Catalogue no. 11F0019M — No. 426
ISSN 1205-9153
ISBN 978-0-660-30765-7

Analytical Studies Branch Research Paper Series

The Impact of Immigrant Business Ownership on International Trade

by Loretta Fung, Douwere Grekou and Huju Liu

Release date: May 13, 2019

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11F0019M No. 426
2019014
ISSN 1205-9153
ISBN 978-0-660-30765-7

May 2019

Analytical Studies Branch
Research Paper Series

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Acknowledgements

The authors would like to thank, for their helpful comments, Jen Baggs of the University of Victoria; Runjuan Liu of the University of Alberta; Immigration, Refugees and Citizenship Canada; seminar participants at the 2017 annual conference of the Canadian Economics Association and the 2017 Comparative Analysis of Enterprise Data Conference; the Bank of Canada; Global Affairs Canada; Innovation, Science and Economic Development Canada; Carleton University; and Academia Sinica (Taiwan).

Table of contents

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 make it possible to better distinguish between the effect immigrants have on reducing information costs and on product demand, and to assess the impact of immigrant business ownership on the extensive and intensive margins of international trade. The results show that although the effect of immigrant business ownership on international trade with all partner regions is either insignificant or small on average, immigrant-owned firms have a positive and significant effect on Canada's trade with the regions of origin of immigrant owners. Compared with Canadian-owned firms, immigrant-owned firms in the manufacturing sector have, on average, a higher probability of importing from (by 6.7 percentage points) and exporting to (by 2.1 percentage points) the immigrant owners' regions of origin, ceteris paribus. Also, conditional on being importers or exporters, immigrant-owned firms have stronger trade connections with the regions of origin of immigrant owners—as measured by a larger number of products and average value per product imported or exported—than their Canadian-owned counterparts. The impact of immigrant business ownership is even larger in the wholesale trade sector, highlighting the role of immigrants as trade intermediaries. Immigrant owners admitted through the business, skilled labour or provincial nominee classes, and owners with a higher level of education upon arrival, are more likely to have a greater impact on international trade than other immigrant owners.

Keywords: immigrant, business ownership, and international trade

Executive summary

Canada has a relatively large foreign-born population, and the country's 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 that link immigration and international trade in Canada do so at the aggregate level. That is, they examine how export and import flows between regions are affected by the stock of immigrants in those regions, after controlling for other observable characteristics. These types of analysis have limited potential for identifying and measuring the channels through which immigrants can affect trade.

This paper uses a data file that links the Canadian Employer–Employee Dynamics Database (CEEDD) with import and export data. It links detailed firm-level data to firm owner characteristics and highly disaggregated international trade data. The data make it possible to differentiate between the two channels by which immigrants can facilitate international trade: the information effect and the demand effect. The information effect is the impact of 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 immigrants' demand for goods (imports) from their region of origin. The CEEDD makes it possible to use immigrant business ownership as a proxy for the information effect and to use the immigrant share in the local population (at the census division level) and immigrant income as proxies for the demand effect from local immigrants. The empirical results suggest that the information and demand effects are both significant for small enterprises in Canada.

Furthermore, the detailed international trade data at the country and product level enable the effects of immigrant business ownership on the extensive and intensive margins of international trade to be investigated. The extensive margins are the probability of importing and exporting, 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 the extensive margins and the intensive margin. For instance, compared with Canadian-owned enterprises, immigrant-owned enterprises in the manufacturing sector have, on average, a higher probability of importing from (by 6.7 percentage points) and exporting to (by 2.1 percentage points) the immigrant owners' regions of origin, ceteris paribus. Also, conditional on being importers or exporters, immigrant-owned firms have stronger trade connections with the regions of origin of immigrant owners than their Canadian-owned counterparts. For example, in the manufacturing sector, the number of products imported by immigrant-owned firms from the owners' regions of origin is 1.6 times higher than that imported by Canadian-owned firms, and the average value per product is 1.8 times higher. For exports, the corresponding numbers are 1.1 and 1.5, respectively.

Finally, compared with most of the micro-level datasets that include only 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 with their Canadian-owned counterparts, immigrant-owned firms in wholesale industry trade more on both the extensive margins and the intensive margin, and that the estimated effects are larger in wholesaling than in manufacturing.

1 Introduction

The impact of immigrants on international trade has been an important research topic for policy makers and academics. It is particularly important for Canada, a small open economy with a relatively large immigrant population. Empirical studies based on gravity equations, such as that by Rauch (1999), show that business and social networks can reduce transaction costs and promote bilateral trade. Rauch and Trindade (2002) further demonstrate 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, preferences and business environment), and access to social and business networks. In addition, immigrants' demand for goods from their countries of origin facilitates imports from these countries. Empirical studies such as those by Gould (1994) for the United States and by Head and Ries (1998) and Wagner, Head and Ries (2002) for Canada show that, overall, immigrants can facilitate trade, and the effect is larger on imports than on exports.

Because of data limitations, most of the empirical studies of immigrant effects on international trade use a linkage between data on immigrant characteristics and trade data at the regional or industry level. 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 services trade data connected with the immigrant share in local labour markets to quantify the impact of immigrants on the services 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. This rich information comes from a unique dataset: the Canadian Employer–Employee Dynamics Database (CEEDD), linked to firm-level import and export data. The CEEDD allows immigrant ownership and immigrant employees within businesses to be identified, thus enabling comparisons to be made between immigrant-owned businesses and their Canadian-owned counterparts, as well as overcoming the data limitations faced by most empirical studies.[1]

The analysis relies on a sample of private corporations in the CEEDD linked to firm-level trade information. This is because business ownership information is available only for private corporations (mostly Canadian-controlled private corporations [CCPCs]), not for publicly traded corporations.[2] This paper therefore focuses mainly on small and medium firms. However, small and medium firms may be more relevant, as they often lack financial resources and information about international markets, which makes additional information from immigrants more valuable. The analysis of firm participation in international trade also focuses only on manufacturing and wholesale trade firms, as these two sectors together account for more than 75% of international trade in goods.

This study first documents several data facts on the involvement of immigrant business ownership in international trade: (1) the share of immigrant-owned manufacturing firms that import and export is lower than that for Canadian-owned and immigrant-owned manufacturing firms combined; (2) the opposite is true in wholesale trade. The share of immigrant-owned wholesalers that import and export is slightly above the share for Canadian-owned and immigrant-owned wholesalers combined; (3) the share of imports from and exports to North American countries (mainly the

1. Green et al. (2016) discuss the development of the CEEDD and study immigrant business ownership and job creation using the CEEDD.
2. Ownership information is also available for unincorporated businesses. However, they are left out of the analysis due to their small share in international trade. See Section 2 for more details on sample selection.

United States) is smaller among immigrant-owned importers and exporters than their Canadian-owned counterparts.

The summary statistics also show that immigrant-owned importers and exporters are different from their Canadian-owned counterparts. On average, immigrant-owned importers and exporters are smaller in employment, less productive, and have greater leverage than their Canadian-owned counterparts. After controlling for these differences, plus differences in owner and regional characteristics, this study finds that immigrant-owned enterprises do have a higher probability of exporting to or importing from their owners' regions of origin, despite the fact that they may not have a higher probability of exporting to or importing from all regions.

Furthermore, conditional on being importers and exporters, immigrant-owned enterprises trade more intensively. Indeed, the total value of trade, the number of products and the average value per product are all higher among immigrant-owned importers and exporters than among Canadian-owned enterprises. The effect is more pronounced for the 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.

Finally, this study also finds that immigrant owners admitted through the business, skilled labour or provincial nominee classes, and owners with a higher level of education upon arrival, are more likely to have positive effects on international trade than other immigrants.[3]

This paper contributes to the literature in three respects.

First, it provides much-needed empirical evidence of the impact of immigrant business ownership (a more direct measure of immigrant participation in business) on international trade. Information about immigrant business ownership and about local immigrant populations makes it possible to better differentiate between the two channels by which immigrants can facilitate international trade: the information effect and the demand effect (Mundra 2010). The information effect is that immigrants' knowledge about their source countries and co-ethnic networks can reduce transaction costs and facilitate trade (both exports and imports). The demand effect is that immigrants demand goods from their source countries and therefore contribute to imports. As firm-level data with immigrant information are scarce, the 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), education (Felbermayr and Toubal 2012) and occupation (Aleksynska and Peri 2014) are used to improve the identification of the demand and information effects. With micro-level data, immigrant business ownership (i.e., a direct measure of immigrant involvement in business activities) can be used as a proxy for the information effect. The immigrant share in the local population (at the census division level) and immigrant income can be used as proxies for the demand effect from local immigrants. The empirical results suggest that the information and demand effects are both significant for small enterprises in Canada.

Second, international trade data at the country and product level enable the effects of immigrant business ownership on the extensive and intensive margins of international trade to be investigated. Here, the extensive margins are the probability of importing and exporting, and the number of products imported and exported (at the Harmonized Commodity Description and Coding System HS-6 level). The intensive margin is the average value per product. Chaney's (2008) theory suggests that changes in variable costs affect both intensive and extensive margins of trade, while changes in fixed costs influence only the extensive margins. Peri and Requena-Silvente's (2010) findings, using Spanish data, suggest that the effect of immigrants on exports is mainly on the extensive margin, implying that immigrants primarily reduce the fixed costs of exports. The empirical results of this study show that, compared with Canadian-owned

3. Head and Ries (1998) also find that the contribution of immigrants vary by immigrant admission class.

small businesses, immigrant-owned businesses import and export more on both the extensive margins and the intensive margin, particularly with owners' regions of origin. These findings suggest that, after other characteristics are controlled for, immigrant-owned firms have a stronger trade connection with the regions of origin of their owners. This connection manifests itself as a higher probability of importing or exporting, more varieties of products traded, and higher real values per product.

Finally, the investigation pertaining to wholesale firms provides rare and important information on immigrants' role as trade intermediaries. In contrast with most micro-level datasets, which include only manufacturing firms (as in the study by Hatzigeorgiou and Lodefalk [2016]), the CEEDD includes all industries in the Canadian economy. This makes it possible to examine another sector that contributes significantly to international trade: wholesale trade. In the sample, manufacturing firms account for 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 those by Ahn, Khandelwal and Wei (2011) and Tang and Zhang (2014), discuss 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 this study suggest that, compared with their Canadian-owned counterparts, immigrant-owned wholesale firms trade more on both the extensive margins and the intensive margin, and that the estimated effects are larger for wholesale firms than for manufacturing firms.

