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Immigrant Entrepreneurs as Job Creators: The Case of Canadian Private Incorporated Companies

by Garnett Picot and Anne-Marie Rollin
Analytical Studies Branch

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Immigrant Entrepreneurs as Job Creators:
The Case of Canadian Private
Incorporated Companies

by

Garnett Picot
Institute for Research on Public Policy and Research and Evaluation Branch;
Immigration, Refugees and Citizenship Canada

Anne-Marie Rollin
Social Analysis and Modelling Division
Analytical Studies Branch
Statistics Canada

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Abstract

This paper focuses on job creation and destruction by private incorporated companies with immigrant and Canadian-born owners, and uses data covering the 2003-to-2013 period. The unadjusted (raw) data indicated that average annual net job growth per firm was higher among immigrant-owned firms than among firms with Canadian-born owners, as was the likelihood of being a high-growth firm. Regression analysis revealed that these differences were largely because immigrant-owned firms were younger on average, and younger firms create jobs at a higher rate. Moreover, immigrant-owned firms accounted for a disproportionate share of entering firms, which play a significant role in job creation. Because of the constant inflow of new immigrants, immigration led to the creation of a large number of new young firms. Through this process, immigrant-owned firms contributed disproportionately to net job creation over the period studied.

Executive summary

Using data from Statistics Canada's Canadian Employer–Employee Dynamics Database (CEEDD), this paper has three objectives: (1) determining how the number of jobs created or destroyed by immigrant-owned private incorporated companies compared with that of firms with Canadian-born owners, (2) determining whether immigrant-owned firms were more likely than firms with Canadian-born owners to be high-growth firms or rapidly shrinking firms, and (3) determining which immigrant characteristics were associated with a higher likelihood of immigrant-owned firms being high-growth firms or rapidly shrinking firms. The data covered the 2003-to-2013 period. Only immigrants who have entered Canada since 1980 could be identified as immigrants in the study; they accounted for roughly three-quarters of all immigrants aged 18 to 69 in Canada in 2011.

This paper addresses gross job creation (jobs created by expanding continuing firms and entering firms), gross job destruction (jobs terminated by contracting continuing firms and exiting firms), and net job change (the difference between gross job creation and gross job destruction).

With regard to gross job creation and gross job destruction, the results revealed that private incorporated immigrant-owned firms were much more likely than firms with Canadian-born owners to be job creators than job destroyers. As a result, in terms of net job change, immigrant-owned firms held the advantage in the unadjusted (raw) data, registering a higher average annual net job creation per firm than firms with Canadian-born owners. For example, firms owned by immigrants who entered Canada since 1980—the population of immigrants available in the dataset used for this study—accounted for 25% of the net jobs created in the private incorporated sector over the 11-year period, while representing 17% of the firms studied.

Entering firms played a larger role in job creation among the immigrant-owned firm population than among firms with Canadian-born owners. The difference in job creation by entering firms and job loss by exiting firms led to one-half of all net job creation among immigrant-owned firms, and one-third of all net job creation among firms with Canadian-born owners. Finally, immigrant-owned firms in the sample accounted for a disproportionate share of entering firms compared with firms with Canadian-born owners.

The characteristics of immigrant-owned firms and firms with Canadian-born owners differed significantly. Notably, immigrant-owned firms were younger, and younger firms have higher job creation rates, which can affect job creation and destruction rates. After the results were adjusted for differences in these and other characteristics, the difference in average annual net job creation between immigrant-owned firms and firms with Canadian-born owners disappeared and, if anything, immigrant-owned firms had lower average annual net job creation rates.

The results were similar with respect to a firm's likelihood of being a high-growth firm (over 20% annual growth in employment). The unadjusted results (raw data) suggested that immigrant-owned firms were significantly more likely (1.3 times as likely) than firms with Canadian-born owners to be high-growth firms. There was little difference in the likelihood of being a rapidly shrinking firm (below -20% annual growth in employment). When the results were adjusted for differences in the characteristics of the firm, the difference in the probability of being a high-growth or rapidly shrinking firm was reduced by 70%.

Immigrants are a very heterogeneous group. An immigrant owner's educational attainment, source region or immigrant class (refugee, economic or family class) may affect the job creation rate of the immigrant-owned firm. However, the adjusted results suggested that the characteristics of the immigrant owners had relatively little effect on the likelihood of an immigrant-owned firm being a high-growth or rapidly shrinking firm.

How can these results be interpreted? Based on the raw data, immigrant-owned firms had a higher level of net job creation per firm, and were more likely to be high-growth firms than those with Canadian-born owners. But most or all of this gap was due to differences in the characteristics of the firms. Most notably, immigrant-owned firms were younger, and younger firms are more dynamic regarding job creation.

Immigrant-owned firms were younger precisely because they were owned by immigrants. A constant inflow of immigrants resulted in a larger share of young firms than would have been the case without immigration, as newly arrived cohorts of immigrants started new private incorporated companies. There was a "years since immigration" effect. Only after immigrant owners had been in Canada for over 30 years did their share of young firms (4 years old or younger) approach that of Canadian-born owners. Therefore, the proportion of young firms was higher among immigrant-owned firms than among firms with Canadian-born owners. This statement is supported in this paper both for firms owned by immigrants who have entered Canada since 1980 and for firms owned by all immigrants in Canada, including those who entered Canada prior to 1980. In 2012, approximately 48% of private incorporated firms owned by all immigrants were young, compared with 29% of those with Canadian-born owners. Thus, while the controls for differences in characteristics eliminated much or all of the job creation advantage immigrant-owned firms held over firms with Canadian-born owners, that was not the end of the story. Immigration increased the job creation dynamism of the private incorporated company sector by generating a large number of entering and young companies, which led to immigrant-owned firms' disproportionate contribution to job creation in the private incorporated company sector.

1   Introduction

This paper focuses on job creation and destruction among private incorporated companies in Canada over the 2003-to-2013 period. Using the Canadian Employer–Employee Dynamics Database (CEEDD), the paper explores whether and why the employment dynamics of immigrant-owned firms differ from those of companies with Canadian-born owners. It addresses both the level of job creation and destruction, and the growth rate of private incorporated companies.

To achieve its goal, this paper merged two different research topics: the economic contribution of immigrant entrepreneurs, and the job creation by firms in the private sector. Immigrant entrepreneurship and its contribution to the host economy has been the topic of considerable recent research (see OECD [2010] and Fairlie and Lofstrom [2013] for reviews). In countries with high immigration rates (Canada, Australia, the United Kingdom and the United States), immigrants are seen as entrepreneurial—their tendency to be business owners surpasses that of the native-born population (Schuetze and Antecol 2007; Fairlie and Lofstrom 2013).

In Canada, Green et al. (2016) found that immigrants had lower business ownership rates during their first few years in Canada than the Canadian-born population. However, after a number of years in Canada, immigrants had a higher propensity to be business owners than the Canadian-born population.

In their review of immigrant entrepreneurship, Fairlie and Lofstrom (2013, p. 38) concluded that "there is little evidence in the literature on how much immigrant-owned businesses contribute to job growth. Although data exists [sic] on employment among immigrant-owned businesses no data are available showing the dynamics of employment among these firms." Recently, American studies looked at immigrant firm formation and employment growth. Presenting what they described as "tentative findings," Kerr and Kerr (2016) concluded that, over the medium term, new immigrant-owned firms were more likely to survive and modestly more likely to experience employment growth than comparable firms founded by the American-born population. Anderson (2016) studied privately held American start-up companies valued at $1 billion or more and noticed that about half of them had an immigrant founder. This provided circumstantial evidence that immigrants contributed disproportionately to the creation of new, fast-growing companies in the United States.

No Canadian research on the employment dynamics of immigrant-owned firms and firms with Canadian-born owners was found.[1] Whether immigrant-owned firms experience faster or slower employment growth is an unanswered question. The results from other countries may or may not apply to Canada. Immigrants to Canada differ in important ways from those entering the United States and Europe. They are typically more highly educated (Ostrovsky, Picot and Leung 2018) and more likely to be economic immigrants. This could influence both start-up rates and employment dynamics.

The literature on business job creation and destruction was another important resource for this study. There is a significant history that addresses the many issues encountered when attempting to assess job creation and destruction at the firm level (see Davis, Haltiwanger and Schuh 1996). A key finding in this literature was that firm size was a crucial variable when explaining job creation and destruction, but whether it was positively or negatively related to job growth depended on the data used (see Audretsch et al. [2004] and Geroski [2005] for a thorough literature review). A more recent result suggested that firm age also mattered, and its omission in earlier job growth studies partly explains the mixed results obtained for firm size. Young firms were key drivers of job creation (Haltiwanger, Jarmin and Miranda 2013).

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1. Canadian research on the relationship between immigration and trade creation was found (Head and Ries 1998).

For Canada, recent research examined whether the growth rate of Canadian employers varied between firms of different sizes and ages across the entire distribution (Dixon and Rollin 2012) and in the tails of the distribution (Dixon and Rollin 2014; Dixon, Petrunia and Rollin 2018; Decker et al. 2015). Younger firms of any size were found to be more likely to post high annual growth rates than older firms. The contribution of high-growth and rapidly shrinking firms to job creation and destruction in Canada was also evaluated. This study builds on the approach used by Dixon and Rollin (2012, 2014) and Dixon, Petrunia and Rollin (2018). However, it differs in that two measures of job change are employed (change in levels and growth rate), and the focus is on the difference between immigrant and Canadian-born owners.

