Probability of Importing		Number of Products		Average Value Per Product	
	(1)	(2)	(3)	(4)	(5)	(6)
	coef	se	coef	se	coef	se
Combined Effect						
Imports from the Region of Birth:						
N. America	0.160	0.019 ^a	0.444	0.104 ^a	0.622	0.181 ^a
N.S.W. Europe	0.182	0.014 ^a	0.631	0.089 ^a	0.711	0.154 ^a
E. Europe	0.060	0.012 ^a	0.798	0.128 ^a	1.667	0.226 ^a
N. Africa and Middle East	0.052	0.011 ^a	0.373	0.101 ^a	1.204	0.203 ^a
E. and SE. Asia	0.145	0.012 ^a	0.311	0.074 ^a	0.914	0.144 ^a
S. Asia	0.157	0.013 ^a	0.752	0.093 ^a	1.289	0.176 ^a
S. America, Africa and Oceania	0.047	0.013 ^a	0.471	0.101 ^a	0.457	0.195 ^a
Immigrant Class (family class as reference):						
Skilled Labour	0.002	0.004	-0.045	0.028	-0.002	0.050
Business	0.001	0.004	-0.012	0.032	0.032	0.060
Provincial Nominee	-0.011	0.011	-0.049	0.172	-0.109	0.246
Economic	0.014	0.016	-0.087	0.089	0.388	0.185 ^b
Refugee	-0.002	0.006	0.055	0.046	-0.163	0.087 ^c
Others	-0.022	0.006 ^a	-0.184	0.052 ^a	0.296	0.094 ^a
Immigrant Education upon Arrival (high school or less as reference):						
Some post high school	0.001	0.003	-0.006	0.025	0.013	0.047
Bachelor and Above	0.001	0.003	-0.034	0.026	0.020	0.048
Observations	675,157		77,189		77,189	
R-squared	0.177		0.162		0.142	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" reports the sum of the estimated effect of immigrant-owned firms and imports from the region of birth by region. 5. Control variables for firm, owner and local market characteristics are included and their coefficient estimates are reported in Appendix A.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 16: Characteristics of Immigrant-Owned firms and Exports in manufacturing industry

VARIABLES	Probability of Exporting		Number of Products		Average Value Per Product	
	(1)	(2)	(3)	(4)	(5)	(6)
	coef	se	coef	se	coef	se
Combined Effect						
Exports from the Region of Birth:						
N. America	0.095	0.028 ^a	0.024	0.195	1.007	0.330 ^a
N.S.W. Europe	0.047	0.012 ^a	0.299	0.238	0.975	0.325 ^a
E. Europe	0.035	0.011 ^a	0.174	0.287	1.604	0.443 ^a
N. Africa and Middle East	0.039	0.012 ^a	0.395	0.265	0.807	0.378 ^b
E. and SE. Asia	0.037	0.011 ^a	0.210	0.225	0.772	0.330 ^b
S. Asia	0.036	0.011 ^a	0.411	0.246 ^b	1.283	0.573 ^b
S. America, Africa and Oceania	0.027	0.013 ^b	0.245	0.237	1.050	0.352 ^a
Immigrant Class (family class as reference):						
Skilled Labour & Business	0.006	0.004 ^c	0.058	0.049	-0.152	0.109
Provincial Nominee	0.019	0.020	0.662	0.356 ^c	-0.110	0.304
Others	0.006	0.004	0.181	0.062 ^a	-0.172	0.154
Immigrant Education upon Arrival (high school or less as reference):						
Some post high school	-0.001	0.003	0.001	0.047	-0.202	0.105 ^c
Bachelor and Above	0.024	0.004 ^a	0.083	0.050 ^c	0.048	0.112
Observations	81,998		4,363		4,363	
R-squared	0.168		0.210		0.229	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" reports the sum of the estimated effect of immigrant-owned firms and exports to the region of birth by region. 5. Control variables for firm, owner and local characteristics are included and their coefficient estimates are reported in Appendix A.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table 17: Characteristics of Immigrant-Owned firms and Exports in Wholesale industry

VARIABLES	Probability of Exporting		Number of Products		Average Value Per Product	
	(1)	(2)	(3)	(4)	(5)	(6)
	coef	se	coef	se	coef	se
Combined Effect						
Exports from the Region of Birth:						
N. America	0.072	0.023 ^a	-0.147	0.174	0.349	0.478
N.S.W. Europe	0.020	0.012	-0.053	0.153	0.215	0.408
E. Europe	0.039	0.012 ^a	0.193	0.182	1.331	0.426 ^a
N. Africa and Middle East	0.044	0.012 ^a	0.067	0.136	0.546	0.371
E. and SE. Asia	0.051	0.011 ^a	0.059	0.123	0.897	0.337 ^a
S. Asia	0.032	0.011 ^a	0.193	0.151	1.106	0.407 ^a
S. America, Africa and Oceania	0.042	0.013 ^a	0.157	0.163	0.728	0.393 ^c
Immigrant Class (family class as reference):						
Skilled Labour & Business	0.005	0.003 ^c	0.093	0.042 ^b	-0.192	0.121
Provincial Nominee	0.009	0.009	-0.172	0.134	0.039	0.416
Others	-0.000	0.003	0.038	0.064	-0.204	0.227
Immigrant Education upon Arrival (high school or less as reference):						
Some post high school	0.003	0.002	0.011	0.049	-0.073	0.125
Bachelor and Above	0.007	0.002 ^a	0.002	0.048	-0.106	0.116
Observations	123,627		3,919		3,919	
R-squared	0.063		0.103		0.201	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" reports the sum of the estimated effect of immigrant-owned firms and exports to the region of birth by region. 5. Control variables for firm, owner and local characteristics are included and their coefficient estimates are reported in Appendix A.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Appendix A: Full Regression Tables