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

2 Data

This paper uses a linked database that combines the CEEDD (2001 to 2012), import data (2002 to 2012) and export data (2011 to 2012). The CEEDD is a newly developed matched database at Statistics Canada that links several administrative tax files, including individual tax files (T1 General - Income Tax and Benefit Return), individual employment remuneration files (T4 Statement of Remuneration Paid), the Longitudinal Immigration Database (IMDB),[4] corporate tax files (T2 Corporation Income Tax Return) and unincorporated business tax files (T1 business declarations). In addition to rich information on workers and their workplaces, the CEEDD contains information on business ownership (such as business owners, ownership shares and immigrant status of owners) for private corporations (mostly CCPCs), sole proprietorships and partnerships. Linking the CEEDD to import and export data thus provides, for the first time, detailed information on trade (at the country and product level) and firm-level ownership.

Several sample restrictions are applied to the CEEDD–trade linked database before the analysis is conducted.

First, public corporations (publicly traded on the stock exchange) are excluded, as the information on corporation ownership is available only for private corporations (not publicly traded on the stock exchange). Put differently, in this paper, incorporated businesses refer mostly to CCPCs, which are primarily small and medium-sized enterprises.

Second, unincorporated businesses are also excluded from the final sample, because incorporated firms (private corporations) account for the vast majority of trade activities. For example, in 2012, incorporated importers accounted for 84% of all importers linked between the CEEDD and the import data, and 98% of the value of linked imports. Incorporated exporters accounted for 90% of all linked exporters and 97% of the value of linked exports.

Third, only simple enterprises are included in the final sample. Simple enterprises are defined as enterprises containing only one nine-digit business number (BN). The reason for including only simple enterprises is twofold. First, almost all private corporations in Canada are simple (99% in 2012). Second, business ownership information is available at the BN level, while the import and export data are 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 merchandise trade) in Canada, the final sample (simple private corporations) accounted for 60% of all importers, 63% of all exporters, 15% of the value of all imports and 12% of the value of all exports in 2012. Although these firms are more likely to be small players in international trade, they are nevertheless more likely to be on the margin, and hence be more relevant for policy.

The trade data are at the firm, country and product level. To simplify the analysis, the import and export data for each firm are aggregated to nine regions based on source and destination countries. These nine regions are North America; Central and South America (including Mexico); Northern, Western and Southern Europe; Eastern Europe; Africa (except Northern Africa); Northern Africa and the Middle East; East and Southeast Asia; South Asia; and Oceania. The number of products imported or exported (at the HS-6 level) and the value of imports or exports are computed for each region. The countries of birth of immigrant owners are classified into the same nine regions to examine the effects of immigrant business ownership on trade with the owners' regions of origin.[5]

4. The IMDB is a collection of information about all immigrants who arrived in Canada after 1980. It provides information on age, gender, country of birth, education level upon landing, admission category, language ability, etc. Individuals identified as immigrants remain in the database regardless of future Canadian citizenship status.
5. The concordance between countries and regions are available upon request.

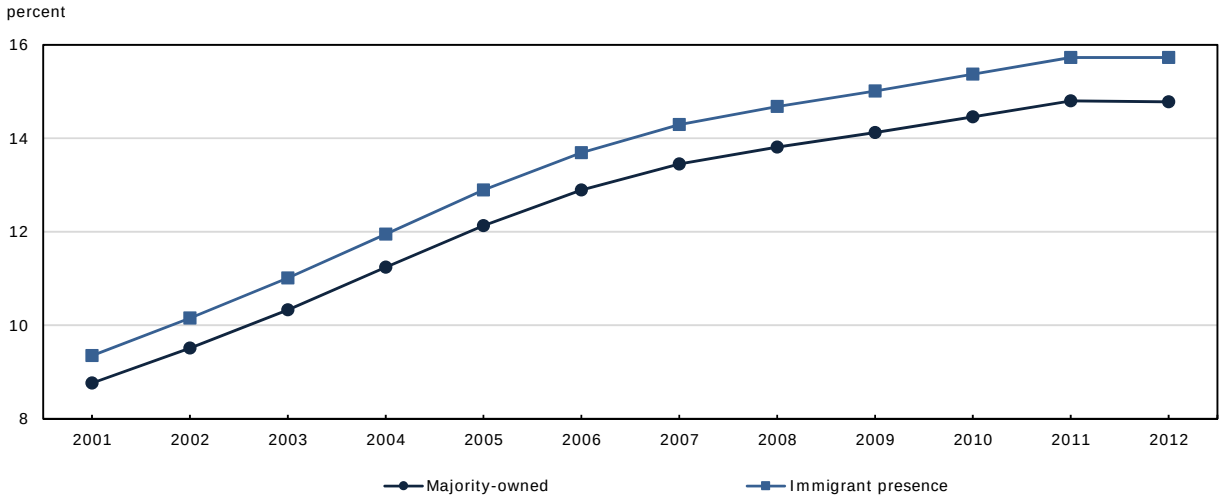
Finally, the sample is augmented with local market information. Previous literature has suggested that the local market—especially the local immigrant market—has a demand effect for products imported from the home countries of immigrants. The local market information is constructed at the census division level where firms are located. It includes census population counts and mean or median income (from the 2001, 2006 and 2011 censuses), and immigrant population counts and immigrant mean or median income by source region (from the CEEDD). This local information will help approximate the immigrant demand effect.

3 Immigrant business ownership at a glance

Two alternative definitions of immigrant-owned business are proposed 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 greater than the share owned by Canadian-born owners (referred to as "majority-owned"), or (2) at least one immigrant is listed as an owner (referred to as "immigrant presence"). Chart 1 presents the percentage of immigrant-owned firms based on these two definitions. When the stricter definition, majority-owned, is used, the share of small firms that are immigrant-owned grows steadily during the sample period (2001 to 2012), from 8.8% in 2001 to 14.8% in 2012. When immigrant presence is used, 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, immigrant business ownership is defined using the "immigrant presence" criterion.

Table 1 summarizes the share of immigrant-owned firms and their share of employment by sector. The share of immigrant-owned businesses ranges from 3.3% in the mining, oil and gas extraction, and utilities sector to close to 24.8% in the transportation and warehousing sector. The share of employment accounted for by immigrant-owned businesses is lowest in the mining, oil and gas extraction, and utilities sector. The share of employment is highest in education and health, and in arts, entertainment and recreation, and accommodation and food services. In general, the share of employment accounted for by immigrant-owned businesses is smaller than the share of immigrant-owned firms in most sectors, except agriculture, forestry, fishing and hunting, suggesting that immigrant-owned firms are generally smaller than their Canadian-owned counterparts.

Chart 1
Share of immigrant-owned enterprises, 2001 to 2012



Note: This chart is based on the sample of simple, privately-held corporations described in Section 2 of the paper.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 1
Share of immigrant-owned enterprises, by sector, 2001 to 2012

Sector	Share in enterprises	Share in employment
	percent	
Agriculture, forestry, fishing and hunting	4.38	6.58
Mining, oil and gas extraction, and utilities	3.34	2.77
Construction	9.68	5.10
Manufacturing	12.93	8.00
Wholesale trade	18.47	10.02
Retail trade	18.80	8.95
Transportation and warehousing	24.78	6.67
Professional services	10.97	10.00
Education and health services	19.07	14.31
Arts, entertainment and recreation, and accommodation and food services	24.01	15.36
Other services	14.34	10.17

Notes: Professional services industries include the following industries: information and cultural; finance and insurance, real estate and rental and leasing; professional, scientific and technical services; management of companies and enterprises; and administrative and support, waste management and remediation services. This table is based on the sample of simple, privately-held corporations described in Section 2.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 2 shows the distribution of immigrant-owned enterprises across owner's region of birth by sector. The region of birth is that of the principal immigrant owner with the highest ownership share. Immigrants from Northern, Western and Southern Europe account for 13% of all principal immigrant business owners across all sectors (last column of Table 2). However, they represent close to 61% of principal immigrant business owners in the agriculture, forestry, fishing and hunting sector, and 31% in the mining, oil and gas extraction, and utilities sector. The share of East and Southeast Asian immigrants is above their all-sector average in: wholesale trade; retail trade; and arts, entertainment and recreation, accommodation and food services, and other services. Immigrants from South Asia dominate in the transportation and warehousing sector.

Table 2
Distribution of immigrant-owned enterprises across principal owner's region of birth, by sector, 2001 to 2012

	Agriculture, forestry, fishing and hunting	Mining, oil and gas extraction, and utilities	Construction	Manufacturing	Wholesale trade	Retail trade	Transportation and warehousing	Professional services	Education and health services	Arts, entertainment and recreation, and accommodation and food services	Other services	All sectors
							percent					
North America	7.86	13.89	2.91	3.35	1.96	1.70	0.83	4.45	4.17	2.29	1.71	**3.20**
Central and South America (including Mexico)	2.51	6.48	6.40	5.59	3.74	2.95	4.56	5.33	4.37	2.86	6.66	**4.70**
Northern, Western and Southern Europe	60.87	30.56	18.21	17.95	9.58	6.58	3.38	15.68	12.52	10.63	10.13	**13.10**
Eastern Europe	4.35	12.04	20.15	14.66	8.31	6.39	20.83	13.50	11.48	4.63	11.94	**12.30**
Africa (except Northern Africa)	1.51	2.78	2.03	3.71	3.67	4.26	2.07	5.45	17.13	2.61	3.41	**4.80**
Northern Africa and the Middle East	2.01	8.33	16.12	13.60	15.21	22.58	6.57	12.14	13.20	16.36	17.45	**14.10**
East and Southeast Asia	10.37	16.67	15.21	27.55	44.61	33.26	5.13	27.56	22.47	44.39	31.04	**27.70**
South Asia	8.86	4.63	17.44	12.54	12.33	21.74	56.00	14.43	13.44	15.63	16.29	**19.00**
Oceania	1.67	4.63	1.53	1.06	0.58	0.56	0.63	1.46	1.20	0.60	1.38	**1.10**

Notes: Professional services industries include the following industries: information and cultural; finance and insurance, real estate and rental and leasing; professional, scientific and technical services; management of companies and enterprises; and administrative and support, waste management and remediation services. This table is based on the sample of simple, privately-held corporations described in Section 2. Percentages for regions of birth in each sector may not add up to 100% because of rounding.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

The distribution of immigrant-owned enterprises across the principal owner's immigration admission class also differs across sectors (Table 3). Across all sectors, immigrants admitted in the skilled labour class make up the largest group, comprising 40% of all immigrant business owners. The family class ranks second. The business class,[6] which is intended to attract investment, ranks third, and the refugee class ranks fourth, accounting for 11% of immigrant business owners.

