



COMPARING DIFFERENT MEASURES OF HIGH-GROWTH ENTERPRISES: A CANADIAN CASE STUDY

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ABSTRACT

Despite the high interest associated with high-growth enterprises (HEGs) and their relationship with employment, there still exists a large heterogeneity in terms of methodologies designed to define and measure them. In light of different attempts in the economic literature, this paper will compare, using Canadian data, three approaches measuring high-growth enterprises based on employment: one developed jointly by the Organisation for Economic Development and Cooperation (OECD) and Eurostat, another one introduced by the U.S. Bureau of Labor Statistics (BLS), and one more based on a top decile approach measured in terms of a compound annual growth rate of employment. This paper will subsequently test the relationship between the definitions of these high-growth enterprises and the sales compound annual growth rate in order to assess in a different way the impact that high-growth enterprises have on economic performance and to see how the different measures relate to one another.

By contrasting different approaches to defining high-growth enterprises, this study offers a comparative context allowing for the coverage of all size classes including micro-enterprises, while, at the same time, assessing the dynamic impact of growth across enterprise size and sector. Such an approach may be of particular interest to policy-makers who want to know which type of enterprise is experiencing growth during various economic cycles and within a national context.

1. INTRODUCTION

1.1 WHY THE INTEREST IN HIGH-GROWTH ENTERPRISES?

Enterprise growth has long been of interest to academics and policy-makers alike. Both have, at different times in the past 40 years, stressed the importance of small growth enterprises as being responsible for a disproportionate share of net jobs. Decades ago, Schumpeter (1942) introduced the notion of “creative destruction” and its subsequent growth of enterprises leading to significant changes in industries. Penrose (1959) further expanded the discussion in the 1950s by examining what makes some enterprises grow and not others. Although different dimensions of enterprise growth have been examined (e.g. profits, sales, and management) in the literature, employment growth seems to have captured, to a higher degree, the imagination of academics and policy-makers alike. One of the main reasons is that policy-makers, in particular, have a direct interest in actively seeking solutions to both joblessness and faltering economic growth.

Recessions, and their consequences on employment, have helped to draw a new generation of work focusing on the impact of firm growth on job creation. The seminal work by Birch (1979), for instance, was the first to present evidence regarding the impact of a small number of enterprises on employment growth. While the study notes that the average firm has a limited impact on the economy, it highlights the fact that a small number of enterprises may experience high growth and, as a result, drive a disproportionately large amount of net jobs. Other empirical studies have also investigated the job contribution of HGEs with similar results. Storey (1994), for example, found that 4 percent of enterprises create 50 percent of the jobs. Research by Stanley et al. (1996) and Bottazzi and Secchi (2006) confirmed similar findings. In another recent paper, Daunfeldt et al. (2015) have demonstrated that the fastest 6 percent of growing enterprises in the Swedish economy contributed to 42 percent of the jobs in Sweden during 2005–2008.

Similarly, think tanks, such as the OECD (2010) and NESTA (2010),¹ also helped fuel the interest within academic and policy circles. In a 2010 report, the OECD, borrowing from a statement from Birch (1979), affirms that high-growth firms should be a focus of policy-makers as they create a “disproportionate” number of net jobs. NESTA (2010), a British think tank, has noted in one of its reports on the subject that 6 percent of all enterprises generated about 49 percent of all new jobs created by existing enterprises in the UK during 2002–2008. In the same vein, the European Commission listed support for high-growth SMEs as a political objective in its Europe 2020 Strategy report (European Commission, 2010).

1. See Bravo-Biosca, 2010.

One interesting feature about many of these studies is that growth rate distributions are heavy-tailed in terms of log differences. As raised in Coad et al. (2014), these growth rate distributions have been shown to resemble a Laplace distribution with most enterprises not growing at all, and only a few realizing high growth. In other words, results have shown that job creation appears very much concentrated in a few enterprises. For this reason, the focus of researchers and policy-makers has therefore been directed toward the right-tail of the enterprise growth rate distribution, i.e. enterprises showing high-growth rates at a specific point in time.