**Table A1: Impact of Immigrant-Owned Firms on Imports (Overall Effect):
Manufacturers**

VARIABLES	Probability of Importing		Number of Products		Average Value Per Product	
	(1)	(2)	(3)	(4)	(5)	(6)
	coef	se	coef	se	coef	se
Immigrant-Owned in t-1	0.001	0.002	0.051	0.013 ^a	0.182	0.023 ^a
Labour Productivity in t-1	0.028	0.000 ^a	0.239	0.006 ^a	0.478	0.012 ^a
Leverage in t-1	0.001	0.000	0.025	0.006 ^a	-0.038	0.010 ^a
Firm:						
Size Categories (less than 10 as reference):						
11-20 employees	0.077	0.001 ^a	0.238	0.010 ^a	0.286	0.019 ^a
21-50	0.152	0.002 ^a	0.483	0.011 ^a	0.582	0.019 ^a
51-100	0.228	0.003 ^a	0.787	0.014 ^a	0.927	0.024 ^a
101+	0.341	0.005 ^a	1.165	0.017 ^a	1.436	0.030 ^a
Census Division:						
Census Population	0.008	0.000 ^a	0.032	0.004 ^a	-0.007	0.007
Immigrant Share	0.071	0.017 ^a	0.839	0.149 ^a	3.016	0.283 ^a
Median Income	0.001	0.004	-0.020	0.041	0.114	0.069 ^c
Median Immigrant Income	0.001	0.000 ^a	0.017	0.006 ^a	0.003	0.012
Owner:						
Owner Age in t-1	-0.001	0.000 ^a	-0.002	0.002	-0.011	0.004 ^a
Owner Age Squared in t-1	0.000	0.000 ^a	0.000	0.000	0.000	0.000 ^a
Male Dummy	0.004	0.001 ^a	-0.012	0.011	0.026	0.019
Constant	-0.261	0.042 ^a	-1.291	0.413 ^a	2.613	0.693 ^a
Observations	3,385,529		359,288		359,288	
R-squared	0.229		0.265		0.128	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and imports from the region of birth. 5. This table reports the full set of coefficient estimates for columns 1, 3, and 5 of Table 12.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table A2: impact of Immigrant-Owned Firms on Imports (Imports from the Region of Birth): Manufacturers

VARIABLES	Probability of Importing		Number of Products		Average Value Per Product	
	(2)		(4)		(6)	
	coef	se	coef	se	coef	se
Immigrant-Owned in t-1	-0.010	0.002 ^a	-0.062	0.014 ^a	0.070	0.025 ^a
Imports from the Region of Birth	0.077	0.003 ^a	0.523	0.026 ^a	0.521	0.041 ^a
Combined Effect	0.067	0.003 ^a	0.461	0.025 ^a	0.591	0.039 ^a
Firm:						
Labour Productivity in t-1	0.028	0.000 ^a	0.242	0.006 ^a	0.481	0.012 ^a
Leverage in t-1	0.001	0.000	0.023	0.006 ^a	-0.039	0.010 ^a
Size Categories (less than 10 as reference):						
11-20 employees	0.077	0.001 ^a	0.242	0.010 ^a	0.290	0.019 ^a
21-50	0.152	0.002 ^a	0.488	0.011 ^a	0.587	0.019 ^a
51-100	0.228	0.003 ^a	0.793	0.014 ^a	0.933	0.024 ^a
101+	0.341	0.005 ^a	1.173	0.017 ^a	1.444	0.030 ^a
Census Division:						
Census Population	0.009	0.000 ^a	0.036	0.004 ^a	-0.003	0.007
Immigrant Share	0.020	0.017	0.401	0.147 ^a	2.579	0.284 ^a
Median Income	0.000	0.004	-0.025	0.041	0.109	0.069
Median Immigrant Income	0.001	0.000 ^a	0.017	0.006 ^a	0.003	0.012
Owner:						
Owner Age in t-1	-0.001	0.000 ^a	-0.002	0.002	-0.011	0.004 ^a
Owner Age Squared in t-1	0.000	0.000 ^a	0.000	0.000	0.000	0.000 ^a
Male Dummy	0.004	0.001 ^a	-0.010	0.011	0.028	0.019
Constant	-0.258	0.042 ^a	-1.335	0.413 ^a	2.569	0.694 ^a
Observations	3,385,529		359,288		359,288	
R-squared	0.230		0.269		0.129	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and imports from the region of birth. 5. This table reports the full set of coefficient estimates for columns 2, 4, and 6 of Table 12.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