Immigrant owners admitted under the business class account for a relatively high proportion of immigrant businesses in sectors such as: agriculture, forestry, fishing and hunting; manufacturing; wholesale trade; retail trade; and arts, entertainment and recreation, and accommodation and food services. They account for a relatively low proportion of businesses in sectors such as: transportation and warehousing, and education and health services. Immigrant business owners admitted under the skilled labour class account for a relatively high fraction of immigrant owned businesses in mining, oil and gas extraction and utilities; wholesale trade; professional services; and education and health. They account for a relatively lower fraction in: agriculture, forestry, fishing and hunting, and transportation and warehousing. Immigrant owners admitted in the family and refugee classes are important participants in the construction, and the transportation and warehousing sectors.

Table 3
Distribution of immigrant-owned enterprises across principal owner's immigration class of entry, by sector, 2001 to 2012

	Family class	Skilled labour	Business class	Provincial nominee	Economic class	Refugees	Others
				percent			
Sector							
Agriculture, forestry, fishing and hunting	25.04	20.03	47.08	1.34	0.17	4.51	1.84
Mining, oil and gas extraction, and utilities	32.41	45.37	11.11	1.85	0.93	6.48	1.85
Construction	36.53	27.00	10.36	0.82	0.50	16.55	8.25
Manufacturing	26.84	38.61	15.77	0.47	0.47	12.89	4.94
Wholesale trade	19.64	41.81	26.54	0.48	0.41	6.90	4.22
Retail trade	26.84	37.30	16.93	0.67	0.49	12.01	5.76
Transportation and warehousing	49.27	20.34	2.92	0.72	0.23	19.45	7.08
Professional services	24.97	49.94	12.06	0.63	0.57	8.10	3.73
Education and health services	23.59	50.90	8.30	4.69	0.64	8.86	3.01
Arts, entertainment and recreation, and accommodation and food services	29.82	32.48	15.92	0.87	0.50	13.58	6.84
Other services	31.85	32.13	10.82	0.66	0.71	17.13	6.70
All sectors	**28.80**	**39.70**	**13.50**	**0.90**	**0.50**	**11.40**	**5.10**

Notes: The business class includes immigrants who were admitted in the entrepreneur, self-employed, investor, and business and other business categories. The economic class includes those who were admitted in the live-in caregiver and Canadian experience categories. Others include all other categories that have not been specified. Professional services industries include the following industries: information and cultural; finance and insurance, real estate and rental and leasing; professional, scientific and technical services; management of companies and enterprises; and administrative and support, waste management and remediation services. This table is based on the sample of simple, privately-held corporations described in Section 2. Percentages across immigration classes for each sector may not add up to 100% because of rounding.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 4 presents the distribution of immigrant-owned enterprises across the principal owner's level of education upon arrival by sector. For all sectors, around 36% had a high school education or less, and 35% had a bachelor's degree or above upon landing. Owners with a high school education or less make up the largest share in construction; manufacturing; retail trade; transportation; arts, accommodation and food services; and other services. Owners with a bachelor's degree or above represent the largest share in mining and utilities, wholesale trade, professional services, and education and health.

6. The business class includes immigrants who were admitted in the entrepreneur, investor, self-employed and business categories.

Table 4
Distribution of immigrant-owned enterprises across principal immigrant owner's level of education upon entry, by sector, 2001 to 2012

	High school or less	Some postsecondary education	Bachelor's degree and above
		percent	
Sector			
Agriculture, forestry, fishing and hunting	40.76	45.93	13.27
Mining, oil and gas extraction, and utilities	30.19	32.10	37.61
Construction	47.71	31.64	20.62
Manufacturing	39.61	36.08	24.24
Wholesale trade	31.73	32.36	35.90
Retail trade	39.77	28.31	31.86
Transportation and warehousing	52.23	28.72	19.03
Professional services	26.57	27.81	45.58
Education and health services	19.90	19.14	60.93
Arts, entertainment and recreation, and accommodation and food services	49.02	29.31	21.64
Other services	49.50	32.43	18.02
All sectors	**36.35**	**29.08**	**34.53**

Notes: Professional services industries include the following industries: information and cultural; finance and insurance, real estate and rental and leasing; professional, scientific and technical services; management of companies and enterprises; and administrative and support, waste management and remediation services. This table is based on the sample of simple, privately-held corporations described in Section 2. Percentages across levels of education for each sector may not add up to 100% because of rounding.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

4 Immigrant-owned firms in international trade

4.1 The role of immigrant-owned firms

The linkage between the CEEDD, import data (2002 to 2012) and export data (2011 and 2012) makes it possible to analyze firms' international trade activities and compare Canadian-owned and immigrant-owned firms. Table 5 summarizes the distribution of international trade activities across sectors for all firms, immigrant-owned firms and Canadian-owned firms. The results show that both imports and exports are concentrated in two sectors: manufacturing and wholesale trade. Together, they account for more than 75% of imports and exports. The wholesale trade sector makes up 51% of imports and 21% of exports, while the manufacturing sector accounts for 26% of imports and 55% of exports. The dominance of the wholesale trade sector in imports highlights the importance of intermediaries in small-firm imports. When the sectoral distributions of Canadian-owned firms and immigrant-owned firms are compared, it is found that the sectoral distributions for Canadian-owned firms are similar to that for all firms, while, for immigrant-owned firms, there is a greater concentration of imports and exports in the wholesale trade sector. This suggests 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 5
Distribution of imports and exports across sectors for all firms, immigrant-owned firms and Canadian-owned firms

	Imports			Exports		
Sector	All firms	Immigrant-owned firms	Canadian-owned firms	All firms	Immigrant-owned firms	Canadian-owned firms
			percent			
Agriculture, forestry, fishing and hunting	1.05	1.25	1.03	4.10	2.39	4.38
Mining, oil and gas extraction, and utilities	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 trade	51.18	60.45	50.06	21.06	39.74	18.05
Retail trade	10.72	8.84	10.94	1.53	5.98	0.81
Transportation and warehousing	2.05	1.50	2.12	2.59	2.60	2.59
Professional services	5.05	4.52	5.12	11.80	6.91	12.58
Education and health services	0.13	0.19	0.12	0.06	0.12	0.05
Arts, entertainment and recreation, and accommodation and food services	0.30	0.37	0.29	0.22	0.27	0.21
Other services	0.96	0.97	0.95	0.45	0.32	0.47

Notes: Shares of imports are based on the period from 2002 to 2012 and exports, on the years 2011 and 2012. Professional services industries include the following industries: information and cultural; finance and insurance, real estate and rental and leasing; professional, scientific and technical services; management of companies and enterprises; and administrative and support, waste management and remediation services. Percentages across sectors for each firm type may not add up to 100% because of rounding. This table is based on the sample of simple, privately-held corporations described in Section 2. Percentages across sectors for each firm type may not add up to 100% because of rounding.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 6 presents the shares of importers and exporters in the manufacturing and wholesale trade sectors. Around 31% of manufacturers and 32% of wholesalers engaged in import activities from 2002 to 2012. Among immigrant-owned manufacturing firms, the import participation rate, 29%, is slightly lower than the average (Canadian-owned and immigrant-owned firms combined), while the participation rate of immigrant-owned wholesalers, 33%, is slightly above the average. In 2011 and 2012, around 20% of manufacturers and 10% of wholesalers exported. Among immigrant-owned firms, 15% of manufacturers exported, much lower than the average, while 11% of wholesalers exported, which is slightly above the average.

In 2011 and 2012, when both export data and import data are considered, firms involved in international trade can be further classified in three groups: importers only (engaging only in import activities), exporters only (engaging only in export activities), and importers and exporters (two-way-trade firms engaging in import and export activities). In the manufacturing sector, Canadian-owned two-way-trade firms clearly dominate, accounting for 77% of the value of imports (Table 7) and 86% of exports (Table 8). Canadian-owned two-way-trade firms also account for the largest share of imports and exports in the wholesale trade sector, but are less dominant. Immigrant-owned importers or exporters only or two-way-trade firms tend to be much smaller than their Canadian-owned counterparts. Immigrant-owned exporters only and two-way-trade firms play a much larger role for exports in the wholesale sectors, accounting for about 22% of all exporters and 26% of value of exports in that sector (Table 8, sum of the shares of the two types).

Table 6
Import or export participation rates of firms in the manufacturing and wholesale trade sectors

	Import participation rate		Export participation rate	
Sector	All firms	Immigrant-owned firms	All firms	Immigrant-owned firms
	percent			
Manufacturing	30.64	28.56	20.04	14.76
Wholesale trade	31.54	32.88	10.42	10.58

Notes: Shares of firms that import are based on the period from 2002 to 2012 and shares of firms that export are based on the years 2011 and 2012. This table is based on the sample of simple, privately-held corporations described in Section 2.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 7
Distribution of importers and value of imports across importer types in the manufacturing and wholesale trade sectors

	Manufacturing sector		Wholesale trade sector	
	Share of importers	Share of value of imports	Share of importers	Share of value of imports
	percent			
Immigrant-owned importers only	7.4	1.3	15.4	7.1
Canadian-owned importers only	43.1	13.9	60.9	40.5
Immigrant-owned two-way-trade firms	5.9	7.7	4.4	6.0
Canadian-owned two-way-trade firms	43.6	77.0	19.3	46.4
Total	**100.0**	**100.0**	**100.0**	**100.0**

Notes: Importers only refer to firms who engage in import only; two-way-trade firms refer to firms who engage in both import and export. This table is based on the sample of simple, privately-held corporations described in Section 2.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 8
Distribution of exporters and value of exports across exporter types in the manufacturing and wholesale trade sectors

	Manufacturing sector		Wholesale trade sector	
	Share of exporters	Share of value of exports	Share of exporters	Share of value of exports
	percent			
Immigrant-owned exporters only	2.4	0.3	6.9	9.6
Canadian-owned exporters only	15.5	4.6	14.6	14.2
Immigrant-owned two-way-trade firms	9.8	9.6	14.6	16.5
Canadian-owned two-way-trade firms	72.4	85.6	63.8	59.7
Total	**100.0**	**100.0**	**100.0**	**100.0**

Notes: Exporters only refer to firms who engage in export only; two-way-trade firms refer to firms who engage in both import and export. This table is based on the sample of simple, privately-held corporations described in Section 2.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 9 reports distributions of the value of imports and exports by trade source and destination region. Columns 1 and 4 summarize the regional distribution of imports and exports of all firms (both immigrant-owned and Canadian-owned). Consistent with previous observations, imports and exports are skewed toward North America (mainly the United States), accounting for approximately 52% of imports and 72% of exports. The second most important trading partner region is East and Southeast Asia, accounting for 27% of imports and 10% 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 in North America, which accounts for 31% of imports and 57% of exports. The shares of imports from and exports to Africa (except Northern Africa), Northern Africa and the Middle East, East and Southeast Asia, and South Asia are larger among immigrant-owned firms than among Canadian-owned firms.