While the above studies have stressed the positive employment outcomes linked to high-growth enterprises, others have come to question the validity of these results. Haltiwanger et al. (2010), for example, have argued that empirical results emphasizing the critical role of high-growth enterprises are often due to measurement error or misinterpretation caused by analysis conducted from inadequate data. Nightingale and Coad (2014) also explored these statistical and conceptual problems in detail and commented that they have historically led to a considerable positive bias in interpretations about the economic impact of entrepreneurial start-ups on the economy.

1.2 THE CHALLENGE OF MEASUREMENT

While disagreements exist on the validity and levels of performance of these small high-growth enterprises, there is also no general agreement on the definition of high-growth enterprises either. This appears to be mainly due to the fact that enterprise growth is multi-dimensional and research has found it difficult to conceptualize and measure this complexity. This lack of consensus can have consequences which limit the ability of policy-makers to identify enterprises that are high-growth and enterprises that have the largest impact in terms of employment. However, it has been possible to discern some level of convergence over the years in terms of the measurement approaches which have been used.

Measurement of high-growth enterprises can in fact be grouped along two general approaches. The first approach aims at targeting a specific threshold level of employment growth above which enterprises can be defined as high-growth (Ahmad, 2006; Hoffman and Junge, 2006; Halabisky et al., 2006; Deschryvere, 2008). A second approach offers to measure high-growth enterprises in terms of absolute employment gains (Birch, 1987; Schreyer, 2000). More recently, the Organisation for Economic Development and Cooperation, along with Eurostat, have promoted a more common approach based on a threshold of 20 percent growth per annum over a three-year period to

encourage international comparison (Eurostat-OECD [2007]).² The U.S. Bureau of Labor Statistics (BLS) more recently offered an extended version of this approach with similar aims.

In order to further examine the relevance of these methodologies, this study will describe and compare these measures with a top decile approach based on the compound annual growth rate of employment (CAGR). These different measures will then be tested and analyzed. While each of the three measures has its advantages, they can also produce either similar or different results depending on the dimensions examined. These three approaches will be reviewed and analyzed in section 3.

This paper will be organized as follows:

- Section 2 contains a description of the data sources and the method used to measure the employment growth rate.
- Section 3 presents in contrast two measurement approaches based on a specific threshold level of growth developed respectively by the Organisation for Economic Development and Cooperation-Eurostat and the U.S. Bureau of Labor Statistics, with a measure of high-growth enterprises based on the top decile. The latter approach has a dual purpose. While it attempts to expand population coverage and to mitigate statistical biases, it also proposes to assess the dynamic impact of growth across enterprise size and sector.
- A relationship test between these high-growth enterprise definitions and the sales compound annual growth rate completes this first part. In presenting results based on econometric analysis, we aim to assess in a different way the impact that high-growth enterprises have on economic performance and see how the different measures compare.

2. DATA SOURCES AND METHODOLOGY

As stated at the outset, each of the three approaches examined uses employment as its measure of growth for defining high-growth enterprises. There are several reasons for its use. Employment growth is of high interest to policy-makers because it identifies areas of rapid growth. Another advantage of choosing employment as a measure of growth is that it is readily available and can be more easily compared across jurisdictions.

2. The OECD, as part of its Entrepreneurship Indicators Programme (EIP), and Eurostat, together with experts from national statistics offices have worked together to produce a manual that serves to identify and provide practical advice on the measurement of business demography indicators (See: Eurostat-OECD Manual on Business Demography Statistics, 2007).

In this paper, the employment growth rate for all enterprises is calculated based on the compound annual growth rate of employment over a three-year period (2009–2012), which should reduce the issue of short-run transitory growth. Enterprises, where the growth is the result of a merger or an acquisition or the result of a restructuring of enterprises during this period, have been excluded. The compound annual growth rate of employment is expressed by the following formula:

$$\text{CAGR} = \left[\left(\frac{X_{t_n}}{X_{t_0}} \right)^{\frac{1}{(t_n - t_0)}} - 1 \right]$$

where $(t_n - t_0)$ represents the number of years between two periods (in our particular case we have $(t_n - t_0 = 3)$ and (x) the number of employees). Because the CAGR is a geometric average rather than an arithmetic average, it has the advantage of allowing for rises and drops during the period of observation.³

The data and analysis in this study are based on the Entrepreneurship Indicators Database (EID) developed by Statistics Canada, which uses several existing administrative sources including the Statistics Canada Business Register (BR) and administrative data from Canada Revenue Agency including incorporated (T2), unincorporated (T1) tax declaration and payroll deduction accounts (PD7). The Entrepreneurship Indicators Database contains a complete up-to-date and unduplicated list of all enterprises in Canada. The objective of the Entrepreneurship Indicators Database is to provide comprehensive business demography statistics and performance indicators for enterprises in Canada.