**Table A3: impact of Immigrant-Owned Firms on Imports (Overall Effect):
Wholesalers**

VARIABLES	Probability of Importing		Number of Products		Average Value Per Product	
	(7)		(9)		(11)	
	coef	se	coef	se	coef	se
Immigrant-Owned in t-1	-0.008	0.002 ^a	-0.017	0.014	0.414	0.024 ^a
Labour Productivity in t-1	0.029	0.000 ^a	0.135	0.004 ^a	0.552	0.009 ^a
Leverage in t-1	-0.004	0.000 ^a	-0.045	0.006 ^a	-0.005	0.010
Firm:						
Size Categories (less than 10 as reference):						
11-20 employees	0.118	0.002 ^a	0.364	0.011 ^a	0.046	0.019 ^b
21-50	0.188	0.003 ^a	0.570	0.014 ^a	0.247	0.024 ^a
51-100	0.278	0.006 ^a	0.775	0.024 ^a	0.539	0.041 ^a
101+	0.414	0.011 ^a	1.179	0.041 ^a	0.879	0.056 ^a
Census Division:						
Census Population	0.017	0.000 ^a	0.078	0.005 ^a	0.064	0.008 ^a
Immigrant Share	0.524	0.019 ^a	1.806	0.144 ^a	4.818	0.249 ^a
Median Income	0.025	0.005 ^a	0.103	0.047 ^b	0.331	0.079 ^a
Median Immigrant Income	0.000	0.000 ^c	0.011	0.009	0.004	0.016
Owner:						
Owner Age in t-1	0.000	0.000	0.001	0.003	-0.006	0.005
Owner Age Squared in t-1	0.000	0.000	0.000	0	0.000	0.000
Male Dummy	-0.000	0.001	-0.046	0.011 ^a	0.060	0.020 ^a
Constant	-0.590	0.048 ^a	-1.664	0.482 ^a	-0.893	0.826
Observations	3,936,163		487,909		487,909	
R-squared	0.191		0.174		0.135	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and imports from the region of birth. 5. This table reports the full set of coefficient estimates for columns 7, 9, and 11 of Table 12.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table A4: Impact of Immigrant-Owned Firms on Imports (Imports from the Region of Birth): Wholesalers

VARIABLES	Probability of Importing		Number of Products		Average Value Per Product	
	(8)		(10)		(12)	
	coef	se	coef	se	coef	se
Immigrant-Owned in t-1	-0.030	0.002 ^a	-0.218	0.015 ^a	0.147	0.027 ^a
Imports from the Region of Birth	0.162	0.003 ^a	0.666	0.021 ^a	0.883	0.032 ^a
Combined Effect	0.132	0.003 ^a	0.448	0.020 ^a	1.030	0.030 ^a
Firm:						
Labour Productivity in t-1	0.029	0.000 ^a	0.143	0.004 ^a	0.564	0.009 ^a
Leverage in t-1	-0.004	0.000 ^a	-0.050	0.006 ^a	-0.012	0.010
Size Categories (less than 10 as reference):						
11-20 employees	0.118	0.002 ^a	0.373	0.011 ^a	0.057	0.019 ^a
21-50	0.188	0.003 ^a	0.580	0.014 ^a	0.261	0.024 ^a
51-100	0.278	0.006 ^a	0.785	0.024 ^a	0.553	0.041 ^a
101+	0.414	0.011 ^a	1.191	0.041 ^a	0.894	0.056 ^a
Census Division:						
Census Population	0.018	0.000 ^a	0.087	0.005 ^a	0.076	0.008 ^a
Immigrant Share	0.307	0.018 ^a	0.776	0.146 ^a	3.451	0.252 ^a
Median Income	0.022	0.005 ^a	0.090	0.047 ^c	0.313	0.079 ^a
Median Immigrant Income	0.000	0.000 ^b	0.013	0.009	0.006	0.016
Owner:						
Owner Age in t-1	0.000	0.000	0.001	0.003	-0.006	0.005
Owner Age Squared in t-1	0.000	0.000	0.000	0.000	0.000	0.000
Male Dummy	-0.000	0.001	-0.045	0.012 ^a	0.063	0.019 ^a
Constant	-0.584	0.048 ^a	-1.750	0.483 ^a	-1.007	0.825
Observations	3,936,163		487,909		487,909	
R-squared	0.196		0.183		0.140	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and imports from the region of birth. 5. This table reports the full set of coefficient estimates for columns 8, 10, and 12 of Table 12.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