This paper focuses on job creation in Canadian companies with immigrant and Canadian-born owners. There are three possible types of ownership structures: unincorporated businesses, privately owned incorporated companies and publicly owned incorporated companies. This paper focuses only on private incorporated companies. Unincorporated businesses (i.e., the unincorporated self-employed) were excluded from this study because very few (about 3% for immigrant-owned firms) have employees beyond the owner (Green et al. 2016). Publicly traded companies were also excluded because ownership is typically widely dispersed, and the owners are not necessarily involved in the day-to-day operation of the company. This paper focuses on Canadian-controlled incorporated companies in the private sector, which accounted for about 55% of private sector employment between 2003 and 2013. Understanding long-term trends is important. Trends such as those observed over the study period change slowly over time, and are likely applicable to more recent years.

2   Data and methods

2.1 Data source

The data come from the CEEDD, which consists of a number of components, including T2 corporate tax data, T1 individual tax data, T4 records of remuneration issued by employers, the Longitudinal Employment Analysis Program (LEAP) and the Longitudinal Immigration Database—a longitudinal file of all immigrants who have entered Canada since 1980. In 2011, roughly 75% of all immigrants in Canada aged 18 to 69 had entered Canada since 1980 according to the National Household Survey (Green et al. 2016). This dataset includes information on employees, firms, business owners and immigrants. See the study by Green et al. (2016) for a detailed description of the CEEDD.

The key to the research on immigrant entrepreneurship is the ability to determine the immigration status of each business owner. Until the recent creation of CEEDD data, this was not possible in Canada. If a firm had at least one immigrant owner, it was considered to be an immigrant-owned firm in this study. The main results were replicated using an alternative definition, where all owners must be immigrants for the firm to be considered immigrant-owned. The results based on the two different definitions were substantially the same (results available from the authors).

The immigration status of the owners could not be established for about 15% of private incorporated companies (Green et al. 2016). To correct for this underreporting, weights were applied to each record to adjust for non-reporting. These weights were estimated and applied at the level of province, firm age, firm size and industry cells.

The firm's employment in any given year was obtained from the LEAP database. This employment estimate was based on the firm's total payroll. A conversion factor derived from the Survey of Employment, Payrolls and Hours was used to convert the payroll to an employment estimate (Lafrance and Leung 2009). This estimate is referred to as an average labour unit (ALU).

2.2 Methods

The central variable in this research is the change in a firm's employment—either change in employment levels or employment growth rate—between consecutive years from 2002/2003 to 2012/2013. The change in employment is simply the change in employment level between t and $t-1$.

To calculate the growth rate of firm i from year $t-1$ to year t, the average employment of the firm over these two years was used in the denominator:

$$\frac{E_{it} - E_{it-1}}{\left(E_{it} + E_{it-1}\right)/2},$$

where E_{it} and E_{it-1} were the firm's employment levels in year t and $t-1$, respectively.

This growth rate, described in the study by Davis, Haltiwanger and Schuh (1996), was bounded between -2 (exit) and 2 (entry). It was similar to the log growth rate for firms expanding or contracting employment by up to 50%. If the change in employment between consecutive years was greater than 0, the firm was a job creator. If the change in employment was less than 0, the firm was a job destroyer (i.e., shrinking employment). The employment change (either in level or growth rate) between each set of consecutive years for each firm constituted an observation. This was referred to as a firm-year observation. The characteristics of the firm and its owners were included with each firm-year observation.

The sample consisted of all firm-year observations belonging to privately owned Canadian-controlled corporations in the private sector[2] that had employment at some point over the 2002/2003-to-2012/2013 period.

The first objective of this paper was to determine whether immigrant-owned private incorporated companies had lower or higher levels of job creation or destruction than firms with Canadian-born owners. The second objective of this paper was to determine whether immigrant-owned firms were more likely to be high-growth or rapidly shrinking firms than firms with Canadian-born owners.

Different samples were used to address each of these two objectives. To determine levels of job creation and destruction and net job change as part of the first objective, the sample consisted of all private incorporated companies with employment over the 2002/2003-to-2012/2013 period. This included entrants, incumbents (i.e., continuing firms) and exits, and produced a sample of 7.49 million firm-year observations (8.60 million with weights).

An entrant in year t was a firm that existed during that year, but not the previous year. An exit in year t was a firm that had employment in year $t-1$ but not in year t. For an entrant in year t, the gross job gain was the employment observed during that first year t. This may have been a partial year since the firm may have started at any time during the year. Similarly, for an exit, the gross job loss was the employment observed during year $t-1$. This, too, may have been a partial year, since the firm could have ceased operations at any time during the year.

To address employment growth rates as part of the second objective, the sample was restricted to incumbents. Entrants and exits were excluded because an entrant grows from zero employment to some finite value, and an exit falls from some finite value to zero employment.

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2. Firms belonging to North American Industry Classification System (NAICS) industries 61 (educational services), 62 (health care and social assistance) and 91 (public administration) were excluded for the purpose of restricting the sample to the private sector.

Calculating growth rates for such firms is difficult. The method used to calculate growth rates, following that of Davis, Haltiwanger and Schuh (1996), would produce growth rates of +2 for entrants and -2 for exits, if they were included.

This paper examined whether immigrant-owned firms or firms with Canadian-born owners were more likely to be rapidly growing firms, defined as firms with a growth rate greater than 0.2 (20%). All entrants would be seen as fast-growing firms, no matter how small their employment during the first year. Many entrants start with less than one full employee (ALU). Similarly, all exits would be seen as rapidly shrinking firms, no matter how small their employment during the last year.

For incumbent firms, a growth rate greater than 20% likely means a significant increase in employment. Therefore, the focus was on incumbents only when looking at the likelihood of being a rapidly growing or shrinking firm. Firms with an average size strictly smaller than one ALU over t and $t-1$ were also excluded when the second objective was addressed, to avoid the small-size bias in growth rate calculations.[3] These smaller firms were included in the analysis of employment level changes, since a similar kind of bias does not apply. The sample size for the second objective was 4.60 million firm-year observations (5.27 million with weights).

To adjust the change in employment for differences in firm and owner characteristics between immigrant-owned firms and firms with Canadian-born owners, both ordinary least squares (OLS) and logit regressions were used.

OLS regression was used to examine the first objective. The dependent variable was the change in employment levels between years $t-1$ and t. All firm-year observations were included, whether they experienced positive, negative or no change in employment. The independent variables used as controls included firm age measured in years (0, 1, 2, 3, 4 or 5, 6 or 7, 8 or 9, 10 to 14, 15 to 19, 20 or more), firm size measured in ALUs (less than 1, 1 to 4, 5 to 19, 20 to 49, 50 to 99, 100 to 499, 500 or more), two-digit industry of the North American Industry Classification System (NAICS) (18 levels, as shown in Table 1), the province where the firm employed most of its workers, a dummy variable to identify firms with multiple owners, the gender mix of owners (female only, male only, both), and the year of the observation. Also included was a dummy variable that was 1 if the firm was immigrant-owned, and 0 otherwise (Canadian-born owner). This variable's coefficient was the point of interest, as it indicated the difference in the average annual absolute change in employment between immigrant-owned firms and firms with Canadian-born owners.

For the second objective—estimating the difference in likelihood of being a high-growth or rapidly shrinking firm—logistic regression was used to adjust for differences in firm characteristics. Two separate regressions were used. In the first, the dependent variable was a binary value equal to 1 if the firm was a high-growth firm and 0 otherwise. For the second, the dependent variable equalled 1 if the firm was a rapidly shrinking firm, and 0 otherwise. In both regressions, the independent variables were identical to those used in the OLS equation above. Based on the coefficients from the logistic regression, the marginal probabilities were estimated. As before, the focus was on the immigrant status variable, since it indicated the difference in the probability of an immigrant-owned firm or a firm with a Canadian-born owner being a high-growth firm or a rapidly shrinking firm.

As noted earlier, the same firm can contribute multiple observations since an observation is a firm-year. Unfortunately, it was not possible to determine how long a firm was in the sample, and therefore it was not possible to correct for the effect of this lack of independent observations on the standard errors. The standard errors were likely underestimated, since the number of independent observations was, in essence, overestimated. However, with many millions of

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3. For example, if a firm has 0.2 ALU in year $t-1$ and 0.9 ALU in year t, its growth rate of 1.27 is extremely high, even though not many employees are being added.

observations, the sample size was so large that even if it were reduced by a factor of 10 after adjusting for clustered observations, the statistically significant effects would likely remain significant. To test this, the model was run 11 times and estimated on annual samples (e.g., using only the observations for 2002/2003, then for 2003/2004, and so on). When proceeding in this manner, there was no problem with the independence of observations. The annual results of the tests of significance produced essentially the same results as were observed when using the entire sample over all years.

3   Characteristics of the sample

Private incorporated firms tended to be small. Among active firms with employees (incumbents plus entrants), 71% had fewer than five employees (Table 1, last column). Only about 3% had more than 50 employees. Private incorporated firms tended to be clustered in five industries that accounted for about 50% of all private incorporated firms, including (starting from the largest) professional, scientific and technical services; construction; retail trade; accommodation and food services; and other services (except public administration).

There were some important differences between firms owned by immigrants[4] and those owned by the comparison group, mainly Canadian-born[5] owners. Immigrant-owned firms tended to be much younger. Among firms over the 2003-to-2013 period, more than three-quarters of immigrant-owned firms were younger than 10 years old (81%), compared with half of those with Canadian-born owners (53%). Twenty-three percent of firms with Canadian-born owners were over 20 years old, compared with 4% of immigrant-owned firms.