This study covers the period from 2009 to 2012. The entire database for this period represents 4,175,162 observations (for each enterprise covering four years of observations). The data have been cleaned for missing values in total sales and total employment. Only enterprises with sales of at least \$30,000, observed over four consecutive years, with one or more employees and with no more than 250 employees have been retained due to confidentiality issues. In addition, all enterprises for which the employment growth is the result of a merger or acquisition or restructuring have been excluded.⁴ Finally, all calculations of the annual growth rates based on the four-year period of observation represent a final count of 615,340 active⁵ small and medium employer enterprises (SMEs) from all industrial sectors (except the public administration sector [NAICS 91]) in the 2012 reference year (Table 1).

Table 1 shows the distribution of the number of SMEs by industry and employment size class in 2012. Of the total count of 615,340 active small and medium employer enterprises (SMEs) distributed

3. For example, if the period of observation is five years and the enterprise is observed for only three years, the average is calculated based on the five-year period.

4. To create the dichotomous variable used to select HGEs, which have been the result of mergers and acquisitions, we use the available flag in the Business Register to identify those enterprises. To do so, we apply this filter based on the last three years to suppress the HGEs, which correspond to this filter. This flag, within the Business Register, remains the best available information used to identify those two events.

5. An active enterprise is an enterprise within a known industry (excluding public administration), that has Canada as the country of control or legal address, and whose business status is "new Business Number", "alive" or "inactive" (rather than "amalgamated", "bankrupt", "dissolved", "ceased operations" or "integrated").

across 19 industrial sectors, over half (52.5 percent) were concentrated into five sectors, namely: construction, professional, scientific and technical services, retail trade, other services, and accommodation and food services.

Table 1: Number of small and medium Canadian employer enterprises in 2012 (size class 2012), by industry and size⁶

Industry	Enterprise size based on employment						Total by industry
	[1-4]	[5-9]	[10-19]	[20-49]	[50-99]	[100-250]	
11 Agriculture, Forestry, Fishing and Hunting	23,980	5,160	2,270	1,060	240	60	32,770
21 Mining and Oil and Gas Extraction	3,440	640	450	300	110	70	5,010
22 Utilities	190	120	60	40	10	10	420
23 Construction	55,110	17,430	9,160	5,110	1,260	460	88,530
31-33 Manufacturing	13,800	8,210	6,530	5,680	2,040	990	37,250
41 Wholesale Trade	17,630	8,170	5,630	3,540	980	400	36,350
44-45 Retail Trade	34,920	20,260	10,970	6,790	2,390	840	76,160
48-49 Transportation and Warehousing	21,780	4,610	2,930	1,900	580	240	32,040
51 Information and Cultural Industries	4,070	1,310	860	550	180	90	7,060
52 Finance and Insurance	6,780	2,050	1,030	770	330	160	11,110
53 Real Estate and Rental and Leasing	16,350	4,150	1,950	1,010	270	90	23,820
54 Professional, Scientific and Technical Services	56,720	10,140	5,530	2,800	720	320	76,230
55 Management of Companies and Enterprises	3,460	790	480	310	100	50	5,200
56 Administrative and Support, Waste Management and Remediation Services	16,670	6,740	3,770	2,330	810	450	30,770
61 Educational Services	2,730	1,230	930	590	190	160	5,810
62 Health Care and Social Assistance	22,020	8,410	4,640	1,860	620	410	37,950
71 Arts, Entertainment and Recreation	4,650	2,260	1,730	1,210	380	140	10,360
72 Accommodation and Food Services	13,380	12,450	10,530	8,000	2,280	700	47,320
81 Other Services	31,420	12,070	4,990	2,020	460	230	51,180
Total (excluding 91)	349,090	126,190	74,410	45,870	13,940	5,850	615,340

Note: All counts of enterprises are rounded to the nearest 10 due to Statistics Canada's confidentiality rules. Each total is calculated before rounding to the nearest 10, so it may not quite equal the sum of its parts since all cells are rounded independently of each other.