**Table A5: impact of Immigrant-Owned Firms on Exports (Overall Effect):
Manufacturers**

VARIABLES	Probability of Exporting		Number of Products		Average Value Per Product	
	(1)		(3)		(5)	
	coef	se	coef	se	coef	se
Immigrant-Owned in t-1	-0.000	0.002	-0.015	0.025	0.241	0.047 ^a
Labour Productivity in t-1	0.014	0.000 ^a	0.152	0.010 ^a	0.429	0.024 ^a
Leverage in t-1	-0.000	0.000	0.010	0.009	0.016	0.018
Firm:						
Size Categories (less than 10 as reference):						
11-20 employees	0.044	0.002 ^a	0.195	0.018 ^a	0.394	0.038 ^a
21-50	0.099	0.002 ^a	0.411	0.017 ^a	0.820	0.038 ^a
51-100	0.169	0.005 ^a	0.633	0.026 ^a	1.223	0.047 ^a
101+	0.263	0.007 ^a	0.924	0.030 ^a	1.780	0.053 ^a
Census Division:						
Census Population	0.004	0.000 ^a	0.013	0.006 ^b	-0.036	0.012 ^a
Immigrant Share	-0.052	0.016 ^a	-0.124	0.259	-0.180	0.563
Owner:						
Owner Age in t-1	0.000	0.000	0.009	0.004 ^b	-0.013	0.009
Owner Age Squared in t-1	0.000	0.000	-0.000	0.000 ^b	0.000	0.000 ^b
Male Dummy	0.000	0.001	-0.004	0.020	-0.052	0.039
Constant	-0.109	0.012 ^a	-0.821	0.204 ^a	8.125	0.467 ^a
Observations	585,844		35,715		35,715	
R-squared	0.173		0.193		0.214	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and exports to the region of birth. 5. This table reports the full set of coefficient estimates for columns 1, 3, and 5 of Table 13.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table A6: Impact of Immigrant-Owned Firms on Exports (Exports to the Region of Birth): Manufacturers

VARIABLES	Probability of Exporting		Number of Products		Average Value Per Product	
	(2)		(4)		(6)	
	coef	se	coef	se	coef	se
Immigrant-Owned in t-1	-0.004	0.002 ^b	-0.034	0.025	0.212	0.049 ^a
Exports from the Region of Birth	0.025	0.002 ^a	0.126	0.037 ^a	0.200	0.088 ^b
Combined Effect	0.022	0.003 ^a	0.092	0.041 ^b	0.412	0.089 ^a
Firm:						
Labour Productivity in t-1	0.014	0.000 ^a	0.152	0.010 ^a	0.429	0.024 ^a
Leverage in t-1	-0.000	0.000	0.010	0.009	0.016	0.018
Size Categories (less than 10 as reference):						
11-20 employees	0.044	0.002 ^a	0.195	0.018 ^a	0.394	0.038 ^a
21-50	0.099	0.002 ^a	0.411	0.017 ^a	0.820	0.038 ^a
51-100	0.169	0.005 ^a	0.633	0.026 ^a	1.223	0.047 ^a
101+	0.263	0.007 ^a	0.924	0.030 ^a	1.781	0.053 ^a
Census Division:						
Census Population	0.004	0.000 ^a	0.013	0.006 ^b	-0.035	0.012 ^a
Immigrant Share	-0.068	0.016 ^a	-0.197	0.259	-0.296	0.568
Owner:						
Owner Age in t-1	0.000	0.000	0.009	0.004 ^b	-0.013	0.009
Owner Age Squared in t-1	0.000	0.000	-0.000	0.000 ^b	0.000	0.000 ^c
Male Dummy	0.000	0.001	-0.003	0.020	-0.052	0.039
Constant	-0.111	0.012 ^a	-0.829	0.205 ^a	8.112	0.467 ^a
Observations	585,844		35,715		35,715	
R-squared	0.173		0.193		0.215	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and exports to the region of birth. 5. This table reports the full set of coefficient estimates for columns 2, 4, and 6 of Table 13.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

**Table A7: impact of Immigrant-Owned Firms on Exports (Overall Effect):
Wholesalers**

VARIABLES	Probability of Exporting		Number of Products		Average Value Per Product	
	(7)		(9)		(11)	
	coef	se	coef	se	coef	se
Immigrant-Owned in t-1	0.008	0.001 ^a	0.055	0.024 ^b	0.542	0.061 ^a
Labour Productivity in t-1	0.008	0.000 ^a	0.074	0.008 ^a	0.392	0.022 ^a
Leverage in t-1	-0.000	0.000	0.006	0.010	0.040	0.028
Firm:						
Size Categories (less than 10 as reference):						
11-20 employees	0.025	0.001 ^a	0.136	0.022 ^a	0.093	0.057 ^c
21-50	0.052	0.002 ^a	0.266	0.024 ^a	0.101	0.060 ^c
51-100	0.095	0.005 ^a	0.345	0.037 ^a	0.514	0.102 ^a
101+	0.143	0.009 ^a	0.542	0.050 ^a	0.534	0.121 ^a
Census Division:						
Census Population	0.001	0.000 ^a	-0.003	0.008	-0.211	0.020 ^a
Immigrant Share	0.149	0.012 ^a	0.649	0.293 ^b	4.952	0.701 ^a
Owner:						
Owner Age in t-1	-0.001	0.000 ^a	0.005	0.005	-0.029	0.013 ^b
Owner Age Squared in t-1	0.000	0.000 ^a	-0.000	0.000	0.000	0.000 ^b
Male Dummy	0.002	0.001 ^b	-0.018	0.023	0.107	0.061 ^c
Constant	-0.026	0.008 ^a	0.756	0.263 ^a	10.521	0.765 ^a
Observations	679,686		18,527		18,527	
R-squared	0.060		0.062		0.157	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and exports to the region of birth. 5. This table reports the full set of coefficient estimates for columns 7, 9, and 11 of Table 13.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table A8: Impact of Immigrant-Owned Firms on Exports (Exports to the Region of Birth): Wholesalers