This study was particularly concerned with the share of young firms (4 years old or younger). During the period of study, the share of young firms was between 23 and 27 percentage points higher among immigrant-owned firms than among firms with Canadian-born owners. The difference averaged 25 percentage points (Table 1). The fact that immigrant-owned firms tend to be younger is important, since younger firms tend to grow faster than older firms (Haltiwanger, Jarmin and Miranda [2013], for the United States; Dixon and Rollin [2012 and 2014], for Canada).

Immigrant-owned firms also tended to be smaller than firms with Canadian-born owners. Eighty-one percent of immigrant-owned firms had fewer than five employees, compared with 69% of firms with Canadian-born owners. This result was consistent with other research (Fairlie and Lofstrom 2013; Green et al. 2016). Smaller firms tend to grow faster than larger firms, although—in absolute terms—larger firms create more jobs. Smaller firms are also more likely to shrink rapidly (Dixon and Rollin 2014).

The industrial distribution of immigrant-owned firms and firms with Canadian-born owners was similar, with a few exceptions. Immigrant-owned firms were more likely than firms with Canadian-born owners to be in accommodation and food services, and less likely to be in construction.

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4. Immigrants who have entered Canada since 1980.
5. The comparison group consisted of the Canadian-born population plus immigrants who have entered Canada since 1980. Roughly 94% of the comparison group were born in Canada.

4 The number of jobs created and lost

Gross job creation and destruction far exceeded the net change in employment[6] (see Davis, Haltiwanger and Schuh [1996] for the United States; and Rollin [2012] for Canada). For example, among the private incorporated firms studied over the 2003-to-2013 period, roughly 8.4 million jobs were created by entrants and expanding incumbents, and roughly 6.8 million jobs were lost by exits and contracting incumbents. This resulted in a net job change of 1.6 million jobs[7] or, more precisely, ALUs (Table 2-1 to 2-5). Note that ALU counts may differ from other employment estimates published by Statistics Canada (see "Methods" section).

There were 8.6 million weighted firm-year observations over the 11 years studied. Therefore, the annual average net number of jobs (ALUs) created per firm was 0.18 (1.6 million divided by 8.6 million). Among entering, exiting and incumbent firms with Canadian-born owners, there was a net change of about 1.2 million jobs. There were 7.2 million observations involving firms with Canadian-born owners, so the annual average net number of jobs created per firm was 0.16. Among immigrant-owned firms, roughly 0.4 million net jobs were created. There were 1.4 million observations involving immigrant-owned firms, so the annual average net number of jobs created per firm was 0.28 among immigrant-owned firms.

Therefore, 25% of the net new jobs created by private incorporated companies were attributable to immigrant-owned firms, although they accounted for only 17% of the private incorporated firms studied. Three-quarters of the net jobs created were attributable to firms with Canadian-born[8] owners (since there were many more of them and they tended to be larger). Over the 11-year period, immigrant-owned firms tended to create more net new jobs on average (0.28) on a per-firm basis than firms with Canadian-born owners (0.16).

Entrants played a larger role among immigrant-owned firms than they did among firms with Canadian-born owners. Eighteen percent of all immigrant-owned firm-year observations (including entrants, incumbents and exits) were entrants, compared with 10% among firms with Canadian-born owners (see Table 2-1 for number of entrants and Table 2-5 for total number of firm-year observations). Entrants accounted for 27% of the gross job creation among immigrant-owned firms, compared with 18% among firms with Canadian-born owners.[9] When job creation associated with entrants (job gain) and exits (job loss) was considered, the immigrant firm population also held the advantage. There were twice as many entrants as exits among immigrant-owned firms, compared with 1.3 times as many among firms with Canadian-born owners (Tables 2-1 and 2-4). Therefore, entrants (relative to exits) played a larger role in net job creation among the immigrant firm population. Roughly one-half of the net job creation generated by immigrant-owned firms was the result of the difference in jobs created by entrants and jobs lost by exits, compared with about one-third among companies with Canadian-born owners. Furthermore, based on the sample of immigrants who have entered Canada since 1980, 26% of all firm entrants were owned by immigrants, although immigrants landed since 1980 accounted for only about 16% of the population in the 2016 Census (Statistics Canada n.d.). Therefore, immigrants who have entered Canada since 1980 disproportionately created new private incorporated companies.

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6. If, for any pair of consecutive years between 2003/2003 and 2012/2013, the change in employment in a firm was positive, there was gross job creation. If negative, it was gross job destruction. Net job creation was simply the difference between the gross jobs created and the gross jobs destroyed.
7. This was the net change over the entire 11 years. There were significant net job gains in all years, except during the 2008/2009 recession, in which there was a substantial net loss. Over the 11-year period, on an annual basis, the net employment (ALU) change varied from a high of 256,000 jobs gained in 2006/2007 to a low of 163,000 jobs lost in 2008/2009.
8. Includes the Canadian-born individuals plus immigrants who have entered Canada since 1980.
9. Gross job creation for entrants is in Table 2-1, while total gross job creation is obtained by summing gross job creation for entrants and for incumbents in Tables 2-1 and 2-2.

While accurate, results based on averages tell only part of the story. The majority of firms, whether immigrant-owned or with Canadian-born owners, generate few jobs or lose few jobs. Relatively few firms account for the majority of both gross job creation and gross job destruction. For example, among all firms (including entrants, incumbents and exits), the 10% of firms that were the largest job creators (i.e., with the highest annual employment change) accounted for 62% of gross job creation, with an average of 11.6 jobs created per firm. The top 5% accounted for 49% of gross jobs creation and created an annual average 18.3 jobs per firm (Table 3). The same was true for firms that lost jobs between consecutive years. The top 10% of job destroyers also accounted for 65% of all jobs lost, and the top 5% accounted for 52%. This concentration of job creation and destruction among relatively few firms was observed among both immigrant-owned firms and firms with Canadian-born owners. Of course, much of this pattern related to the size of the firms.

Finally, the gross job creation and destruction numbers quoted above tell a story of tremendous annual volatility in employment levels in firms. Net job creation is much smaller. As noted earlier, over the period studied, gross job creation registered 8.4 million ALUs and gross job loss 6.8 million ALUs, for a net job gain of 1.6 million ALUs. Similar patterns were observed for both immigrant-owned private incorporated companies and their counterparts with Canadian-born owners.

4.1 Adjusting for differences in firm characteristics

To adjust for differences in firm characteristics between immigrant-owned firms and firms with Canadian-born owners, the regression model described in Subsection 2.2 was applied. The dependent variable was the change in employment for each firm-year (i.e., the change in employment between t and $t-1$ in each firm). All firm-year observations were in the sample, including those generated by entrants, exits and incumbent firms.

First, a model was run with only an immigrant status (immigrant or Canadian-born owner) dummy. The coefficient on this variable was 0.119 (statistically significant), which was the difference between immigrant firms and firms with Canadian-born owners in the average annual net employment generated per firm when no control variables were applied (i.e., the difference observed in the raw data, Tables 2-1 to 2-5). Then the control variables were added, which included firm age, firm size, industry, firm main province of employment, year of the observation, number of owners, gender mix of owners, and the main variable of interest—the immigrant status of owners. In this case, the coefficient on the immigrant status variable was -0.098 and was significant (Table 4).

The difference in the coefficient between the two regressions indicated the extent to which the control variables accounted for or "explained" the difference in the job creation behaviour of immigrant-owned firms and firms with Canadian-born owners. This difference was 0.217. A straightforward Oaxaca decomposition was used to decompose the difference in the net job creation per firm between immigrant-owned firms and firms with Canadian-born owners. As noted, 0.217 of this difference was "explained" by the control variables (more than 100% of the total). The decomposition demonstrated that 0.396 of the difference was because immigrant-owned firms were younger than their Canadian-born counterparts. Younger firms tend to be more dynamic and create and lose jobs at a higher rate than older firms. This represented more than all of the "explained" difference (0.271). The effect of firm age was partially offset by the effect of other independent variables.[10]

10. The contribution of each variable to explaining the difference between immigrant-owned firms and firms with Canadian-born owners in the average annual net jobs created per firm (0.217 in total) was as follows: 0.396 for firm age, -0.150 for firm size, -0.029 for industry, -0.005 for province, 0.006 for year, 0.000 for gender and -0.001 for number of owners. Firm age explained far more of the difference than any other variable.

To summarize, with regard to gross job change, immigrant-owned firms were more likely than firms with Canadian-born owners to be job creators than job destroyers (including incumbents, entrants and exits, Tables 2-1 to 2-5). As a result, in terms of net job change based on the unadjusted (raw) data, immigrant-owned firms held the advantage. On average, immigrant-owned firms accounted for 25% of the net jobs created over the 11-year period, while representing 17% of all private incorporated firms in the sample. This tendency to have higher net employment creation per firm was primarily because they were younger firms. When this difference was accounted for, the difference in average annual net job creation between immigrant-owned firms and firms with Canadian-born owners disappeared and, if anything, immigrant-owned firms had an annual average net job creation rate lower than that of firms with Canadian-born owners.

Why does that happen? In any given year, young firms (4 years old or younger) were much more likely to increase employment than to shed employment. Young firms accounted for 40.5% of gross job creation, but only 17% of gross job losses (Table 5) in the period studied. Even if entrants were excluded, since by definition they cannot shed employment, the tendency among young firms was very much toward gross job creation. Young incumbent firms accounted for 24% of gross job creation and 17% of gross job destruction. The opposite was true for older firms that had been in existence for over 20 years. Job losses among those firms outstripped job gains. Older firms accounted for 26% of all gross job gains, but 39% of gross job losses. In terms of net job gains, younger firms as a group accounted for the majority of the gains, and older firms as a group registered net job losses. While some older firms registered job gains, more registered job losses.