Table 9

Distribution of imports and exports across trade regions, by ownership of enterprise

	Imports			Exports		
	All firms	Immigrant-owned	Canadian-owned	All firms	Immigrant-owned	Canadian-owned
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
	percent					
North America	51.75	30.53	54.44	72.43	56.83	75.04
Central and South America (including Mexico)	4.60	3.22	4.78	3.58	3.59	3.58
Northern, Western and Southern 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 (except Northern Africa)	0.33	0.67	0.28	0.98	2.12	0.79
Northern Africa and the Middle East	1.34	3.55	1.06	2.14	4.59	1.73
East and 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: Distribution of imports is based on the period from 2002 to 2012 and exports on the years 2011 and 2012. This table is based on the sample of simple, privately-held corporations described in Section 2.

Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

To analyze the difference between immigrant-owned and Canadian-owned businesses that are engaged in international trade, the two groups are compared along several dimensions. These include owner's age and gender, firm size,[7] relative productivity and leverage (the debt–asset ratio),[8] the total number of products imported or exported (at the HS-6 level), and the value of imports and exports. Tables 10-1 and 10-2 present the results for importers in manufacturing and wholesale trade, respectively. Column 1 summarizes the mean values of key variables for Canadian-owned firms, Column 2 for immigrant-owned firms and Column 3 for all firms. The results suggest that, compared with their Canadian-born importer counterparts, immigrant business owners 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), are less productive and have a higher leverage ratio. In addition, the number of imported products, the total value of imports and the share of imports from North America are smaller among immigrant-owned importers. This pattern holds for both the manufacturing sector and the wholesale trade sector.

7. The firm size measure is based on the individual labour unit (ILU). It is similar to an employee head count. However, a person working at multiple jobs in a particular year (1 ILU) is allocated to multiple firms proportionally to his or her payroll, instead of being counted multiple times.
8. Relative productivity is defined as the deviation of firm labour productivity from the mean (within the three-digit North American Industry Classification System code) in the year 2001. Firm labour productivity is defined as revenue divided by firm employment. The top and bottom 1% of the distribution of firm labour productivity are trimmed to prevent outliers. Leverage is defined as total liabilities divided by total assets. The top and bottom 3% of the distribution of the firm leverage ratio are also trimmed.

Table 10-1
Comparison between Canadian-owned and immigrant-owned importers, 2002 to 2012 — Manufacturing sector

Variables	Canadian-owned importers Column 1	Immigrant-owned importers Column 2	Combined Column 3
Owner's age			
Number of observations	163,179	22,731	185,910
Mean	54.000	48.087 *	53.277
Standard error	0.029	0.061	0.027
Male owner			
Number of observations	163,192	22,731	185,923
Mean	0.843	0.787 *	0.836
Standard error	0.001	0.003	0.001
Number of employees			
Number of observations	150,344	20,146	170,490
Mean	38.368	23.650 *	36.628
Standard error	0.216	0.383	0.196
Relative productivity			
Number of observations	148,108	19,854	167,962
Mean	0.128	-0.022 *	0.110
Standard error	0.002	0.005	0.002
Leverage			
Number of observations	161,838	22,418	184,256
Mean	0.752	0.914 *	0.772
Standard error	0.002	0.005	0.002
Number of imported products			
Number of observations	163,192	22,731	185,923
Mean	12.113	10.220 *	11.882
Standard error	0.048	0.109	0.045
Total value of imports			
Number of observations	163,192	22,731	185,923
Mean	712.046	469.139 *	682.348
Standard error	8.832	16.704	8.019
Share of imports from North America			
Number of observations	163,189	22,731	185,920
Mean	0.681	0.490 *	0.658
Standard error	0.001	0.003	0.001

* significantly different from reference category ($p < 0.05$). The difference between Canadian-owned and immigrant-owned importers is significantly different from zero at the 5% significance level.

Notes: The value of imports is in thousands of dollars. This table is based on the sample of simple, privately-held corporations described in Section 2.

Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 10-2
Comparison between Canadian-owned and immigrant-owned importers, 2002 to 2012 — Wholesale trade sector

Variables	Canadian-owned importers Column 1	Immigrant-owned importers Column 2	Combined Column 3
Owner's age			
Number of observations	185,102	45,029	230,131
Mean	53.781	47.012 *	52.457
Standard error	0.026	0.045	0.024
Male owner			
Number of observations	185,123	45,034	230,157
Mean	0.824	0.738 *	0.807
Standard error	0.001	0.002	0.001
Number of employees			
Number of observations	157,797	34,382	192,179
Mean	17.740	9.257 *	16.222
Standard error	0.107	0.118	0.090
Relative productivity			
Number of observations	148,337	32,181	180,518
Mean	0.038	-0.284 *	-0.019
Standard error	0.002	0.006	0.002
Leverage			
Number of observations	182,862	43,810	226,672
Mean	0.777	1.126 *	0.844
Standard error	0.002	0.005	0.002
Number of imported products			
Number of observations	185,123	45,034	230,157
Mean	19.457	13.803 *	18.351
Standard error	0.077	0.111	0.066
Total value of imports			
Number of observations	185,123	45,034	230,157
Mean	1,178.021	705.290 *	1,085.523
Standard error	12.252	11.746	10.127
Share of imports from North America			
Number of observations	185,120	45,031	230,151
Mean	0.585	0.241 *	0.518
Standard error	0.001	0.002	0.001

* significantly different from reference category ($p < 0.05$). The difference between Canadian-owned and immigrant-owned importers is significantly different from zero at the 5% significance level.

Notes: The value of imports is in thousands of dollars. This table is based on the sample of simple, privately-held corporations described in Section 2.

Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Tables 11-1 and 11-2 compare immigrant-owned and Canadian-owned exporters in the manufacturing and wholesale trade sectors, respectively, using data from 2011 and 2012. The findings are similar to those for importers. Compared with Canadian-owned manufacturing exporters, immigrant-owned manufacturing exporters sell fewer products and products have a smaller value. However, the means of these two variables are not significantly different in the wholesale trade sector.

Table 11-1
Comparison between Canadian-owned and immigrant-owned exporters, 2011 and 2012 — Manufacturing sector

Variables	Canadian-owned exporters Column 1	Immigrant-owned exporters Column 2	Combined Column 3
Owner's age			
Number of observations	18,438	2,568	21,006
Mean	56.954	51.068 *	56.234
Standard error	0.086	0.178	0.079
Male owner			
Number of observations	18,438	2,568	21,006
Mean	0.843	0.783 *	0.836
Standard error	0.003	0.008	0.003
Number of employees			
Number of observations	17,114	2,368	19,482
Mean	48.797	32.726 *	46.843
Standard error	0.788	1.627	0.721
Relative productivity			
Number of observations	16,882	2,336	19,218
Mean	0.200	0.083 *	0.186
Standard error	0.005	0.016	0.005
Leverage			
Number of observations	18,278	2,546	20,824
Mean	0.727	0.821 *	0.738
Standard error	0.005	0.016	0.005
Number of exported products			
Number of observations	18,438	2,568	21,006
Mean	5.202	4.765 *	5.149
Standard error	0.060	0.146	0.055
Total value of exports			
Number of observations	18,438	2,568	21,006
Mean	2,311.407	1,811.853 *	2,250.336
Standard error	75.665	148.776	68.868
Share of exports to North America			
Number of observations	18,435	2,568	21,003
Mean	0.795	0.730 *	0.787
Standard error	0.003	0.008	0.002

* significantly different from reference category ($p < 0.05$). The difference between Canadian-owned and immigrant-owned importers is significantly different from zero at the 5% significance level.

Notes: The value of exports is in thousands of dollars. This table is based on the sample of simple, privately-held corporations described in Section 2.

Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 11-2
Comparison between Canadian-owned and immigrant-owned exporters, 2011 and 2012 — Wholesale trade sector

Variables	Canadian-owned exporters Column 1	Immigrant-owned exporters Column 2	Combined Column 3
Owner's age			
Number of observations	10,187	2,793	12,980
Mean	56.334	49.662 *	54.898
Standard error	0.113	0.188	0.101
Male owner			
Number of observations	10,187	2,793	12,980
Mean	0.839	0.754 *	0.820
Standard error	0.004	0.008	0.003
Number of employees			
Number of observations	9,008	2,322	11,330
Mean	30.515	14.556 *	27.244
Standard error	0.719	0.632	0.589
Relative productivity			
Number of observations	8,018	1,978	9,996
Mean	0.228	0.015 *	0.186
Standard error	0.009	0.021	0.008
Leverage			
Number of observations	10,083	2,748	12,831
Mean	0.718	0.947 *	0.767
Standard error	0.006	0.018	0.006
Number of exported products			
Number of observations	10,187	2,793	12,980
Mean	3.908	3.618	3.846
Standard error	0.067	0.144	0.061
Total value of exports			
Number of observations	10,187	2,793	12,980
Mean	1304.268	1683.160	1385.797
Standard error	88.797	207.984	82.830
Share of exports to North America			
Number of observations	10,186	2,792	12,978
Mean	0.657	0.333 *	0.587
Standard error	0.004	0.009	0.004

* significantly different from reference category ($p < 0.05$). The difference between Canadian-owned and immigrant-owned importers is significantly different from zero at the 5% significance level.

Notes: The value of exports is in thousands of dollars. This table is based on the sample of simple, privately-held corporations described in Section 2.

Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

4.2 Extensive and intensive margins of imports

Aggregate international trade can be further decomposed into extensive and intensive margins to assess the relative importance of these margins. These margins can be important for understanding trade with different regions and of different products. Extensive margins (the number of firms or products) are affected by firm and product entry and exit in different markets, while the intensive margin (the value of international trade) indicates the size of each transaction. Recent studies (such as that by Bernard et al. [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).