VARIABLES	Probability of Exporting		Number of Products		Average Value Per Product	
	(8)		(10)		(12)	
	coef	se	coef	se	coef	se
Immigrant-Owned in t-1	-0.000	0.001	-0.012	0.026	0.366	0.068 ^a
Exports from the Region of Birth	0.060	0.002 ^a	0.228	0.034 ^a	0.607	0.083 ^a
Combined Effect	0.060	0.003 ^a	0.216	0.034 ^a	0.972	0.081 ^a
Firm:						
Labour Productivity in t-1	0.008	0.000 ^a	0.076	0.008 ^a	0.396	0.023 ^a
Leverage in t-1	-0.000	0.000	0.003	0.010	0.033	0.028
Size Categories (less than 10 as reference):						
11-20 employees	0.025	0.001 ^a	0.144	0.022 ^a	0.114	0.057 ^b
21-50	0.052	0.002 ^a	0.274	0.025 ^a	0.121	0.061 ^b
51-100	0.095	0.005 ^a	0.355	0.037 ^a	0.539	0.103 ^a
101+	0.143	0.009 ^a	0.552	0.050 ^a	0.560	0.122 ^a
Census Division:						
Census Population	0.002	0.000 ^a	-0.001	0.008	-0.205	0.020 ^a
Immigrant Share	0.072	0.011 ^a	0.164	0.302	3.661	0.706 ^a
Owner:						
Owner Age in t-1	-0.001	0.000 ^a	0.005	0.005	-0.029	0.013 ^b
Owner Age Squared in t-1	0.000	0.000 ^a	-0.000	0.000	0.000	0.000 ^b
Male Dummy	0.002	0.001 ^b	-0.016	0.023	0.111	0.061 ^c
Constant	-0.034	0.008 ^a	0.705	0.263 ^a	10.385	0.765 ^a
Observations	679,686		18,527		18,527	
R-squared	0.063		0.065		0.160	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and exports to the region of birth. 5. This table reports the full set of coefficient estimates for columns 8, 10, and 12 of Table 13.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table A9: Characteristics of Immigrant-Owned firm and imports: Manufacturing industry

VARIABLES	Probability of Importing		Number of Products		Average Value Per Product	
	(1)		(2)		(3)	
	coef	se	coef	se	coef	se
Labour Productivity in t-1	0.032	0.001 ^a	0.186	0.012 ^a	0.484	0.028 ^a
Leverage in t-1	0.002	0.001	0.026	0.013 ^b	-0.019	0.025
Firm:						
Size Categories (less than 10 as reference):						
11-20 employees	0.076	0.003 ^a	0.199	0.024 ^a	0.308	0.045 ^a
21-50	0.164	0.006 ^a	0.504	0.028 ^a	0.496	0.048 ^a
51-100	0.254	0.011 ^a	0.795	0.037 ^a	0.860	0.069 ^a
101+	0.362	0.016 ^a	1.229	0.057 ^a	1.335	0.079 ^a
Combined Effect						
Imports from the Region of Birth:						
N. America	0.159	0.020 ^a	0.359	0.092 ^a	0.162	0.163
N.S.W. Europe	0.108	0.012 ^a	0.333	0.077 ^a	0.416	0.158 ^a
E. Europe	0.029	0.010 ^a	0.479	0.132 ^a	1.310	0.267 ^a
N. Africa and Middle East	0.038	0.010 ^a	0.738	0.129 ^a	0.948	0.267 ^a
E. and SE. Asia	0.083	0.011 ^a	0.469	0.076 ^a	0.608	0.156 ^a
S. Asia	0.051	0.011 ^a	0.497	0.114 ^a	0.606	0.240 ^b
S. America, Africa and Oceania	0.033	0.011 ^a	0.442	0.138 ^a	0.466	0.254 ^c
Immigrant Class (family class as reference):						
Skilled Labour	0.000	0.003	0.021	0.029	-0.054	0.054
Business	0.018	0.005 ^a	0.094	0.039 ^b	0.151	0.071 ^b
Provincial Nominee	0.031	0.017 ^c	0.157	0.085 ^c	0.463	0.190 ^b
Economic	0.004	0.017	-0.124	0.151	0.425	0.211 ^b
Refugee	0.004	0.004	0.079	0.041 ^c	-0.141	0.076 ^a
Others	-0.012	0.005 ^b	-0.132	0.049 ^a	-0.035	0.104

Immigrant Education upon Arrival (high school or less as reference):

Some post high school	0.004	0.003	0.018	0.027	-0.082	0.051
Bachelor and Above	0.025	0.004 ^a	0.096	0.029 ^a	0.138	0.055 ^b

Census Division:

Census Population	-0.000	0.001	0.014	0.012	0.003	0.023
Immigrant Share	0.160	0.039 ^a	0.710	0.371 ^c	2.142	0.686 ^a
Median Income	-0.007	0.013	-0.036	0.113	0.042	0.210
Median Immigrant Income	-0.003	0.002	-0.037	0.029	-0.047	0.064
Owner:						
Owner Age in t-1	-0.002	0.001 ^b	-0.019	0.008 ^b	-0.025	0.015
Owner Age Squared in t-1	0.000	0.000 ^b	0.000	0.000 ^b	0.000	0.000 ^c
Male Dummy	0.003	0.003	-0.003	0.026	-0.031	0.052
Constant	-0.128	0.137	0.384	1.182	2.646	2.199