Immigration leads to the creation of new, young and dynamic private incorporated firms. This occurs because the companies owned by recent immigrants tend to be young (4 years old or younger) since immigrants have been in Canada for a shorter period of time than Canadian-born owners of the same age. In short, there is a "years since immigration" effect. This effect can be seen clearly in Chart 1. In 2012, 90% of firms owned by immigrants who had lived in Canada for five years were young firms. Even among firms owned by immigrants who had lived in Canada for 20 years, 43% were young. Only among immigrant owners who had lived in Canada for over 30 years did the proportion of young firms in 2012 approach that of Canadian-born owners, at roughly 29%.

Chart 1
Proportion of immigrant-owned firms aged 4 or younger in 2012, by number of years since immigration

percent

Number of years since immigration
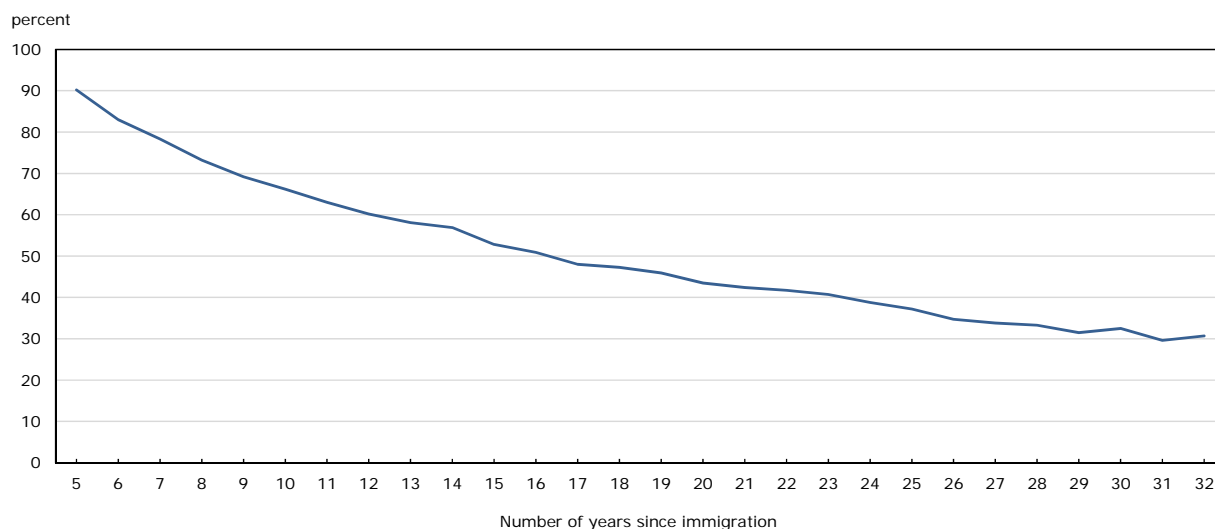
Note: Canadian-controlled private incorporated companies in the private sector only.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

But how much greater is the tendency among all immigrants in Canada to own young firms? Based on the sample of immigrants who have entered Canada since 1980, this study found that, over the entire 2003-to-2013 period, 58% of the private incorporated companies owned by immigrants were young firms (4 years old or younger), compared with about 32% among Canadian-born owners—a difference of 26 percentage points (Table 1). The share of young firms declined over the study period. From 2003 to 2012, this share fell for both immigrant-owned firms (from 60% to 54%) and firms with Canadian-born owners (from 35% to 29%). This finding was consistent with earlier research (MacDonald 2016; Decker et al. 2014; Criscuolo, Gal and Menon 2014). However, the difference between immigrant-owned firms and firms with Canadian-born owners remained at 25 percentage points. For the entire immigrant population, including those who have entered Canada prior to 1980, this may have been an overestimate of both the share of young immigrant-owned firms and the difference with firms with Canadian-born owners, since longer-term immigrants tend to own older firms. When all immigrant cohorts who have entered Canada since 1955 were included, it was estimated that 47% to 49% of all immigrant-owned firms in 2012 were young, well above the 29% observed among firms with Canadian-born[11] owners—a difference of roughly 18 to 20 percentage points (Appendix).[12]

5   The likelihood of being a high-growth firm

This section focuses on the employment growth rate of incumbent firms, and examines whether there is a difference between immigrant-owned continuing firms and continuing firms with Canadian-born owners in terms of likelihood of being a high-growth or rapidly shrinking firm. The most common definition of a high-growth firm comes from Eurostat and the Organisation for Economic Co-operation and Development (Eurostat and OECD 2007; Audretsch 2012). It defines high-growth firms as firms with 20% average annualized growth over three consecutive years.[13] Because this paper uses data on year-to-year changes, for any two consecutive years, high growth is defined as an annual growth rate of 20% or more. Rapidly shrinking firms are defined in this study as having an annual growth rate of -20% or less. Growth rates are estimated using the formula described in Susbection 2.2.

Entrants and exits were excluded since, in a comparison between immigrant-owned firms and firms with Canadian-born owners, restricting the sample to incumbents was more informative when it came to growth rate patterns, for reasons discussed in Subsection 2.2.

5.1 Growth rate distributions

The distribution of the growth rates showed that there were fewer immigrant-owned businesses than businesses with Canadian-born owners at the peak of the distribution (Chart 2). Therefore, there were more immigrant-owned firms present in the tails of the distribution, notably above 0.2 on the positive side. The difference was more pronounced on the job creation side of the distribution, and barely noticeable on the job loss side.

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11. The comparison group (Canadian-born individuals plus immigrants who have entered prior to 1980) also changes when immigrants who entered between 1955 and 1980 are added to the "immigrant" calculation presented in the Appendix. Those immigrants are also removed from the comparison group. This has little effect on the share of Canadian-born firms that are young, since it falls between 28.8% and 29.6%, compared with 29.0% for the comparison group that included Canadian-born individuals plus immigrants who have entered since 1980.
12. Few immigrant firm owners in 2012 entered Canada prior to 1955. Indeed, immigrants who arrived in 1954 or earlier were 58 years old or older in 2012; they were therefore out of the core-working-age population.
13. In its definition of high-growth firms, the OECD recommends considering only firms with at least 10 employees in the initial year. The sample includes all firms with more than 1 ALU. All regressions presented in this study were also executed using the subsample of firms with at least 10 employees. The results obtained were similar to the ones presented and can be obtained upon request.

Chart 2
Distribution of annual employment growth rates, by firm ownership status

frequency (percent)

Growth rate

----- Canadian-born-owned   —— Immigrant-owned
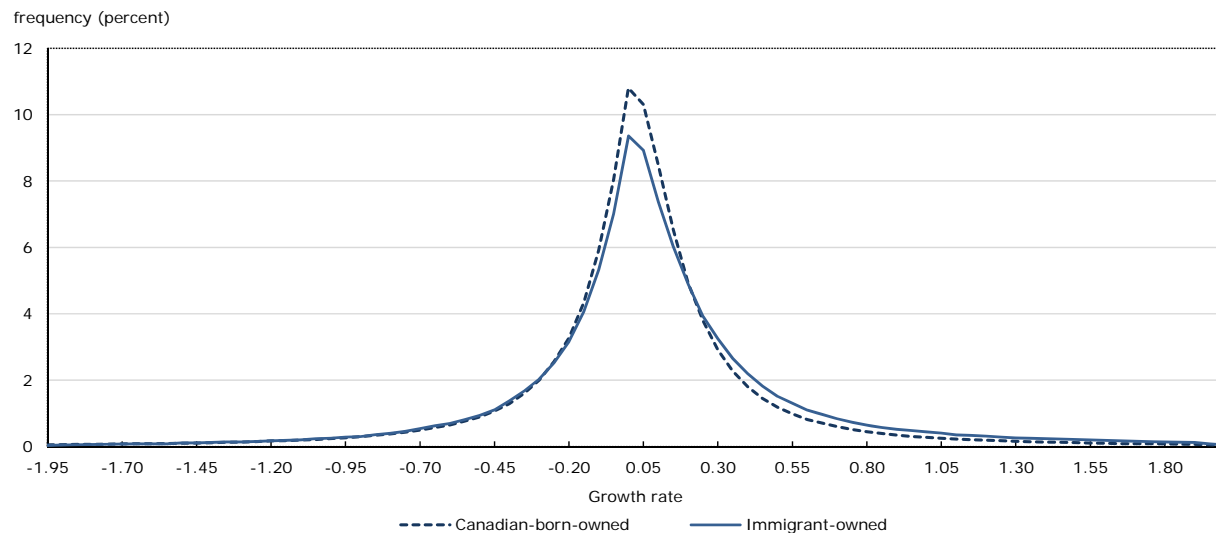
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 6 presents cumulative frequencies by growth rate. This table indicates the share of firms that are above or below any given growth rate. Among job creators (firms with positive employment growth), 27.3% of immigrant-owned firms were considered high-growth firms (i.e., growth rates above 0.2 or 20%) compared with 21.3% of firms with Canadian-born owners— a difference of 5.9 percentage points. Put another way, immigrant-owned firms were about 28%[14] more likely to be high-growth firms, an important difference. But the share of firms considered rapidly shrinking (growth rates below -0.2) was also marginally higher among immigrant-owned firms—19.8% versus 19.3%—a difference of 0.5 percentage points, or about 3% more likely to be rapidly shrinking. Immigrant-owned firms had a greater advantage over firms with Canadian-born owners on job creation (28% more likely) compared with job destruction (3% more likely). Table 6 shows that the differences on the positive growth side are both larger and present over a wider range of growth rates than on the negative growth side.