Sources: Statistics Canada, Entrepreneurship Indicators Database, 2012; and authors' calculations.

More specifically, micro-enterprises (enterprises having between one and nine employees) represent the vast majority of enterprises (77.2 percent of all SMEs in the sample) and are mainly concentrated in four specific industries, by order of relative importance: construction, retail trade, professional, scientific and technical services, and other services. These account for 38.7 percent of this size class. By contrast, the share of larger enterprises (having between 100 and 250 employees) represents less

6. The Appendix Tables A1, A2, and A3 present the numbers of HGEs breakdown by size and industries in 2012 for each HGE approach.

than one percent of all SMEs in Canada. Within this latter size class, 46.8 percent can be grouped into four industry sectors: manufacturing, retail trade, construction, and administrative and support, waste management and remediation services.

3. MEASURING HIGH-GROWTH ENTERPRISES

This section presents and compares three measurement approaches defining HGEs. Starting with the OECD-Eurostat approach, it follows with the one introduced by the Bureau of Labor Statistics – namely a “kink point” approach. We then present a different methodology based on the top decile of enterprises.

Applying the OECD-Eurostat definition to the Statistics Canada Entrepreneurship Indicators Database in 2012 (Table 1), one counts 615,340 small and medium enterprises of which 6,170 were high-growth enterprises in Canada (Table 2). This number of high-growth enterprises based on the OECD-Eurostat approach represents 4.4 percent of all SMEs having between 10 and 250 employees, which amount to 140,130 enterprises.⁷ The BLS’ kink point approach shows a higher number of HGEs with 11,400. However, because it imposes a growth specification and includes the whole population of enterprises, it shows a lower proportion of HGEs with 1.9 percent. On the other hand, by also covering the whole population of enterprises, the top decile approach captures 72,600 HGEs – which represent 11.8 percent of HGEs.⁸ Not surprisingly perhaps, depending on which approach one uses, different results are derived.

Before analyzing in more detail the differences between the three measurement approaches, it is important to stress the problematic element that relates to which reference year is most appropriate to use. Indeed, using either the 2009 or 2012 reference year will have an impact on the size class distribution and, subsequently, on the data interpretation. This is due to the fact that enterprises in a given size class in 2009 could have moved into another size class category during the three-year period. Although one could make the case that using the 2009 size class (Table 2) has the advantage of contrasting more clearly the BLS and OECD-Eurostat approaches in terms of their size class distribution – particularly for the smaller size classes 1 to 4 and 5 to 9⁹ – it is not without caveats.

7. The differences between statistics related to high-growth enterprises using the OECD-Eurostat approach shown in previous official releases (3.4 percent) and statistics from Table 2 (4.4 percent) are due to some minor changes in the methodology. Specifically, in Table 2, all enterprises selling below \$30,000 have been suppressed, whereas in the official numbers the methodology used this threshold based on revenue and not on sales. Also, Table 2 includes the NAICS 11, 21 and 23, and covers only enterprises having between 1 and 250 employees, whereas the official publication covers all size classes.

8. The main reason for the top deciles being more than 10 percent (11.8 percent in this case) is due to the fact that the figure is calculated by taking the top 10 percent distribution for each cell along the size class and the industry sector. As a result, some enterprises in the small size category have exactly the same growth rate. This approach results in a total number of enterprises being slightly higher than 10 percent of the selected sample. For further explanation, please refer to Section 3.3.

9. As illustrated in Table 2, the 5 to 9 class shows the same count as the OECD-Eurostat approach for the size classes 10 and above. This is expected as the two measures only differ in their treatment of the smaller size classes.

Perhaps the most important limitation in selecting the 2009 size class as the reference year is the fact that it is not representative of the current industrial structure. Again, this is because between 2009 and 2012, a significant number of enterprises have switched from a size class to another and, for some, from an industrial classification (NAICS code) to another. This development is clearly noticeable when comparing the two reference years in Tables 2 and 3 respectively.