Observations	427,959	41,524	41,524
R-squared	0.204	0.241	0.126

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and imports from the region of birth by region. 5. This table reports the full set of coefficient estimates for Table 14.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table A10: Characteristics of Immigrant-Owned firms and import: Wholesale industry

VARIABLES	Probability of Importing		Number of Products		Average Value Per Product	
	(1)		(2)		(3)	
	coef	se	coef	se	coef	se
Labour Productivity in t-1	0.025	0.001 ^a	0.095	0.007 ^a	0.479	0.016 ^a
Leverage in t-1	-0.006	0.001 ^a	-0.060	0.013 ^a	-0.060	0.023 ^b
Firm:						
Size Categories (less than 10 as reference):						
11-20 employees	0.125	0.006 ^a	0.379	0.024 ^a	0.190	0.047 ^a
21-50	0.188	0.009 ^a	0.557	0.035 ^a	0.298	0.067 ^a
51-100	0.261	0.021 ^a	0.729	0.073 ^a	0.626	0.136 ^a
101+	0.366	0.040 ^a	1.150	0.170 ^a	1.033	0.191 ^a
Combined Effect						
Imports from the Region of Birth:						
N. America	0.160	0.019 ^a	0.444	0.104 ^a	0.622	0.181 ^a
N.S.W. Europe	0.182	0.014 ^a	0.631	0.089 ^a	0.711	0.154 ^a
E. Europe	0.060	0.012 ^a	0.798	0.128 ^a	1.667	0.226 ^a
N. Africa and Middle East	0.052	0.011 ^a	0.373	0.101 ^a	1.204	0.203 ^a
E. and SE. Asia	0.145	0.012 ^a	0.311	0.074 ^a	0.914	0.144 ^a
S. Asia	0.157	0.013 ^a	0.752	0.093 ^a	1.289	0.176 ^a
S. America, Africa and Oceania	0.047	0.013 ^a	0.471	0.101 ^a	0.457	0.195 ^a
Immigrant Class (family class as reference):						
Skilled Labour	0.002	0.004	-0.045	0.028	-0.002	0.050
Business	0.001	0.004	-0.012	0.032	0.032	0.060
Provincial Nominee	-0.011	0.011	-0.049	0.172	-0.109	0.246
Economic	0.014	0.016	-0.087	0.089	0.388	0.185 ^b
Refugee	-0.002	0.006	0.055	0.046	-0.163	0.087 ^c
Others	-0.022	0.006 ^a	-0.184	0.052 ^a	0.296	0.094 ^a
Immigrant Education upon Arrival (high school or less as reference):						
Some post high school	0.001	0.003	-0.006	0.025	0.013	0.047
Bachelor and Above	0.001	0.003	-0.034	0.026	0.020	0.048

Census Division:						
Census Population	0.010	0.002 ^a	0.046	0.016 ^a	0.027	0.024
Immigrant Share	0.156	0.043 ^a	0.785	0.335 ^b	0.659	0.579
Median Income	0.030	0.014 ^b	-0.007	0.137	-0.358	0.223
Median Immigrant Income	0.001	0.002	-0.066	0.052	0.005	0.095
Owner:						
Owner Age in t-1	-0.001	0.001	0.006	0.007	-0.032	0.012 ^a
Owner Age Squared in t-1	0.000	0.000 ^c	-0.000	0.000	0.000	0.000 ^b
Male Dummy	0.001	0.002	-0.033	0.022	0.102	0.041 ^b
Constant	-0.454	0.164 ^a	0.762	1.404	8.672	2.338 ^a
Observations	675,157		77,189		77,189	
R-squared	0.177		0.162		0.142	

Notes: 1. ^a $p < 0.01$, ^b $p < 0.05$, ^c $p < 0.1$. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and imports from the region of birth by region. 5. This table reports the full set of coefficient estimates for Table 15.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table A11: Characteristics of Immigrant-Owned firms and exports: Manufacturing industry

VARIABLES	Probability of Exporting		Number of Products		Average Value Per Product	
	(1)		(2)		(3)	
	coef	se	coef	se	coef	se
Labour Productivity in t-1	0.017	0.001 ^a	0.104	0.025 ^a	0.521	0.059 ^a
Leverage in t-1	-0.002	0.001	0.001	0.025	0.009	0.051
Firm:						
Size Categories (less than 10 as reference):						
11-20 employees	0.045	0.004 ^a	0.166	0.048 ^a	0.420	0.104 ^a
21-50	0.103	0.007 ^a	0.432	0.048 ^a	0.805	0.110 ^a
51-100	0.200	0.017 ^a	0.469	0.066 ^a	1.196	0.150 ^a
101+	0.323	0.032 ^a	0.934	0.114 ^a	1.842	0.183 ^a
Combined Effect						
Exports from the Region of Birth:						
N. America	0.095	0.028 ^a	0.024	0.195	1.007	0.330 ^a
N.S.W. Europe	0.047	0.012 ^a	0.299	0.238	0.975	0.325 ^a
E. Europe	0.035	0.011 ^a	0.174	0.287	1.604	0.443 ^a
N. Africa and Middle East	0.039	0.012 ^a	0.395	0.265	0.807	0.378 ^b
E. and SE. Asia	0.037	0.011 ^a	0.210	0.225	0.772	0.330 ^b
S. Asia	0.036	0.011 ^a	0.411	0.246 ^b	1.283	0.573 ^b
S. America, Africa and Oceania	0.027	0.013 ^b	0.245	0.237	1.050	0.352 ^a
Immigrant Class (family class as reference):						
Skilled Labour & Business	0.006	0.004 ^c	0.058	0.049	-0.152	0.109
Provincial Nominee	0.019	0.020	0.662	0.356 ^c	-0.110	0.304
Others	0.006	0.004	0.181	0.062 ^a	-0.172	0.154
Immigrant Education upon Arrival (high school or less as reference):						
Some post high school	-0.001	0.003	0.001	0.047	-0.202	0.105 ^c
Bachelor and Above	0.024	0.004 ^a	0.083	0.050 ^c	0.048	0.112