5.2 Adjusting for differences in firm characteristics

Some of these differences may be related to firm characteristics other than ownership, as noted earlier.

To adjust for these differences, logistic regression was used (see Subsection 2.2 for descriptions of these regressions). Two regression models were run: the first to estimate the likelihood of being a high-growth firm (sample of job creators), the second to estimate the likelihood of being a rapidly shrinking firm (sample of job destroyers). The independent (control) variables in both regressions included firm age, firm size, industry, province, number of owners, gender mix of owners and— most importantly—an immigrant status variable. The marginal probabilities of being a high-growth or rapidly shrinking firm were estimated based on the coefficients from the logistic regression.

The advantage that immigrant-owned firms held over firms with Canadian-born owners regarding the probability of being a high-growth firm decreased from 5.9 to 1.8 percentage points after adjusting for differences in firm characteristics (Table 7). The difference in the likelihood of being a rapidly shrinking firm was reduced from 0.5 to 0.4 percentage points. Immigrant-owned firms held an advantage in both, but it was considerably reduced, as expected.

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14. Obtained by calculating $([27.3 - 21.3] / 21.3) * 100$.

To summarize, the unadjusted results (raw data) suggested that immigrant-owned firms were substantially more likely to be high-growth firms than firms with Canadian-born owners, and only marginally more likely to be rapidly shrinking. When the results were adjusted for differences in firm characteristics, the difference in the probability of being a high-growth or rapidly shrinking firm was reduced by 70%. Immigrant-owned firms were 1.8 percentage points, or 8%, more likely to be high-growth firms, and 0.4 percentage points, or 2%, more likely to be rapidly shrinking firms. These results for Canada were consistent with the results for the United States obtained by Kerr and Kerr (2016).

5.3 The effect of immigrant characteristics on being a high-growth firm

There is considerable heterogeneity among different types of immigrants regarding their tendency to be entrepreneurs and the types of businesses they own (Green et al. 2016; Fairlie and Lofstrom 2013). This study examined whether there was variation among incumbent firms regarding their tendency to be high-growth or rapidly shrinking firms, depending on the characteristics of the immigrant owners. These characteristics were defined in terms of immigrant class (economic, family, refugee, other and mixed [if there were multiple owners]), source region, educational attainment at arrival, and knowledge of an official language at arrival. Logistic regression was used. The independent variables included firm characteristics (firm age, firm size, industry and province), and the immigrant characteristics mentioned above.[15]

Highest level of educational attainment among owners

Educational attainment of immigrant owners at the time of landing made little or no difference in the likelihood of an immigrant-owned firm being a high-growth or rapidly shrinking firm. The coefficients on the educational attainment variables in the logistic regressions were statistically or economically insignificant, which implies similar probabilities of being a high-growth or rapidly shrinking firm (Table 8).

Immigrant class

Similarly, the owner's immigrant class appeared to make little difference regarding the probability of a firm being a high-growth or rapidly shrinking firm, with one exception. After the controls for firm and worker characteristics, firms owned by refugees had a marginally higher probability of being high-growth firms. The likelihood was roughly 1.0 percentage point higher among firms owned by refugees compared with the family and economic classes.

Source region

Firms owned by immigrants from China, India, North Africa and the Middle East, and Latin America had the highest probability of being high-growth firms. But the differences were not great (about 1.0-percentage-point difference with other source regions). There was also some small difference in the likelihood of being a rapidly shrinking firm based on the source region of the owner. Firms owned by immigrants from Western and Eastern Europe were less likely to shrink rapidly than firms owned by immigrants from Africa, North Africa and the Middle East, and Latin America (1.5-percentage-point difference).

Overall, the characteristics of immigrant owners (source region, educational attainment and immigrant class) had relatively little effect on the likelihood of a firm being a high-growth or rapidly shrinking firm.

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15. Firms with multiple owners represented 54% of immigrant-owned firms. However, only 5% of immigrant-owned firms had owners from different immigrant classes (value labelled "mixed") and 5% had owners from different source regions (value labelled "mixed" as well).

6   Conclusion

This paper used microdata from the Canadian Employer–Employee Dynamics Database to examine whether immigrant-owned private incorporated companies disproportionately contributed to job creation in Canada. Job creation was measured both by the number of jobs created and lost by firms, and by the employment growth rate.

The gross job creation and destruction analysis found that firms owned by immigrants who have entered Canada since 1980[16]—the population of immigrants used in this study—were more likely than firms with Canadian-born owners to be job creators than job destroyers. This gave immigrant-owned firms an advantage in net job creation. As a result, the unadjusted (raw) data indicated that immigrant-owned private incorporated companies registered a higher average annual net job creation per firm over the decade than their counterparts with Canadian-born owners. Firms owned by immigrants accounted for a disproportionate share of net job creation; they accounted for 25% of net jobs created by private incorporated firms over the 11-year period, while representing 17% of the firms studied. The analysis also found that entering firms played a larger role in job creation among the immigrant-owned firm population than among the population of firms with Canadian-born owners. Also, the immigrant-owned firms in the sample accounted for a disproportionate share of entering firms when compared with firms with Canadian-born owners.

Immigrant-owned firms displayed significantly different characteristics than firms with Canadian-born owners. Most importantly, they tended to be younger, and younger firms create jobs at a higher rate than older firms. After adjusting for differences in firm age, firm size and other characteristics, the difference between immigrant-owned firms and firms with Canadian-born owners in the net job creation rate disappeared and, if anything, immigrant-owned firms had a lower annual net job creation rate.

The analysis also reaffirmed that, among immigrant-owned firms and firms with Canadian-born owners, both job creation and job loss were heavily concentrated among very few firms. The majority of private incorporated companies create or lose few jobs.

A similar trend emerged when focusing on a firm's likelihood of being a high-growth firm (i.e., having over a 20% annual growth rate) or a rapidly shrinking firm (i.e., having a growth rate less than -20%). With regard to incumbent (i.e., continuing) firms, the unadjusted results indicated that immigrant-owned firms were 1.3 times more likely to be high-growth firms than firms with Canadian-born owners. There was little difference in the likelihood of being a rapidly shrinking firm. However, when the results were adjusted for differences in firm characteristics, the advantage held by immigrant-owned firms was reduced by 70%.

The characteristics of the immigrant owners (source region, educational attainment and immigrant class) had relatively little effect on the likelihood of a firm being a high-growth or rapidly shrinking firm.

How can these results be interpreted? Differences in firm age dictated much of the difference in job creation between immigrant-owned firms and firms with Canadian-born owners. Immigrant-owned firms were younger precisely because they were owned by immigrants. A constant inflow of immigrants resulted in a larger share of young firms than would have been the case without immigration, as newly arrived cohorts of immigrants started new private incorporated companies. There was a "years since immigration" effect—immigrants who had been in Canada for less than 20 years were much more likely to own young firms than the Canadian-born. Only after immigrant owners had been in Canada for over 30 years did their share of young firms (4 years old or

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16. Among the 18-to-69 age group, immigrants who have entered Canada since 1980 represented about three-quarters of all immigrants in 2011 (Green et al. 2016).

younger) approach that of Canadian-born owners. Therefore, the share of young firms was higher among immigrant-owned firms than among firms with Canadian-born owners. This statement was demonstrated to be true both for firms owned by immigrants who have entered Canada since 1980—the population used in this study—and for firms owned by all immigrants in Canada, including those who entered Canada prior to 1980. In 2012, approximately 48% of private incorporated firms owned by all immigrants were young firms, compared with 29% of those owned by the Canadian-born population. While the controls for differences in characteristics eliminated much or all of the job creation advantage immigrant-owned firms held over firms with Canadian-born owners, that was not the end of the story. Immigration increased the job creation dynamism of the private incorporated company sector by generating a large number of entering and young companies, which led to immigration's disproportionate contribution to job creation in the private incorporated company sector over the period studied. Understanding long-term trends is important. Trends such as those observed over the study period change slowly over time, and are likely applicable to more recent years.