For example, imports by firms in Canada can be attributed to immigrant-owned firms and Canadian-owned firms, and they can be further decomposed into extensive and intensive margins. Based on the work of Bernard et al. (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 the average value of trade

($\overline{m_r}$). Specifically, $m_r = f_r p_r d_r \overline{m_r}$. 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, $d_r \equiv o_r / f_r \cdot p_r$. 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 as 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 estimated across different regions and years with controls for year fixed effects.[9] Table 12 reports the results of the regression decomposition separately 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. Immigrant-owned firms account for only 8.4% of the imports in the manufacturing sector. Compared with the decomposition results of Bernard et al. (2009), which use U.S. trade data, the contribution of the intensive margin is larger in the sample used for this study (above 50% across all groups).[10] When immigrant-owned and Canadian-owned firms are compared, the contribution of the firm extensive margin is smaller and that of the intensive margin is larger for immigrant-owned firms. This pattern is true for both the manufacturing sector and the wholesale trade sector.

Table 12
Decomposition of imports by ownership of enterprise for the manufacturing and wholesale trade sectors

	Manufacturing		Wholesale trade	
	Canadian-owned	Immigrant-owned	Canadian-owned	Immigrant-owned
Share in imports (percent)	**91.60**	**8.40**	**87.32**	**12.68**
Firm extensive margin				
Coefficient	0.507 **	0.462 **	0.503 **	0.467 **
Standard error	0.017	0.016	0.015	0.011
Product extensive margin				
Coefficient	0.371 **	0.375 **	0.373 **	0.378 **
Standard error	0.003	0.008	0.003	0.005
Density				
Coefficient	-0.399 **	-0.407 **	-0.376 **	-0.394 **
Standard error	0.031	0.025	0.029	0.021
Intensive margin				
Coefficient	0.522 **	0.571 **	0.501 **	0.549 **
Standard error	0.015	0.017	0.013	0.013

** significantly different from reference category ($p < 0.01$)
Notes: Year fixed effects are included. This table is based on the sample of simple, privately-held corporations described in Section 2.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

5 Empirical analysis

Section 4 shows that immigrant-owned firms are less likely to import and export than Canadian-owned firms, and that immigrant importers and exporters, on average, import or export fewer products, and have a lower value of imports and exports. However, these differences may result from immigrant-

9. Regression analysis is not feasible for exports with this dataset. Exports are available only for two years, making the number of observations too small for a meaningful regression decomposition.
10. Bernard et al. (2009) show that the intensive margin accounts for around 20% to 40% of U.S. trade.

owned firms being smaller, as the international trade literature has well documented that exporters and importers are larger on average than firms that do not engage in international trade.

The recent theoretical and empirical literature has also stressed the importance of extensive margins in international trade.[11] At the firm level, the extensive margin of international trade with a certain partner includes the probability of importing or exporting, and the number of products traded by the firm. The intensive margin can be measured as the average value per product. As shown in the decomposition regression analysis in the previous section, the contribution of intensive margin is larger for immigrant-owned firms than for Canadian-owned firms and that of extensive margin is smaller. However, the decomposition regression analysis is conducted without controlling for the differences in characteristics between immigrant-owned and Canadian-owned firms.

The purpose of this section is to further assess the impact of immigrant business ownership on the probability of importing and exporting and on the extensive and intensive margins of trade at the firm level, after firm and owner characteristics are controlled for. It is important to decompose imports and exports into extensive and intensive margins, because the estimated effects of immigrant business ownership on these margins can have implications for the degree to which immigrant networks lower the fixed or variable costs of international trade.

The following is based on the work of Chaney (2008). With a constant elasticity of substitution 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 follows:

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

Where $\bar{\varphi}_{hr} = \Psi \times \left(\frac{G_r}{G}\right)^{1/\gamma} \times \left(\frac{w_h \tau_{hr}}{\theta_r}\right) \times f_{hr}^{1/(\sigma-1)}$ and 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 level 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 are 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 the Pareto distribution. With the fixed and variable costs of imports, a firm's decision to import can be expressed conceptually by a similar equation with the output of the destination market replaced by Canadian output, and the Canadian labour cost replaced by the labour cost of the import source country.

Immigrants' knowledge about their region of origin can potentially 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

11. See, for instance, Melitz (2003); Chaney (2008); Eaton et al. (2008); Bernard et al. (2009); and Eaton, Kortum and Kramarz (2011).

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 or exporting and the value of imports and exports.[12] As discussed by Peri and Requena-Silvente (2010), the decision to import from or export to a region can be broken down into whether to import or export, which products to import or export, and how much of each product to import and export. Therefore, the value of imports and exports can be further decomposed into the number of products and the average value per product. The probability of importing or exporting and the number of products can be defined as the extensive margins, and the average value per product can be defined as the intensive margin. The empirical question that will be explored in the following sections is the degree to which immigrant business ownership affects the probability of importing or exporting, the number of products, and the average value of imports and exports.

5.1 Empirical models

5.1.1 Probability of importing or exporting

The empirical analysis starts with an estimation of 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 follows:

$$D_{ijct}^{k} = \beta_0^k + \beta_1^k IMM_{it-1} + \beta_2^k Origin_{irt-1} + \delta^k{}' h_{it-1} + \gamma^k{}' x_{it-1} + \lambda^k{}' z_{crt} + \nu_j + \nu_{rt} + \nu_c + \varepsilon_{ijcrt}^k, \quad k = M \text{ or } X \tag{2}$$

where i indexes firms, j industries, c the census divisions where firms are located and r import source or export destination regions. D_{ijct}^{k} is a dummy variable that equals 1 if a 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 1 if firm i had at least one immigrant owner in the previous year. Lagged immigrant business ownership is used to alleviate the potential risks associated with the simultaneity issue (for example, a positive demand shock that is correlated with both immigrant business ownership and imports) and reverse causality (immigrant ownership induced by trade purpose).[13]

As immigrant business ownership's impact on imports and exports is likely attributable to owners' information about their region of origin, this information effect is expected to be stronger for trade with the immigrants' region of origin. This effect has been observed in numerous studies, such as those by Wagner, Head and Ries (2002), and Peri and Requena-Silvente (2010). To identify the effect of immigrant business ownership on imports from (or exports to) an owner's region of origin, an indicator of the region of origin, $Origin_{irt-1}$, is included. It equals 1 if the source or 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. It includes an indicator of the owner's gender (that equals 1 if male and 0 if female), age and a quadratic term of age to capture the curvature of the age effect.[14] x_{it-1} is a vector of controls for firm characteristics. It includes firm

12. If immigrant networks influence multilateral fixed or variable costs, the effect enters the remoteness term θ.
13. Formal tests were also conducted to check endogeneity issues. Endogeneity of immigrant ownership is found for some cases, for which lagged immigrant ownership is found to be a strong instrument.
14. When a firm has multiple owners, only the principal owner is kept, defined as the owner with the most shares or greatest income from the firm.

size (measured by size category), labour productivity and leverage, as these variables are known to be determinants in the decision of firms to import.[15]

As the decision of a firm to import can also be affected by demand in the local market (see, for instance, Mundra [2010]), local market conditions (z_{crt}) are controlled for. The logarithm of the local census division's population and median income are used to account for general market size and consumer purchasing power. To measure the immigrant demand effect, the share of local immigrants and median immigrant income from region r in the population of census division c are also included. Introducing both immigrant business ownership and the 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 the local immigrant population and income in the census division where firms are located). When exports are analyzed, the local population and the immigrant share in the local population are also included to capture the effects of regional production capacity and the immigrant network on a firm's probability of exporting. The following are also included to account for general macroeconomic conditions, exchange rate and tariff changes, and regional trading agreements: province fixed effects (v_c), industry fixed effects (at the North American Industry Classification System three-digit level) (v_j), region of import or export and year fixed effects, as well as the interaction of region of import or export and year fixed effects (v_{rt}). ε_{ijcrt} is an error term.

5.1.2 Number of products and average value per product

For a firm with a positive value of imports or exports, this value can be decomposed into two components—the number of products (denoted as n^k_{ijcrt}) and the average value per product ($\bar{y}^k_{ijcrt}$): $y^k_{ijcrt} = n^k_{ijcrt}\bar{y}^k_{ijcrt}$, where $\bar{y}^k_{ijcrt} = y^k_{ijcrt} / n^k_{ijcrt}, k = M \text{ or } X$. The number of products 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 firm ownership on the number of products and the average value per product can be analyzed separately. The equation that is estimated can be specified as follows:

$$\ln \omega^k_{ijct} = \beta^k_0 + \beta^k_1 IMM_{it-1} + \beta^k_2 Origin_{irt-1} + \delta^k{}' h_{it-1} + \gamma^k{}' x_{it-1} + \lambda^k{}' z_{crt} + v_j + v_{rt} + v_c + \varepsilon^k_{ijcrt}, \quad k = M \text{ or } X \tag{3}$$

where ω_{ijcrt} is the number of products (n_{ijcrt}) or the average value per product ($\bar{y}_{ijcrt}$). The set of explanatory variables is the same as the set in Equation (2).

5.2 The impact of immigrant firm ownership on international trade

5.2.1 The effects of immigrant firm ownership on imports

This subsection summarizes estimated effects of immigrant firm ownership 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 full regression tables are available upon request.

15. Firms are divided into five categories based on the number of employees: 10 or fewer, 11 to 20, 21 to 50, 51 to 100, and above 100. Labour productivity is measured as total revenues divided by ILUs.

The effect of immigrant firm ownership on the probability of importing is assessed by estimating Equation (2) using a linear probability model. Column 1 of Table 13-1 presents the overall effect of immigrant firm ownership in the manufacturing sector on imports regardless of the source region of imports.[16] The results suggest that immigrant-owned and Canadian-owned manufacturing firms have little difference in their probability of importing.

When the indicator of immigrant firm ownership and the indicator that the import region is the same as the immigrant owner's region of origin are both included in the regression, the results suggest that the impact of immigrant ownership on imports is uneven (Column 2 of Table 13-1). The coefficient estimate for the immigrant ownership indicator is negative and significant, suggesting that immigrant-owned firms are less likely than Canadian-owned firms to import from regions that are not the owner's region of origin. The coefficient estimate for the origin indicator is positive and significant. It is larger than the coefficient estimate for the immigrant ownership indicator, indicating that immigrant-owned firms are more likely to import from the owner's region of origin than from non-origin regions. Compared with Canadian-owned firms, the probability of immigrant-owned firms importing from their owner's region of origin is 6.7 percentage points higher, and this difference is statistically significant.[17]

This impact of immigrant business ownership on imports from the regions of origin of immigrant owners can be translated into an alternative productivity equivalence measure. That is, how much more productive must an average Canadian-owned firm be to have the same probability as an average immigrant-owned firm of importing from the immigrant owner's region of origin? The estimated equivalent productivity is 10.9.[18] 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 firm. Since immigrant market effects are controlled for by using local market conditions, this effect of immigrant business ownership is more likely attributable to immigrants' information on the market of their regions of origin. This finding suggests that immigrant business owners can potentially lower information barriers.