Census Division:						
Census Population	-0.001	0.002	-0.048	0.024 ^b	-0.083	0.045 ^c
Immigrant Share	-0.004	0.032	0.262	0.630	1.110	1.445
Owner:						
Owner Age in t-1	-0.001	0.001	-0.014	0.014	-0.081	0.029 ^a
Owner Age Squared in t-1	0.000	0.000	0.000	0.000	0.001	0.000 ^a
Male Dummy	-0.003	0.003	-0.073	0.055	0.059	0.103
Constant	-0.142	0.040 ^a	1.620	0.571 ^a	7.121	1.167 ^a
<hr/>						
Observations	81,998		4,363		4,363	
R-squared	0.168		0.210		0.229	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and exports to the region of birth by region. 5. This table reports the full set of coefficient estimates for Table 16.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Table A12: Characteristics of Immigrant-Owned firms and Exports: Wholesale industry

VARIABLES	Probability of Exporting		Number of Products		Average Value Per Product	
	(1)		(2)		(3)	
	coef	se	coef	se	coef	se
Labour Productivity in t-1	0.011	0.001 ^a	0.065	0.013 ^a	0.480	0.038 ^a
Leverage in t-1	0.001	0.001	-0.052	0.019 ^a	0.069	0.055
Firm:						
Size Categories (less than 10 as reference):						
11-20 employees	0.035	0.005 ^a	0.169	0.041 ^a	0.250	0.144 ^c
21-50	0.062	0.008 ^a	0.311	0.057 ^a	0.318	0.143 ^b
51-100	0.149	0.026 ^a	0.276	0.100 ^a	1.291	0.308 ^a
101+	0.249	0.046 ^a	0.595	0.132 ^a	0.995	0.334 ^a
Combined Effect						
Exports from the Region of Birth:						
N. America	0.072	0.023 ^a	-0.147	0.174	0.349	0.478
N.S.W. Europe	0.020	0.012	-0.053	0.153	0.215	0.408
E. Europe	0.039	0.012 ^a	0.193	0.182	1.331	0.426 ^a
N. Africa and Middle East	0.044	0.012 ^a	0.067	0.136	0.546	0.371
E. and SE. Asia	0.051	0.011 ^a	0.059	0.123	0.897	0.337 ^a
S. Asia	0.032	0.011 ^a	0.193	0.151	1.106	0.407 ^a
S. America, Africa and Oceania	0.042	0.013 ^a	0.157	0.163	0.728	0.393 ^c
Immigrant Class (family class as reference):						
Skilled Labour & Business						
Provincial Nominee	0.005	0.003 ^c	0.093	0.042 ^b	-0.192	0.121
Others	0.009	0.009	-0.172	0.134	0.039	0.416
	-0.000	0.003	0.038	0.064	-0.204	0.227
Immigrant Education upon Arrival (high school or less as reference):						
Some post high school	0.003	0.002	0.011	0.049	-0.073	0.125
Bachelor and Above	0.007	0.002 ^a	0.002	0.048	-0.106	0.116
Census Division:						
Census Population	-0.004	0.001 ^a	-0.017	0.022	-0.101	0.058 ^c
Immigrant Share	0.174	0.030 ^a	0.207	0.510	2.860	1.316 ^b

Owner:						
Owner Age in t-1	-0.002	0.001 ^c	0.007	0.010	-0.053	0.032
Owner Age Squared in t-1	0.000	0.000 ^c	-0.000	0.000	0.000	0.000
Male Dummy	0.001	0.002	0.051	0.038	0.152	0.128
Constant	0.004	0.032	1.119	0.439 ^b	9.486	1.255 ^a
Observations	123,627		3,919		3,919	
R-squared	0.063		0.103		0.201	

Notes: 1. ^a p<0.01, ^b p<0.05, ^c p<0.1. 2. Standard errors are adjusted for clustering at the enterprise level. 3. Industry fixed effects (NAICS 3-digit), provincial fixed effects and full interactions of import source region and year fixed effects are included. 4. "Combined effect" is the sum of the estimated effect of immigrant-owned firms and exports to the region of birth by region. 5. This table reports the full set of coefficient estimates for Table 17.