7 Tables

Table 1

Characteristics of the sample, by firm type and firm ownership status, 2003 to 2013

	Incumbents		Entrants		Exits		Active firms (incumbents and entrants)		
	Canadian-born-owned	Immigrant-owned	Canadian-born-owned	Immigrant-owned	Canadian-born-owned	Immigrant-owned	Canadian-born-owned	Immigrant-owned	All firms
	percent								
Firm age (years)									
0	…	…	79.6	88.9	…	…	8.7	17.3	10.1
1 to 4	25.9	49.3	5.5	4.9	42.1	64.1	23.7	40.6	26.5
5 to 9	22.5	27.6	6.6	4.0	23.3	23.2	20.7	23.0	21.1
10 to 14	15.8	12.5	3.7	1.4	13.3	7.9	14.5	10.3	13.8
15 to 19	10.7	5.6	1.9	0.5	7.5	2.8	9.8	4.6	8.9
20 or older	25.1	5.0	2.8	0.3	13.8	1.9	22.6	4.1	19.6
Firm size (average labour units)									
Less than 1	22.5	32.9	60.3	68.6	66.2	72.3	26.6	39.9	28.8
1 to 4	43.6	44.5	33.6	27.5	28.2	24.3	42.5	41.2	42.3
5 to 19	23.6	17.8	5.3	3.5	4.8	3.2	21.6	15.0	20.5
20 to 49	6.9	3.6	0.7	0.3	0.6	0.2	6.2	2.9	5.7
50 to 99	2.2	0.9	0.1	0.0	0.1	0.0	2.0	0.7	1.8
100 to 499	1.1	0.3	0.0	0.0	0.0	0.0	1.0	0.3	0.9
500 or more	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Industry (NAICS code)									
Agriculture, forestry, fishing and hunting (11)	5.5	1.5	3.8	0.8	4.6	0.9	5.4	1.4	4.7
Mining, quarrying, and oil and gas extraction (21)	1.2	0.2	1.4	0.2	1.5	0.2	1.2	0.2	1.1
Utilities (22)	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
Construction (23)	15.3	8.2	13.6	7.9	13.5	8.1	15.1	8.2	14.0
Manufacturing (31 to 33)	6.7	5.6	2.9	2.3	4.2	3.4	6.3	4.9	6.1
Wholesale trade (41)	6.5	7.1	3.2	3.9	4.8	6.5	6.1	6.5	6.2
Retail trade (44 and 45)	11.6	14.5	6.4	10.0	8.6	12.8	11.0	13.6	11.5
Transportation and warehousing (48 and 49)	5.3	8.7	4.5	10.1	5.5	7.6	5.2	8.9	5.8
Information and cultural industries (51)	1.4	1.1	1.6	1.1	1.9	1.3	1.4	1.1	1.4
Finance and insurance (52)	4.0	1.8	3.6	1.3	5.0	2.0	3.9	1.7	3.6
Real estate and rental and leasing (53)	4.8	2.9	5.3	2.8	6.2	3.6	4.8	2.9	4.5
Professional, scientific and technical services (54)	14.1	16.4	16.5	15.8	17.6	19.2	14.4	16.2	14.7
Management of companies and enterprises (55)	2.0	0.7	2.4	0.6	3.5	0.9	2.1	0.6	1.8
Administrative and support, waste management and remediation services (56)	5.0	4.3	4.1	3.2	4.6	3.7	4.9	4.1	4.8
Arts, entertainment and recreation (71)	1.6	0.7	1.4	0.5	1.7	0.7	1.6	0.6	1.4
Accommodation and food services (72)	5.8	14.4	4.2	9.8	5.0	11.8	5.6	13.5	6.9
Other services (except public administration) (81)	6.6	5.9	4.6	4.2	5.2	4.5	6.4	5.6	6.3
Unclassified	2.5	6.1	20.4	25.8	6.6	12.7	4.4	9.9	5.3
	number								
Number of firm-year observations (weighted)	5,889,900	1,052,900	719,800	255,100	550,300	129,000	6,609,700	1,308,000	7,917,600

… not applicable

Notes: Immigrant-owned firms are defined as having at least one immigrant owner who has entered Canada since 1980. Canadian-born-owned firms are owned by Canadian-born individuals and immigrants who entered Canada prior to 1980. Incumbents have employment in both previous and current years. Entrants have employment in the current year only, while exits have employment in the previous year only. The age of the firm captures the first year in which the firm had employees. Not all entrants are aged 0. Entrants with a non-0 age are re-entrants, that is, firms that resumed having employees after a period without employment. Percentages may not add up to 100% because of rounding. NAICS: North American Industry Classification System.

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

Table 2-1

Absolute number of jobs created, by firm ownership status, pooled data from 2003 to 2013 — Gross job creation for entrants

	Number of firm-year observations (weighted)	Number of ALUs created	Average job creation per firm-year	Share of entry gross job creation
	number	millions	ALUs	percent
Ownership status				
Canadian-born-owned	719,800	1.3	1.74	79.8
Immigrant-owned	255,100	0.3	1.24	20.2
All firms	974,800	1.6	1.61	100.0

Note: ALU: average labour unit.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 2-2

Absolute number of jobs created, by firm ownership status, pooled data from 2003 to 2013 — Gross job creation for incumbents

	Number of firm-year observations (weighted)	Number of ALUs created	Average job creation per firm-year	Share of incumbent gross job creation
	number	millions	ALUs	percent
Ownership status				
Canadian-born-owned	2,962,600	6.0	2.02	88.3
Immigrant-owned	564,100	0.8	1.41	11.7
All firms	3,526,700	6.8	1.92	100.0

Note: ALU: average labour unit.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 2-3

Absolute number of jobs destroyed, by firm ownership status, pooled data from 2003 to 2013 — Gross job destruction for incumbents

	Number of firm-year observations (weighted)	Number of ALUs destroyed	Average job destruction per firm-year	Share of incumbent gross job destruction
	number	millions	ALUs	percent
Ownership status				
Canadian-born-owned	2,907,800	5.2	1.79	90.3
Immigrant-owned	487,700	0.6	1.15	9.7
All firms	3,395,500	5.8	1.70	100.0

Note: ALU: average labour unit.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 2-4

Absolute number of jobs destroyed, by firm ownership status, pooled data from 2003 to 2013 — Gross job destruction for exits

	Number of firm-year observations (weighted)	Number of ALUs destroyed	Average job destruction per firm-year	Share of exit gross job destruction
	number	millions	ALUs	percent
Ownership status				
Canadian-born-owned	550,300	0.9	1.58	85.4
Immigrant-owned	129,000	0.1	1.15	14.6
All firms	679,300	1.0	1.49	100.0

Note: ALU: average labour unit.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 2-5

Absolute number of net jobs created, by firm ownership status, pooled data from 2003 to 2013 — Net job growth

	Number of firm-year observations (weighted)	Number of ALUs created	Average net job growth per firm-year	Share of net job growth
	number	millions	ALUs	percent
Ownership status				
Canadian-born-owned	7,159,900	1.2	0.16	74.3
Immigrant-owned	1,437,000	0.4	0.28	25.7
All firms	8,596,900	1.6	0.18	100.0

Note: ALU: average labour unit.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 3

Share of job creation and destruction and average job creation and destruction for top creators and destroyers, by firm ownership status, pooled data from 2003 to 2013

	Gross job creation		Gross job destruction	
	Share of total job creation	Average job creation per firm-year	Share of total job destruction	Average job destruction per firm-year
	percent	ALUs	percent	ALUs
Entire distribution				
Canadian-born-owned	100.0	2.0	100.0	1.8
Immigrant-owned	100.0	1.4	100.0	1.1
All firms	100.0	1.9	100.0	1.7
Top 20% of job creators / job destroyers				
Canadian-born-owned	77.2	7.6	79.0	6.9
Immigrant-owned	72.6	4.9	74.9	4.3
All firms	76.7	7.1	78.6	6.5
Top 10% of job creators / job destroyers				
Canadian-born-owned	63.0	12.4	65.5	11.5
Immigrant-owned	57.3	7.8	60.1	6.9
All firms	62.4	11.6	65.1	10.8
Top 5% of job creators / job destroyers				
Canadian-born-owned	50.0	19.7	52.8	18.6
Immigrant-owned	43.8	11.9	47.0	10.8
All firms	49.4	18.3	52.4	17.4

Note: ALU: average labour unit.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 4
Linear regression results, net job growth as the dependent variable

	Model without controls	Model with controls
	coefficient	
Independent variable		
Ownership status (reference: Canadian-born-owned)		
Immigrant-owned	0.119 ***	-0.098 ***
Number of owners (reference: one)		
Two or more	…	0.116 ***
Gender mix of owners (reference: male only)		
Female only	…	-0.076 ***
Male and female	…	-0.112 ***
Missing	…	0.035
Firm age (years) (reference: 20 or older)		
0	…	2.635 ***
1	…	1.919 ***
2	…	0.850 ***
3	…	0.741 ***
4 or 5	…	0.691 ***
6 or 7	…	0.623 ***
8 or 9	…	0.545 ***
10 to 14	…	0.470 ***
15 to 19	…	0.346 ***
Firm size (ALUs) (reference: 100 to 499)		
Less than 1	…	-3.677 ***
1 to 4	…	-3.294 ***
5 to 19	…	-2.860 ***
20 to 49	…	-2.298 ***
50 to 99	…	-1.650 ***
500 or more	…	-5.790
Intercept	0.163 ***	2.678 ***
	number	
Number of firm-year observations (weighted)	8,596,900	8,596,900

... not applicable

*** significantly different from reference category (p < 0.001)

Notes: These regressions include all firm-year observations (entrants, exits and incumbents). The model with controls also includes controls for the number of owners, the gender of the owners, the firm's industry, the firm's main province of employment and the year. For the model with controls, the reference category is Canadian-born-owned, single owner, male-only owners, firm age 20 years or older, firm size 100 to 499 average labour units (ALUs) or more, retail trade industry (North American Industry Classification System codes 44 and 45), main province Ontario and year 2013.

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

Table 5
Share of gross job creation, gross job destruction and net growth, by firm age and firm ownership status, pooled data from 2003 to 2013

	Share of gross job creation	Share of gross job destruction	Share of net job growth
	percent		
Canadian-born-owned, firm age (years)			
0	14.6	…	90.5
1 to 4	22.5	15.3	59.9
5 to 9	14.9	17.7	0.2
10 to 14	11.3	14.5	-5.5
15 to 19	8.4	11.2	-6.1
20 or older	28.3	41.3	-39.0
All ages	100.0	100.0	100.0
Immigrant-owned, firm age (years)			
0	25.8	…	70.8
1 to 4	36.8	32.9	43.6
5 to 9	16.5	27.3	-2.3
10 to 14	8.7	15.4	-3.0
15 to 19	4.4	8.5	-2.8
20 or older	7.7	15.8	-6.4
All ages	100.0	100.0	100.0
All firms, firm age (years)			
0	16.1	…	85.5
1 to 4	24.4	17.2	55.7
5 to 9	15.1	18.7	-0.4
10 to 14	10.9	14.6	-4.9
15 to 19	7.9	11.0	-5.2
20 or older	25.6	38.6	-30.6
All ages	100.0	100.0	100.0

… not applicable

Notes: The numbers for gross job creation include firm-year observations with a strictly positive change in employment. The numbers for gross job destruction include firm-year observations with a strictly negative change in employment. The numbers for net job growth consider all firm-year observations, including those with unchanged employment. Percentages may not add up to 100% because of rounding.
Source: Statistics Canada, Canadian Employer–Employee Dynamics Database.