16. When the overall effect is estimated, the $Origin_{irt-1}$ is not included in Equation (2).

17. Control variables mentioned in Subsection 5.1 are included in the regressions. Their coefficient estimates are not reported but available upon request.

18. This and subsequent similar equivalence estimates are calculated from $\exp\left(\left(\beta_1^M + \beta_2^M\right) / \gamma_p^M\right)$, where γ_p^M is the coefficient estimate for labour productivity, available upon request. The large magnitude of the equivalent productivity effect may capture part of the effect from intermediate inputs as the productivity measure is based on revenue, not on value added.

Table 13-1
Impact of immigrant ownership on imports — Manufacturing sector

	Probability of importing		Number of products		Average value per product	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Immigrant-owned in *t*-1						
Coefficient	0.001	-0.010 **	0.051 **	-0.062 **	0.182 **	0.070 **
Standard error	0.002	0.002	0.013	0.014	0.023	0.025
Imports from the region of birth						
Coefficient	…	0.077 **	…	0.523 **	…	0.521 **
Standard error	…	0.003	…	0.026	…	0.041
Combined effect						
Coefficient	…	0.067 **	…	0.461 **	…	0.591 **
Standard error	…	0.003	…	0.025	…	0.039
Number of 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

… not applicable

** significantly different from reference category ($p < 0.01$)

Notes: Standard errors are adjusted for clustering at the enterprise level. Industry fixed effects (3-digit level of the North American Industry Classification System), provincial fixed effects and full interactions of import source region and year fixed effects are included. The combined effect is the sum of the estimated effect of immigrant-owned firms and imports from the region of birth. Control variables for firm, owner and local market characteristics are included. This table is based on the sample of simple, privately-held corporations described in Section 2.

Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 13-2
Impact of immigrant ownership on imports — Wholesale trade sector

	Probability of importing		Number of products		Average value per product	
	Column 7	Column 8	Column 9	Column 10	Column 11	Column 12
Immigrant-owned in *t*-1						
Coefficient	-0.008 **	-0.030 **	-0.017	-0.218 **	0.414 **	0.147 **
Standard error	0.002	0.002	0.014	0.015	0.024	0.027
Imports from the region of birth						
Coefficient	…	0.162 **	…	0.666 **	…	0.883 **
Standard error	…	0.003	…	0.021	…	0.032
Combined effect						
Coefficient	…	0.132 **	…	0.448 **	…	1.030 **
Standard error	…	0.003	…	0.020	…	0.030
Number of 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

… not applicable

** significantly different from reference category ($p < 0.01$)

Notes: Standard errors are adjusted for clustering at the enterprise level. Industry fixed effects (3-digit level of the North American Industry Classification System), provincial fixed effects and full interactions of import source region and year fixed effects are included. The combined effect is the sum of the estimated effect of immigrant-owned firms and imports from the region of birth. Control variables for firm, owner and local market characteristics are included. This table is based on the sample of simple, privately-held corporations described in Section 2.

Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

The effects of immigrant business ownership on the number of imported products and the average value per imported product are evaluated by estimating Equation (3) using an ordinary least squares model. Columns 3 and 4 of Table 13-1 present results with the number of products imported from region *r* as the dependent variable for manufacturing importers. The results suggest that, compared with Canadian-owned importers, immigrant-owned importers import 5% more products from all source regions and 59% more from the owner's region of origin, but 6% fewer products from other regions.[19] Columns 5 and 6 present results with the average import value per product in logarithms as the dependent variable. The results suggest that the average value per imported product for immigrant-owned importers, compared with Canadian-owned importers, is 20% higher for all imports, 81% higher for imports from immigrant owners' regions of origin, and only 7% higher for imports from other regions. For the product extensive margin and the intensive margin, the productivity measures of the effects of immigrant business ownership are equivalent to labour productivity that would be 6.7 and 3.4 times higher, respectively.

Compared with Canadian-owned wholesalers, immigrant-owned wholesalers are less likely on average to import, by 0.8 percentage points (Column 7 of Table 13-2). When imports from immigrant owners' regions of origin are differentiated from those from other regions (Column 8 of Table 13-2), immigrant-owned wholesalers are less likely than Canadian-owned wholesalers 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 immigrant owners' regions of origin for immigrant-owned wholesale trade firms is twice as large as that for immigrant-owned manufacturing firms. This impact is equivalent to labour productivity that would be 94.7 times higher for an average Canadian-owned firm.

With regard to product margin, on average, immigrant-owned and Canadian-owned importers in the wholesale trade sector have little difference in the number of products imported (Column 9 of Table 13-2). However, immigrant-owned wholesalers import 56% more products from their owners' regions of origin and 20% fewer products from other regions (Column 10 of Table 13-2).

With regard to the intensive margin, the results indicate that the average value per imported product for immigrant-owned importers in the wholesale trade sector, compared with their Canadian-owned counterparts, is 51% higher for all imports (Column 11 of Table 13-2), 180% higher for imports from immigrant owners' regions of origin and 16% higher for imports from other regions (Column 12 of Table 13-2).

These results suggest that immigrant-owned firms in the wholesale trade sector have larger effects on the firm extensive margin (the probability of importing) and the intensive margin (the average value per imported product) than those in the manufacturing sector.[20] The effects of immigrant business ownership on the number of products and the average value are equivalent to productivity that would be 22.9 and 6.2 times higher, respectively, for an average Canadian-owned firm in the wholesale trade industry.

5.2.2 The effects of immigrant firm ownership 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.

19. These numbers are calculated by taking exponentials of the corresponding coefficients as logarithms are used in the regressions of number of products and average value per product.
20. The same regressions were also run for other sectors. The finding that immigrant business ownership has a positive and larger impact on trade with the owners' regions of origin is also found for other sectors. Meanwhile, the import data are available for the years 2002 to 2012, and the export data only for 2011 and 2012. For consistency between import and export data, import regressions are also run for only 2011 and 2012, and the results are consistent with what is reported in the main text. All these additional results are available from the authors upon request.

Columns 1 and 2 of Table 14-1 report the impact of immigrant business ownership on the decision of manufacturing firms to export. The estimated effect in Column 1 suggests that the probability of exporting of immigrant-owned firms is not significantly different from that of Canadian-owned firms for exports to all regions, on average. However, after exports to immigrant owners' regions of origin are distinguished from exports to other regions, the results in Column 2 show that the probability of immigrant-owned firms exporting to immigrant owners' regions of origin is higher than that of Canadian-owned firms by 2.2 percentage points. The probability of exporting to other regions is 0.4 percentage points lower.

In terms of the number of exported products, the results suggest that the number of products exported to all regions by immigrant-owned exporters is not significantly different from that of their Canadian-owned counterparts on average (Column 3 of Table 14-1). However, immigrant-owned exporters export 9.7% more products to immigrant owners' regions of origin (Column 4 of Table 14-1) (see Footnote 19).

On the intensive margin, the average value per product exported by immigrant-owned exporters is 27% higher for all exports than that by Canadian-owned exporters (Column 5 of Table 14-1). It is 51% higher for exports to immigrant owners' regions of origin and 24% higher for exports to other regions (Column 6 of Table 14-1).

The effects of immigrant business ownership on the probability of exporting, the number of products and the average export value that are equivalent to productivity would be 4.8, 1.8 and 2.6 times higher, respectively, for an average Canadian-owned firm in the manufacturing industry.

Table 14-1
Impact of immigrant ownership on exports — Manufacturing sector

	Probability to export		Number of products		Average value per product	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Immigrant-owned in *t*-1						
Coefficient	0.000	-0.004 *	-0.015	-0.034	0.241 **	0.212 **
Standard error	0.002	0.002	0.025	0.025	0.047	0.049
Exports to the region of birth						
Coefficient	...	0.025 **	...	0.126 **	...	0.200 *
Standard error	...	0.002	...	0.037	...	0.088
Combined effect						
Coefficient	...	0.022 **	...	0.092 *	...	0.412 **
Standard error	...	0.003	...	0.041	...	0.089
Number of observations	585,844	585,844	35,715	35,715	35,715	35,715
R-squared	0.173	0.173	0.193	0.193	0.214	0.215

... not applicable
* significantly different from reference category ($p < 0.05$)
** significantly different from reference category ($p < 0.01$)
Notes: Standard errors are adjusted for clustering at the enterprise level. Industry fixed effects (3-digit level of the North American Industry Classification System), provincial fixed effects and full interactions of import source region and year fixed effects are included. The combined effect is the sum of the estimated effect of immigrant-owned firms and exports to the region of birth. Control variables for firm, owner and local characteristics are included. This table is based on the sample of simple, privately-held corporations described in Section 2.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 14-2
Impact of immigrant ownership on exports — Wholesale trade sector

	Probability to export		Number of products		Average value per product	
	Column 7	Column 8	Column 9	Column 10	Column 11	Column 12
Immigrant-owned in *t*-1						
Coefficient	0.008 **	-0.000	0.055 *	-0.012	0.542 **	0.366 **
Standard error	0.001	0.001	0.024	0.026	0.061	0.068
Exports to the region of birth						
Coefficient	...	0.060 **	...	0.228 **	...	0.607 **
Standard error	...	0.002	...	0.034	...	0.083
Combined effect						
Coefficient	...	0.060 **	...	0.216 **	...	0.972 **
Standard error	...	0.003	...	0.034	...	0.081
Number of observations	679,686	679,686	18,527	18,527	18,527	18,527
R-squared	0.060	0.063	0.062	0.065	0.157	0.160

... not applicable
* significantly different from reference category ($p < 0.05$)
** significantly different from reference category ($p < 0.01$)
Notes: Standard errors are adjusted for clustering at the enterprise level. Industry fixed effects (3-digit level of the North American Industry Classification System), provincial fixed effects and full interactions of import source region and year fixed effects are included. The combined effect is the sum of the estimated effect of immigrant-owned firms and exports to the region of birth. Control variables for firm, owner and local characteristics are included. This table is based on the sample of simple, privately-held corporations described in Section 2.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Immigrant-owned wholesalers are more likely to export by 0.8 percentage points than their Canadian-owned counterparts, regardless of export destination (Column 7 of Table 14-2). They are also more likely to export to immigrant owners' regions of origin than Canadian-owned wholesalers, by 6 percentage points (Column 8). This estimated effect is larger than that for immigrant-owned manufacturing firms.