Source: Statistics Canada, Canadian Employer-Employee Dynamics Database

Appendix B: Concordance between Countries and Regions

North America

Greenland	St. Pierre et Miquelon
United States of America	

South America

Anguilla	Ecuador	Panama Canal Zone
Antigua and Barbuda	El Salvador	Paraguay
Argentina	Falkland Islands	Peru
Aruba	French Guiana	Puerto Rico
Bahamas Islands, The	Grenada	South America (nes)
Barbados	Guadeloupe	St. Kitts-Nevis
Belize	Guatemala	St. Lucia
Bermuda	Guyana	St. Vincent and the Grenadines
Bolivia	Haiti	Surinam
Brazil	Honduras	Trinidad and Tobago (Republic of)
Cayman Islands	Jamaica	Turks and Caicos Islands
Central America (nes)	Martinique	Uruguay
Chile	Mexico	Venezuela
Colombia	Montserrat	Virgin Islands (British)
Costa Rica	Netherlands Antilles (The)	Virgin Islands (U.S.)
Cuba	Nevis	West Indies (nes)
Dominica	Nicaragua	
Dominican Republic	Panama (Republic of)	

Western Europe

United Kingdom and Colonies	Germany (Federal Republic of)	Malta
Andorra	Gibraltar	Monaco
Austria	Greece	Netherlands (The)
Azores	Holy See (Vatican City State)	Norway
Belgium	Iceland	Portugal
Canary Islands	Ireland (Republic of)	San Marino
Denmark	Italy	Spain
Finland	Liechtenstein	Sweden
France	Luxembourg	Switzerland
German Democratic Republic	Madeira	

Eastern Europe

Albania	Hungary	Russia
Belarus	Latvia	Serbia, Republic of
Bosnia-Herzegovina	Lithuania	Serbia-Montenegro
Bulgaria	Macedonia (former Yugoslav Republic)	Slovak Republic
Croatia	Moldova	Slovenia
Czech Republic	Montenegro, Republic of	Ukraine
Czechoslovakia	Poland	Union of Soviet Socialist Republics
Estonia	Republic of Kosovo	Yugoslavia
Georgia	Romania	

Middle East

Afghanistan	Kazakhstan	Syria
Algeria	Kuwait	Tadjikistan
Armenia	Kyrgyzstan	Tunisia
Azerbaijan	Lebanon	Turkey
Bahrain	Libya	Turkmenistan
Cyprus	Morocco	United Arab Emirates
Egypt	Oman	Uzbekistan
Iran	Palestinian National Authority (Gaza/West Bank)	Western Sahara
Iraq	Qatar	Yemen (People's Democratic Republic of)
Israel	Saudi Arabia	Yemen (Republic of)
Jordan	Sudan (Democratic Republic of)	

East and Southeast Asia

Brunei	Korea (Republic of)	Philippines
Cambodia	Laos	Singapore
China (People's Republic of)	Macao	Taiwan
Hong Kong	Macao (Sar)	Thailand
Hong Kong (Sar)	Malaysia	Tibet
Indonesia (Republic of)	Mongolia (People's Republic of)	Vietnam (Socialist Republic of)
Japan	Myanmar (Burma)	
Korea (People's Democratic Republic of)	North Vietnam	

South Asia

Bangladesh	India	Pakistan
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Bhutan	Maldives (Republic of)	Sikkim (Asia)
East Timor, Democratic Republic of	Nepal	Sri Lanka

Africa

Angola	Ghana	Nigeria
Benin (Peoples Republic of)	Guinea (Republic of)	Reunion
Botswana (Republic of)	Guinea, Equatorial	Rwanda
Burkina-Faso	Guinea-Bissau	Sao Tome E Principe (Democratic Republic of)
Burundi	Ivory Coast (Republic)	Senegal
Cameroon (Federal Republic of)	Kenya	Seychelles
Cape Verde Islands	Lesotho	Sierra Leone
Central Africa Republic	Liberia	Somalia (Democratic Republic of)
Chad (Republic of)	Madagascar	South Africa (Republic of)
Comoros	Malawi	St. Helena
Congo (Democratic Republic of)	Mali (Republic of)	Swaziland
Congo (People's Republic of)	Mauritania	Tanzania (United Republic of)
Djibouti (Republic of)	Mauritius (Republic of)	Togo (Republic of)
Eritrea	Mayotte	Uganda
Ethiopia	Mozambique	Zambia
Gabon Republic	Namibia	Zimbabwe
Gambia	Niger (Republic of the)	

Oceania

Australia	Nauru	Samoa (Western)
Australia (nes)	New Caledonia	Soloman Islands
Commonwealth of the Northern Mariana Islands	New Zealand	Solomons
Cook Islands	Ocean (nes)	Southern Antarctic Territories
Federated States of Micronesia	Papua	Tonga
Fiji	Papua New Guinea	Tuvalu
French Polynesia	Pitcairn Island	Vanuatu (Republic of)
Guam	Republic of Palau	Wallis and Futuna
Kiribati	Republic of the Marshall Islands	
Marinas	Samoa (American)	

Source: Statistics Canada, Standard Classification of Countries and Areas of Interest (SCCAI) 2011 and authors' own grouping.