Table 6
Cumulative frequency below and above selected growth rates, for incumbent (continuing) firms

Growth rate	Cumulative frequency below growth rate			Cumulative frequency above growth rate		
	Canadian-born-owned	Immigrant-owned	Difference	Canadian-born-owned	Immigrant-owned	Difference
			percent			
-0.25	16.0	16.6	0.6	84.0	83.4	-0.6
-0.20[1]	**19.3**	**19.8**	**0.5**	**80.7**	**80.2**	**-0.5**
-0.15	23.6	23.8	0.2	76.4	76.2	-0.2
-0.10	29.6	29.2	-0.4	70.4	70.8	0.4
-0.05	37.6	36.2	-1.5	62.4	63.8	1.5
0.00	48.4	45.5	-2.9	51.6	54.5	2.9
0.05	58.7	54.4	-4.3	41.3	45.6	4.3
0.10	67.2	61.8	-5.4	32.8	38.2	5.4
0.15	73.7	67.9	-5.9	26.3	32.1	5.9
0.20[2]	**78.7**	**72.7**	**-5.9**	**21.3**	**27.3**	**5.9**
0.25	82.4	76.7	-5.8	17.6	23.3	5.8
0.75	95.7	93.1	-2.7	4.3	6.9	2.7
1.00	97.5	95.7	-1.8	2.5	4.3	1.8
1.25	98.5	97.4	-1.1	1.5	2.6	1.1

1. Cumulative frequency below -0.20 (rapidly shrinking firms).

2. Cumulative frequency above 0.20 (high-growth firms).

Note: Incumbent (continuing) firms with an average size of 1 average labour unit or more in years t-1 and t (5.27 million weighted firm-year observations from 2003 to 2013).

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

Table 7

Estimated probability of being a high-growth or rapidly shrinking firm based on logistic regression, for incumbent (continuing) firms, by firm characteristic

	Probability of being a high-growth firm	Probability of being a rapidly shrinking firm
	coefficient	
Firm characteristic		
Ownership status		
Canadian-born-owned (reference)	21.9	19.3
Immigrant-owned	23.7 ***	19.7 ***
Firm age (years)		
1 to 4	36.5 ***	17.6 ***
5 to 9	21.2 ***	20.2 ***
10 to 14	18.0 ***	20.2 ***
15 to 19	16.1 ***	20.0 ***
20 or older (reference)	13.3	19.7
Firm size (ALUs)		
1 to 4	22.9 ***	23.1 ***
5 to 19	21.6 **	15.8 ***
20 to 49	19.2	11.7 ***
50 to 99	18.2	10.0
100 to 499	18.4	9.5
500 or more (reference)	19.0	9.3
	number	
Number of firm-year observations (weighted)	5,273,100	5,273,100

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

*** significantly different from reference category (p < 0.001)

Notes: Incumbent (continuing) firms with an average size of 1 average labour unit (ALU) or more in years t-1 and t only. High growth is defined as having an employment growth rate of 0.2 or more. Rapidly shrinking is defined as having an employment growth rate of -0.2 or less. The probabilities presented are average marginal probabilities over the sample, based on logistic regression. The probabilities were multiplied by 100. The logistic regression also included controls for the number of owners, the gender of the owners, the firm's industry, the firm's main province of employment and the year.

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

Table 8

Estimated probability of immigrant-owned firms being high-growth or rapidly shrinking incumbent (continuing) firms based on logistic regression, by owner characteristic

	Probability of being high-growth firms	Probability of being rapidly shrinking firms
	percent	
Owner characteristic		
Immigration class of the owners		
Economic (reference)	27.0	19.9
Family	27.3 **	19.6 *
Refugees	28.2 ***	19.7
Others	27.0	19.8
Mixed	27.6 **	19.4 *
Number of owners		
One (reference)	26.3	20.1
Two or more	28.1 ***	19.4 ***
Gender mix of owners		
Male only (reference)	28.2	19.6
Female only	28.0	20.5 ***
Mixed	25.7 ***	19.8
Missing	34.2 *	19.8
Level of education at arrival (maximum value for all owners)		
High school or less (reference)	27.5	19.6
Some postsecondary education	26.9 ***	19.8
Bachelor's degree	27.3	19.9
Master's degree or doctorate	27.7	19.9
Region of origin		
English-speaking (reference)	26.1	19.7
Western Europe	27.7 ***	18.9 **
Eastern Europe	26.8 **	18.9 ***
North Africa and the Middle East	28.1 ***	20.4 ***
Africa (except North Africa and the Middle East)	26.2	20.4
India (including other countries in the region)	27.9 ***	19.8
China (including other countries in the region)	28.0 ***	19.8
Latin America	27.9 ***	20.4 **
Southeast Asia	27.0 ***	19.8
Unknown	25.4 *	19.7
Mixed	27.3 ***	20.2
Knowledge of an official language at arrival (maximum value for all owners)		
No (reference)	27.0	19.4
Yes	27.4 **	19.9 ***
	number	
Number of firm-year observations (weighted)	706,300	706,300

* significantly different from reference category (p < 0.05)

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

*** significantly different from reference category (p < 0.001)

Notes: The values for region of origin are the same ones used in previous research on immigration. See D. Green, H. Liu, Y. Ostrovsky, and G. Picot, 2016, *Immigration, Business Ownership and Employment in Canada*. Immigrant-owned incumbent (continuing) firms with an average size of 1 average labour unit or more in years *t*-1 and *t* only. Immigrant-owned firms are defined as having at least one immigrant owner who has entered Canada since 1980. High growth is defined as having an employment growth rate of 0.2 or more. Rapidly shrinking is defined as having an employment growth rate of -0.2 or less. The probabilities presented are average marginal probabilities over the sample, based on logistic regression. The probabilities were multiplied by 100. In addition to the "immigrant characteristics" variables listed in the table above, the independent variables in the regression included firm age, firm size, firm industry, the province in which the most employees were located, whether there were multiple owners or not, and the year.

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

Appendix   Estimating the proportion of immigrant-owned private incorporated companies aged 4 or younger in 2012

Because of data limitations, the analysis in the main body of this report was based on the population of immigrants who have entered Canada since 1980. As demonstrated earlier, the probability of immigrant-owned private incorporated companies being young firms (i.e., 4 years of age or younger) declines rapidly with the number of years the owner has been in Canada (Chart 1). By restricting the population to immigrants who have entered Canada since 1980, the proportion of young firms in the entire immigrant population was overestimated (i.e., if immigrants entering Canada after 1980 were included). The belief that the share of young private incorporated companies was greater among immigrant-owned firms than among firms with Canadian-born owners was essential to the conclusion that immigrant-owned firms contributed disproportionately to net job creation. Therefore, it was necessary to determine whether this held true for the entire population of immigrant-owned firms, not just those owned by immigrants who have entered Canada since 1980. This was determined by calculating the share of young firms in 2012, when the estimate was based on all immigrants who have entered Canada since 1955. Very few immigrants who entered Canada prior to 1955 owned firms in 2012.[17]

To achieve this, five-year immigrant entry cohorts were defined from the 1955-to-1959 cohort to the 2005-to-2009 cohort, and the total number of immigrants entering Canada in each five-year cohort was determined (IRCC n.d.). The age distribution upon entry to Canada of each of these cohorts was then determined, and the cohort was "aged" to determine each cohort's age distribution in 2012. Based on historical data and the relative probability of immigrants from different age groups (i.e., 25 to 34, 35 to 44, 45 to 54, 55 to 64) owning a firm, the likelihood of immigrants aged 25 to 64 owning a firm in 2012 was estimated for each of the cohorts from the 1955-to-1959 cohort to the 1975-to-1979 cohort. This determined the total number of immigrant-owned firms in 2012 from each entering cohort. Again based on historical data, the share of these young firms was estimated by applying two different scenarios. These steps determined the total number of private incorporated companies and the number of young firms owned in 2012 by immigrants from all entering cohorts since 1955. The details follow.

This study used the age distribution of entering immigrants, which was based on official statistics produced annually by Immigration, Refugees and Citizenship Canada (previously Citizenship and Immigration Canada, see Table A.1). For the cohorts in the 2000s, the 2005 age distribution (IRCC n.d.) was applied. For the cohorts in the 1990s, the 1994 age distribution—the oldest age distribution that could be located—was used (CIC 2003). The 1994 age distribution of entering immigrants was also applied to all the cohorts from the 1955-to-1959 cohort to the 1985-to-1989 cohort.