Compared with Canadian-owned exporters in the wholesale trade sector, immigrant-owned exporters export slightly more products, regardless of destination, on average (around 6%, Column 9 of Table 14-2), but they export 24% more products to their owners' regions of origin (Column 10 of Table 14-2).

On the intensive margin, the average value per product exported by immigrant-owned exporters is, on average, 72% higher for all exports, 164% higher for exports to their owners' regions of origin and 44% higher for exports to other regions, compared with their Canadian-owned counterparts (Columns 11 and 12 of Table 14-2).

The impacts of immigrant business ownership on the probability of exporting, the number of products and the average value of exports that are equivalent to productivity would be 1,808.0, 17.2 and 11.6 times higher, respectively, for an average Canadian-owned firm in the wholesale trade industry. The extraordinarily large estimated equivalent productivity measure seems too large to believe. It could be due to the following: (1) wholesalers are less likely to export than manufacturers (Table 6); (2) the explanatory power of the export regression of wholesalers on the extensive margins is not as strong as that for manufacturers, as the R^2 is smaller, and the estimated productivity effect is also smaller, compared with manufacturers; and (3) the labour productivity dispersion in the wholesale trade sector is much larger than in manufacturing.[21]

These results suggest that immigrant business ownership in the wholesale trade sector has larger estimated effects than in the manufacturing sector on all three export margins: the firm and the product extensive margins (the probability of exporting and the number of exported products), and the intensive margin (the average value per exported product).

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 the manufacturing sector and the wholesale trade sector, the largest equivalent productivity change is 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. A large equivalent productivity difference suggests that knowledge about the region of origin can lower the fixed and variable costs, making it possible for smaller and less productive immigrant-owned firms to import and export. As the effect on the probability of importing and exporting is the largest, this also indicates that the immigrant information effect is particularly important in lowering firms' fixed cost of importing and exporting. These findings align with those of 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. A larger immigrant effect on imports than on exports is consistent with the findings of Head and Ries (1998) and Wagner, Head and Ries (2002). Because the immigrant demand effect has been accounted for in this paper, this finding suggests that the larger effect on imports than exports

21. The standard deviation of labour productivity for wholesalers is more than three times larger than for manufacturers.

may have causes other than the immigrant demand effect. It may also relate to different types of products imported and exported by immigrant- and Canadian-owned firms, which will be examined further in the future.

Finally, the equivalent productivity difference is larger for the wholesale trade sector than for manufacturing, and the equivalent productivity for the probability of exporting and the average value of exports is larger than the two corresponding margins in wholesale trade imports. This may suggest that immigrants play an important role as intermediaries in international trade, particularly in facilitating exports. This result warrants further investigation into immigrants' role in the wholesale trade sector.

Coefficient estimates for firm characteristics, owner characteristics and local market controls are summarized herein, although not reported. 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 higher for younger owners than older owners, but the effect is not linear. This age effect is also more pronounced for manufacturing firm imports and wholesale trade firm exports. Male ownership generally has a positive effect on trade. For instance, firms with male owners are more likely than firms with female owners to import in the manufacturing sector and to export in the wholesale trade sector. Meanwhile, the average value per product is also higher for both importers and exporters with male owners in the wholesale trade sector. Local market size (measured by census division population) and immigrant share generally have a positive effect on imports, implying a market demand effect. Interestingly, immigrant share also has a positive effect on exports in the wholesale trade sector. This may suggest information spillovers within the community.

5.3 Characteristics of immigrant-owned firms associated with trade

This subsection presents an investigation into the characteristics of immigrant-owned firms and how these characteristics affect immigrant-owned firms' international trade behaviour: the probability of importing and exporting, the number of traded products, and the average value per product. The equations estimated are similar to Equations (2) and (3) discussed above, except the indicators of immigrant-owned businesses (IMM_{it-1}) and importing from or exporting to immigrant owners' regions of origin ($Origin_{irt-1}$) are further differentiated by source region. These regions are North America; Northern, Western and Southern Europe; Eastern Europe; Northern Africa and the Middle East; East and Southeast Asia; South Asia; and Central and South America, Africa (except Northern Africa), and Oceania.[22] Controls for immigrant owners' education level upon landing and admission class are also included to examine whether involvement in international trade is related to the characteristics of immigrant owners. Other firm, owner and local market condition controls are also included here.

5.3.1 Characteristics of immigrant-owned importers

Table 15 summarizes results for estimating Equations (2) and (3) using the subsample of immigrant-owned firms in the manufacturing sector.

Compared with firms owned by immigrants from North America (mostly the United States) importing from other regions, immigrant-owned firms are more likely to import from the owners' regions of origin (Column 1).[23] This own-region effect is true across all regions and largest for

22. The nine regions previously defined are regrouped into seven for confidentiality reasons.

23. The estimated effect is computed by summing up $\widehat{\beta}_1$ and $\widehat{\beta}_2$. In unreported results, the coefficient estimates for immigrant owners' regions of origin are generally insignificant, while the coefficient estimates for the indicators of imports from the owners' regions of origin are positive and significant for all regions. This suggests that immigrants are more likely to import from their own regions of origin, and this effect is positive across all regions.

firms owned by immigrants from North America (mostly the United States) and second largest for those from Northern, Western and Southern Europe. Similar to the results in Column 1, the coefficient estimates for imports from immigrant owners' regions of origin are positive and significant across all regions for the product margin and the 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 have the highest likelihood of importing from the owners' regions of origin, while firms owned by immigrants from Eastern Europe have the lowest (Column 1). However, conditional on being importers, firms owned by immigrants from Eastern Europe imported more products from the owners' regions of origin than those owned by North American immigrants (Column 2). The average value per imported product is also higher for imports from the owners' regions of origin by Eastern European immigrants than by North American immigrants (Column 3).

With respect to education level, firm ownership by immigrants with a bachelor's degree or above has larger effects on all three margins of imports, compared with ownership by immigrants with a high school education or less upon landing (the base group). Firm ownership by immigrants who were admitted in the business class and in the provincial nominee class has widespread positive effects on all three margins of imports, compared with ownership by immigrants admitted in the family class (the base group).

The results for immigrant-owned firms in the wholesale trade sector are summarized in Table 16. Like immigrant-owned manufacturers, immigrant-owned wholesalers are more likely to import from the owners' regions of origin and to import more products. The average value per imported product is also higher from the owners' regions of origin. These own-region effects are positive and significant across all regions. The effects of immigrant ownership on the extensive and intensive margins in general are larger for wholesalers than manufacturers. However, the education level and admission class of immigrant owners have an indifferent impact on imports among immigrant-owned wholesalers, unlike among immigrant-owned manufacturers.

Table 15
Impacts of characteristics of immigrant owners on imports in the manufacturing sector

	Probability of importing	Number of products	Average value per product
	Column 1	Column 2	Column 3
Combined effect			
Imports from the region of birth			
North America			
Coefficient	0.159 **	0.359 **	0.162
Standard error	0.020	0.092	0.163
Northern, Western and Southern Europe			
Coefficient	0.108 **	0.333 **	0.416 **
Standard error	0.012	0.077	0.158
Eastern Europe			
Coefficient	0.029 **	0.479 **	1.310 **
Standard error	0.010	0.132	0.267
Northern Africa and the Middle East			
Coefficient	0.038 **	0.738 **	0.948 **
Standard error	0.010	0.129	0.267
East and Southeast Asia			
Coefficient	0.083 **	0.469 **	0.608 **
Standard error	0.011	0.076	0.156
South Asia			
Coefficient	0.051 **	0.497 **	0.606 *
Standard error	0.011	0.114	0.240
Central and South America, Africa and Oceania			
Coefficient	0.033 **	0.442 **	0.466 †
Standard error	0.011	0.138	0.240
Immigrant class (family class as reference)			
Skilled labour			
Coefficient	0.000	0.021	-0.054
Standard error	0.003	0.029	0.054
Business			
Coefficient	0.018 **	0.094 *	0.151 *
Standard error	0.005	0.039	0.071
Provincial nominee			
Coefficient	0.031 †	0.157 †	0.463 *
Standard error	0.017	0.085	0.190
Economic			
Coefficient	0.004	-0.124	0.425 *
Standard error	0.017	0.151	0.211
Refugee			
Coefficient	0.004	0.079 †	-0.141 †
Standard error	0.004	0.041	0.076
Others			
Coefficient	-0.012 *	-0.132 **	-0.035
Standard error	0.005	0.049	0.104
Immigrant education upon arrival (high school or less as reference)			
Some postsecondary education			
Coefficient	0.004	0.018	-0.082
Standard error	0.003	0.027	0.051
Bachelor's degree and above			
Coefficient	0.025 †	0.096 **	0.138 *
Standard error	0.004	0.029	0.055
Number of observations	427,959	41,524	41,524
R-squared	0.204	0.241	0.126

* significantly different from reference category ($p < 0.05$)
** significantly different from reference category ($p < 0.01$)
† significantly different from reference category ($p < 0.10$)

Notes: Standard errors are adjusted for clustering at the enterprise level. Industry fixed effects (3-digit level of the North American Industry Classification System), provincial fixed effects and full interactions of import source region and year fixed effects are included. The combined effect is the sum of the estimated effect of immigrant-owned firms and imports from the region of birth by region. Control variables for firm, owner and local market characteristics are included. This table is based on the sample of simple, privately-held corporations described in Section 2.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 16

Impacts of characteristics of immigrant owners on imports in the wholesale trade sector

	Probability of importing	Number of products	Average value per product
	Column 1	Column 2	Column 3
Combined effect			
Imports from the region of birth			
North America			
Coefficient	0.160 **	0.444 **	0.622 **
Standard error	0.019	0.104	0.181
Northern, Western and Southern Europe			
Coefficient	0.182 **	0.631 **	0.711 **
Standard error	0.014	0.089	0.154
Eastern Europe			
Coefficient	0.060 **	0.798 **	1.667 **
Standard error	0.012	0.128	0.226
Northern Africa and the Middle East			
Coefficient	0.052 **	0.373 **	1.204 **
Standard error	0.011	0.101	0.203
East and Southeast Asia			
Coefficient	0.145 **	0.311 **	0.914 **
Standard error	0.012	0.074	0.144
South Asia			
Coefficient	0.157 **	0.752 **	1.289 **
Standard error	0.013	0.093	0.176
Central and South America, Africa and Oceania			
Coefficient	0.047 **	0.471 **	0.457 **
Standard error	0.013	0.101	0.195
Immigrant class (family class as reference)			
Skilled labour			
Coefficient	0.002	-0.045	-0.002
Standard error	0.004	0.028	0.050
Business			
Coefficient	0.001	-0.012	0.032
Standard error	0.004	0.032	0.060
Provincial nominee			
Coefficient	-0.011	-0.049	-0.109
Standard error	0.011	0.172	0.246
Economic			
Coefficient	0.014	-0.087	0.388 *
Standard error	0.016	0.089	0.185
Refugee			
Coefficient	-0.002	0.055	-0.163 †
Standard error	0.006	0.046	0.087
Others			
Coefficient	-0.022 **	-0.184 **	0.296 **
Standard error	0.006	0.052	0.094
Immigrant education upon arrival (high school or less as reference)			
Some postsecondary education			
Coefficient	0.001	-0.006	0.013
Standard error	0.003	0.025	0.047
Bachelor's degree and above			
Coefficient	0.001	-0.034	0.020
Standard error	0.003	0.026	0.048
Number of observations	675,157	77,189	77,189
R-squared	0.177	0.162	0.142

* significantly different from reference category ($p < 0.05$)

** significantly different from reference category ($p < 0.01$)

† significantly different from reference category ($p < 0.10$)

Notes: Standard errors are adjusted for clustering at the enterprise level. Industry fixed effects (3-digit level of the North American Industry Classification System), provincial fixed effects and full interactions of import source region and year fixed effects are included. The combined effect is the sum of the estimated effect of immigrant-owned firms and imports from the region of birth by region. Control variables for firm, owner and local market characteristics are included. This table is based on the sample of simple, privately-held corporations described in Section 2.

Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

5.3.2 Characteristics of immigrant-owned exporters

Table 17 presents results for the subsample of immigrant-owned manufacturing firms on the export side. As indicated in Columns 1 and 3, immigrant ownership from all regions has a positive and significant effect for exports to the owners' regions of origin on the firm extensive margin (the probability of exporting) and the intensive margin (the average value per product). However, the effect on the number of export products is insignificant across almost all regions (Column 2). Firm ownership by immigrants from North America has the largest effect on the firm extensive margin. However, conditional on firms being immigrant-owned exporters, its effect on the intensive margin is not the largest.

In addition, immigrant-owned firms whose owners were admitted through the skilled labour or business classes are more likely to export than those whose owners were admitted through the family class.[24] Results in Column 2 suggest that immigrant owners from the provincial nominee and other classes export more products than those from the family class. Immigrant-owned firms whose owners have a bachelor's degree or above are more likely than those whose owners have a high school education or less to export and to export more products, although, significantly, only at the 10% level for the latter. However, the effect of a bachelor's degree or above on the intensive margin is not significantly different from that of a high school education or less.

Table 18 summarizes results for immigrant-owned wholesalers. These results indicate that immigrant owners from all regions except Northern, Western and Southern Europe are more likely to export to their own regions of origin. There is also a positive and significant effect on the intensive margin for immigrant owners from Eastern Europe; East and Southeast Asia; South Asia; and Central and South America, Africa (except Northern Africa), and Oceania. 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 through the skilled labour and business classes are more likely to export and to export more products than immigrant owners from the family class. Immigrant owners with a bachelor's degree or above are also more likely to export.

Other coefficient estimates, unreported, are summarized herein. 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 to import more products. The local immigrant share has a positive effect on imports for immigrant-owned firms in both the manufacturing sector and the wholesale trade sector. Interestingly, the local immigrant share also has a positive effect on exports for immigrant-owned firms in the wholesale trade sector.

24. The skilled labour and business classes are grouped together for exports for confidentiality reasons.

Table 17

Impacts of characteristics of immigrant owners on exports in the manufacturing sector

	Probability of exporting	Number of products	Average value per product
	Column 1	Column 2	Column 3
Combined effect			
Imports from the region of birth			
North America			
Coefficient	0.095 **	0.024	1.007 **
Standard error	0.028	0.195	0.330
Northern, Western and Southern Europe			
Coefficient	0.047 **	0.299	0.975 **
Standard error	0.012	0.238	0.325
Eastern Europe			
Coefficient	0.035 **	0.174	1.604 **
Standard error	0.011	0.287	0.443
Northern Africa and the Middle East			
Coefficient	0.039 **	0.395	0.807 *
Standard error	0.012	0.265	0.378
East and Southeast Asia			
Coefficient	0.037 **	0.210	0.772 *
Standard error	0.011	0.225	0.330
South Asia			
Coefficient	0.036 **	0.411 *	1.283 *
Standard error	0.011	0.246	0.573
Central and South America, Africa and Oceania			
Coefficient	0.027 *	0.245	1.050 **
Standard error	0.013	0.237	0.352
Immigrant class (family class as reference)			
Skilled labour and business classes			
Coefficient	0.006 †	0.058	-0.152
Standard error	0.004	0.049	0.109
Provincial nominee			
Coefficient	0.019	0.662 †	-0.110
Standard error	0.020	0.356	0.304
Others			
Coefficient	0.006	0.181 **	-0.172
Standard error	0.004	0.062	0.154
Immigrant education upon arrival (high school or less as reference)			
Some postsecondary education			
Coefficient	-0.001	0.001	-0.202 †
Standard error	0.003	0.047	0.105
Bachelor's degree and above			
Coefficient	0.024 **	0.083 †	0.048
Standard error	0.004	0.050	0.112
Number of observations	81,998	4,363	4,363
R-squared	0.168	0.210	0.229

* significantly different from reference category ($p < 0.05$)

** significantly different from reference category ($p < 0.01$)

† significantly different from reference category ($p < 0.10$)

Notes: Standard errors are adjusted for clustering at the enterprise level. Industry fixed effects (3-digit level of the North American Industry Classification System), provincial fixed effects and full interactions of import source region and year fixed effects are included. The combined effect is the sum of the estimated effect of immigrant-owned firms and exports to the region of birth by region. Control variables for firm, owner and local characteristics are included. The skilled labour and business classes are grouped together for confidentiality reasons. "Others" include the economic class, refugees and the remaining classes. This table is based on the sample of simple, privately-held corporations described in Section 2.

Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 18
Impacts of characteristics of immigrant owners on exports in the wholesale trade sector

	Probability of exporting	Number of products	Average value per product
	Column 1	Column 2	Column 3
Combined effect			
Imports from the region of birth			
North America			
Coefficient	0.072 **	-0.147	0.349
Standard error	0.023	0.174	0.478
Northern, Western and Southern Europe			
Coefficient	0.020	-0.053	0.215
Standard error	0.012	0.153	0.408
Eastern Europe			
Coefficient	0.039 **	0.193	1.331 **
Standard error	0.012	0.182	0.426
Northern Africa and the Middle East			
Coefficient	0.044 **	0.067	0.546
Standard error	0.012	0.136	0.371
East and Southeast Asia			
Coefficient	0.051 **	0.059	0.897 **
Standard error	0.011	0.123	0.337
South Asia			
Coefficient	0.032 **	0.193	1.106 **
Standard error	0.011	0.151	0.407
Central and South America, Africa and Oceania			
Coefficient	0.042 **	0.157	0.728 †
Standard error	0.013	0.163	0.393
Immigrant class (family class as reference)			
Skilled labour and business classes			
Coefficient	0.005 †	0.093 *	-0.192
Standard error	0.003	0.042	0.121
Provincial nominee			
Coefficient	0.009	-0.172	0.039
Standard error	0.009	0.134	0.416
Others			
Coefficient	-0.000	0.038	-0.204
Standard error	0.003	0.064	0.227
Immigrant education upon arrival (high school or less as reference)			
Some postsecondary education			
Coefficient	0.003	0.011	-0.073
Standard error	0.002	0.049	0.125
Bachelor's degree and above			
Coefficient	0.007 **	0.002	-0.106
Standard error	0.002	0.048	0.116
Number of observations	123,627	3,919	3,919
R-squared	0.063	0.103	0.201

* significantly different from reference category ($p < 0.05$)
** significantly different from reference category ($p < 0.01$)
† significantly different from reference category ($p < 0.10$)

Notes: Standard errors are adjusted for clustering at the enterprise level. Industry fixed effects (3-digit level of the North American Industry Classification System), provincial fixed effects and full interactions of import source region and year fixed effects are included. The combined effect is the sum of the estimated effect of immigrant-owned firms and exports to the region of birth by region. Control variables for firm, owner and local characteristics are included. The skilled labour and business classes are grouped together for confidentiality reasons. "Others" include the economic class, refugees and the remaining classes. This table is based on the sample of simple, privately-held corporations described in Section 2.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

6 Conclusion

This paper uses a novel linked database, Canadian Employer–Employee Dynamics Database that connects firm-level business ownership with data on imports and exports to investigate the impact of immigrant business ownership on international trade for small enterprises. In general, summary statistics show that immigrant-owned enterprises have a lower value of imports and exports and fewer products than their Canadian-owned counterparts. Immigrant-owned importers and exporters are also on average smaller and less productive, and they have greater leverage than their Canadian-owned counterparts.

After differences in firms and owners' characteristics and local market conditions are controlled for, the regression analysis suggests the following. The probability that immigrant-owned firms import or export, the number of products they import or export and their average value, for all regions on average, are either insignificantly different or slightly different from those of Canadian-owned firms. However, when immigrant owners' regions of origin are differentiated from other regions, the results show a significant positive effect toward the owners' regions of origin. Compared with Canadian-owned firms, immigrant-owned firms are more likely to import from and export to the owners' regions of origin. They also import and export more products from and to the owners' regions of origin, with a higher average value per product. Interestingly, the estimated effect of immigrant business ownership is larger for wholesale trade firms, considered to be intermediaries in international trade, than for 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 immigrants' regions of origin) and larger for wholesale trade firms. The results also suggest a positive demand effect approximated by the size of the local population, the immigrant share of the local population and the median incomes of the local population and of the local immigrant population.

The finding of a positive bilateral effect of immigrant business ownership after the demand effect is being controlled for suggests that immigrants contribute to lowering the bilateral trade cost, possibly through their knowledge and networks both in Canada and in their regions of origin. As the effects are significant on both extensive and intensive margins, the results suggest that the information effect influences both fixed costs 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. This indicates that immigrant business owners have information that may be particularly important for lowering the fixed costs of importing and exporting. Finally, the larger effect of immigrant-owned enterprises in the wholesale trade sector than in the manufacturing sector highlights the importance of immigrant-owned enterprises as intermediaries in international trade.

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