Table A.1
Age distribution of entering immigrants, 1994 and 2005

	0 to 4 years	5 to 14 years	15 to 24 years	25 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 years or older
				percent				
1994	5.2	15.5	17.8	27.7	14.0	10.8	4.2	4.6
2005	7.0	15.0	15.4	31.5	18.4	7.9	3.1	1.7

Sources: Immigration, Refugees and Citizenship Canada, n.d., *Facts and Figures 2015: Immigration Overview - Permanent Residents,* and Citizenship and Immigration Canada, 2003, *Facts and Figures 2002: Immigration Overview.*

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17. All immigrants who arrived prior to 1955 were out of the core-working-age population by 2012 since they were 58 years old or older in 2012. For example, immigrants who arrived at age 0 in 1954 were 58 years old in 2012, while those who arrived at age 10 in 1954 were 68 years old in 2012.

Each cohort was then "aged" to determine the age distribution of that cohort in 2012 and the number of immigrants from each cohort who were aged 25 to 64 in 2012.

To determine the number of private incorporated companies in 2012 that were owned by immigrants from each cohort, the following approach was used.

The objective is to estimate S—the share of immigrant-owned private incorporated companies that were 4 years old or younger in 2012—for two different populations: all immigrants who have entered Canada since 1980, and all immigrants who have entered Canada since 1955.

For each entry cohort i:

$$N_i = (R_i \cdot P_i)$$

$$Y_i = (N_i \cdot K_i)$$

$$S = \left(\frac{\sum_{i=1}^{n} Y_i}{\sum_{i=1}^{n} N_i} \right) Y_i = (N_i \cdot K_i) \times 100, \text{ where } n = \text{the number of cohorts}$$

where

N_i: the number of firms owned in 2012 by immigrants aged 25 to 64 from cohort i

R_i: the number of immigrants from entry cohort i aged 25 to 64 in 2012

P_i: the proportion of the immigrant population aged 25 to 64 that owned a firm in 2012 (projected values for cohorts from the 1955-to-1959 cohort to the 1975-to-1979 cohort, see below)

Y_i: the number of firms in entry cohort i that are 4 years old or younger in 2012

K_i: the proportion of all firms from entry cohort i that are 4 years old or younger in 2012 (projected values for cohorts from the 1955-to-1959 cohort to the 1975-to-1979 cohort, see below).

Projecting P_i and K_i for the entering cohorts from the 1955-to-1959 cohort to the 1975-to-1979 cohort

Rather than arbitrarily projecting P_i (the proportion of the immigrant population aged 25 to 64 from cohort i that owned a firm in 2012), available information on the characteristics of immigrant owners of private incorporated companies was used to inform the projection.

A paper by Green et al. (2016) documented the prevalence of ownership by immigrants of private incorporated companies in 2010. They found that age was a major determinant: 45- to 54-year-olds were twice as likely as 25- to 34-year-olds to own a company. For example, in 2012, immigrants from the 1960s cohorts are going to be older than those from the 1990s cohorts. A method of accounting for this age difference was developed in the present projection. Green et al. (2016) also concluded that gender was a factor, but since the distribution by gender of entering immigrants changed little from the 1960s to the 2000s, this variable would have little effect on the results in this paper.

The projection was adjusted to account for the fact that the age distribution in 2012 of immigrants from the earlier cohorts would be very different from that of the later cohorts. The relative (to immigrants aged 15 to 24) probabilities of immigrants owning a firm were as follows: ages 15 to 24, 1.0; ages 35 to 44, 1.9 times as likely; ages 45 to 54, 2.3 times as likely; ages 55 to 64, 1.6 times as likely (Green et al. 2016).

For any particular cohort i, the relative probability of all immigrants aged 25 to 64 owning a firm in 2012 was the weighted average of the relative probabilities by age group, where the weights were the share of the population in each age group in 2012. That is,

$$RP_i = \sum_{k=1}^{4} (P_k \cdot rp_k),$$

where

RP_i: relative probability of an immigrant from cohort i owning a firm in 2012

rp_k : relative probability of an immigrant in age group k owning a firm

P_k: proportion of immigrants aged 25 to 64 in 2012 who are in age group k.

The weights (the age distributions in 2012) are shown for all cohorts in Table A.2 below.

Table A.2
Estimating the relative probability of owning a firm in 2012, by immigrant cohort

Entry cohort	Age distribution of 25- to 64-year-olds in 2012				Relative[1] probability of a 25- to 64-year-old owning a firm in 2012	Proportion of 25- to 64-year-olds owning a firm in 2012
	25 to 34	35 to 44	45 to 54	55 to 64		
	percent				ratio	proportion
2005 to 2009	36.1	32.7	19.4	11.9	1.62	0.026
2000 to 2004	25.4	39.6	19.4	15.4	1.70	0.037
1995 to 1999	22.7	31.5	28.6	16.9	1.75	0.033
1990 to 1994	20.7	23.8	37.1	18.2	1.31	0.028
1985 to 1989	17.6	22.7	31.3	28.2	1.77	0.034
1980 to 1984	7.8	23.5	26.8	41.0	1.80	0.040
1975 to 1979	0.0	24.6	31.7	43.3	1.89 ‡	0.042 ‡
1970 to 1974	0.0	13.5	40.3	46.2	1.92 ‡	0.043 ‡
1965 to 1969	0.0	0.0	43.7	56.2	1.90 ‡	0.043 ‡
1960 to 1964	0.0	0.0	25.1	74.9	1.77 ‡	0.039 ‡
1955 to 1959	0.0	0.0	0.0	100.0	1.60 ‡	0.036 ‡

‡ projection

1. Relative to a 25- to 34-year-old.

Sources: Statistics Canada, calculations by the authors based on data from the Canadian Employer–Employee Dynamics Database and the data from Immigration, Refugees and Citizenship Canada, and from Citizenship and Immigration Canada presented in Table A.1.

The projected variable P_i—the proportion of 25- to 64-year-olds who owned a firm in 2012—was calculated such that it was proportional to the projected values of the relative probability of owning a firm in 2012 (i.e., RP_i) (se last column of Table A.2).

The second variable to be projected was K_i, the proportion of all firms that were 4 years of age or younger. Two alternative projections were produced since there was little guidance. The first projection (projection A) assumed that the tendency of K_i was to continue to decline with years

since immigration. Therefore, the values declined from 0.250 to 0.120 between the 1975-to-1979 entering cohort and the 1955-to-1959 entering cohort (Table A.3). The second projection (projection B) assumed that K_i stabilized in value 28 to 33 years after immigration, as demonstrated in Chart 1, and therefore K_i remained at 0.313 for all cohorts prior to the 1980s. The outcome variable S—the share of immigrant-owned firms that were young in 2012—was minimally affected by these two different assumptions, varying by only 1 percentage point.

The outcome

Once the two key ratios used in this estimation procedure were projected, the calculations to determine the primary outcome variable—the proportion of immigrant-owned firms that were young (4 years old or younger) in 2012—are shown below in Table A.

Based on immigrants who have entered Canada since 1980, 55% of immigrant-owned firms were 4 years old or younger in 2012. Based on the population of immigrants who have entered Canada since 1955, this proportion was 47% or 49%, depending on which projection of K_i is used.

Approximately 29% of private incorporated companies owned by the Canadian-born population in 2012 were 4 years old or younger. Therefore, private incorporated companies owned by all immigrants were more likely than firms with Canadian-born owners to be young in 2012.

Table A.3
Estimating the proportion of immigrant-owned firms aged 4 or younger in 2012

Cohort i	Number of entering immigrants	Number of entering immigrants aged 25 to 64 in 2012 (R_i)	Age range in 2012	Proportion of R_i owning a firm[1] in 2012 (P_i)		Number of firms owned in 2012 ($N_i = P_i \cdot R_i$)		Proportion of all firms aged 4 or younger in 2012 (K_i)			Number of firms aged 4 or younger ($Y_i = N_i \cdot K_i$)		
				probability	projection	probability	projection	probability	projection A[2]	projection B[3]	probability	projection A[2]	projection B[3]
	thousands		years	proportion		thousands		proportion			thousands		
2005 to 2009	1,249.1	904.9	25 to 64	0.026	…	23.6	…	0.864	…	…	20.4	…	…
2000 to 2004	1,164.1	812.5	25 to 64	0.037	…	30.4	…	0.659	…	…	20.0	…	…
1995 to 1999	1,018.9	797.7	25 to 64	0.033	…	26.5	…	0.533	…	…	14.1	…	…
1990 to 1994	1,184.8	1,016.5	25 to 64	0.028	…	28.3	…	0.440	…	…	12.5	…	…
1985 to 1989	688.7	506.9	25 to 64	0.034	…	17.4	…	0.376	…	…	6.5	…	…
1980 to 1984	570.2	380.9	30 to 64	0.040	…	15.4	…	0.313	…	…	4.8	…	…
1975 to 1979	650.4	344.1	35 to 64	…	0.042	…	14.4	…	0.250	0.313	…	3.6	4.5
1970 to 1974	799.3	301.3	40 to 64	…	0.043	…	12.9	…	0.220	0.313	…	2.8	4.0
1965 to 1969	912.2	271.8	45 to 64	…	0.043	…	11.6	…	0.180	0.313	…	2.1	3.6
1960 to 1964	456.2	95.3	50 to 64	…	0.039	…	3.7	…	0.150	0.313	…	0.5	1.2
1955 to 1959	788.5	104.1	55 to 64	…	0.036	…	3.7	…	0.120	0.313	…	0.4	1.2

… not applicable

1. Canadian-controlled private incorporated company.

2. Projection A: K_i continues to decline with years since immigration.

3. Projection B: K_i stabilizes in value from 28 to 33 years after immigration.

Sources: Statistics Canada, calculations by the authors based on data from the Canadian Employer–Employee Dynamics Database and the data from Immigration, Refugees and Citizenship Canada, and from Citizenship and Immigration Canada presented in Table A.1.

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