Table 2: Total number of high-growth enterprises in 2012 (size class 2009) by size based on the OECD-Eurostat, the U.S. Bureau of Labor Statistics' kink point, and the top decile approaches

Total (excluding 91)	Enterprise size based on employment						Total by industry
	[1-4]	[5-9]	[10-19]	[20-49]	[50-99]	[100-250]	
OECD-Eurostat approach	X	X	3,670	1,970	470	60	6,170
BLS' kink point approach	2,590	2,640	3,670	1,970	470	60	11,400
Top decile approach	60,790	6,570	3,250	1,610	320	50	72,600

Note 1: All counts of enterprises are rounded to the nearest 10 due to Statistics Canada's confidentiality rules. Each total is calculated before rounding to the nearest 10, so it may not quite equal the sum of its parts since all cells are rounded independently of each other.

Note 2: Confidential data were indicated by "X" in the table.

Sources: Statistics Canada, Entrepreneurship Indicators Database, 2012; and authors' calculations.

For the purpose of illustrating this transition, the number of HGEs, belonging to the first size class category (1 to 4 employees) in the top decile approach, is respectively 60,790 and 44,070 enterprises whether we use 2009 or 2012 as the reference year. The difference between those two counts is 16,720 enterprises, which represents those who have switched from the 1-4 size class category in 2009 to another larger size class category over the three-year period. We find similar transitions for both the OECD and BLS approaches. This dynamic explains why we observe in Table 3 more HGEs in the subsequent size class categories.

Table 3: Total number of high-growth enterprises in 2012 (size class 2012) by size based on the OECD-Eurostat, the U.S. Bureau of Labor Statistics' kink point, and the top decile approaches

Total (excluding 91)	Enterprise size based on employment						Total by industry
	[1-4]	[5-9]	[10-19]	[20-49]	[50-99]	[100-250]	
OECD-Eurostat approach	X	X	210	3,640	1,560	770	6,170
BLS' kink point approach	0	110	3,840	4,970	1,680	800	11,400
Top decile approach	44,070	13,940	7,980	4,610	1,410	600	72,600

Note 1: All counts of enterprises are rounded to the nearest 10 due to Statistics Canada's confidentiality rules. Each total is calculated before rounding to the nearest 10, so it may not quite equal the sum of its parts since all cells are rounded independently of each other.

Note 2: Confidential data were indicated by "X" in the table.

Sources: Statistics Canada, Entrepreneurship Indicators Database, 2012; and authors' calculations.

As demonstrated in the case of the 2012 reference year (Table 3), it seems more appropriate to use the most recent industrial structure and class distribution in order to appreciate the dynamism of the economy (in line with the OECD guidelines). Hence, the paper is using the 2012 reference year in its comparison and interpretation of the results. A more detailed explanation of each of the measurement approaches follows.

3.1 THE OECD-EUROSTAT APPROACH

In recent years, it has become increasingly popular to use the OECD-Eurostat definition when identifying HGEs (Bravo-Biosca, 2010; Nordic Council of Ministers, 2010; Hölzl, 2014), reflecting the organizations' role in the provision and analysis of official statistics (both organizations use this definition to compile official statistics on HGEs). Because of their wide membership, the definition has an advantage in that it allows comparisons over time and across countries without the need to access micro data. However, it is important to stress that an absolute threshold affects countries and industries differently, depending on their size.

The OECD-Eurostat defines high-growth enterprises, as measured by employment, as enterprises with average annualized growth in employees greater than 20 percent per year, over a three-year period, and with ten or more employees at the beginning of the observation period. Using this definition, the OECD-Eurostat approach represents 4.4 percent of all SMEs having between 10 and 250 employees (Table 3).

The use of the OECD-Eurostat definition immediately raises an important question: why are only enterprises with at least 10 employees covered when it is known that the enterprises having between one and nine employees account for 77.2 percent of all SMEs in 2012? Hence, the OECD-Eurostat definition in the Canadian context excludes approximately 475,280 active employer enterprises out of 615,340. The main reason justifying this approach is to avoid possible distortions that would overstress the importance of small high-growth enterprises. Indeed, an enterprise with one employee, which hires another one during a three-year period, would be considered a high-growth enterprise under the definition. This distortion in the distribution is what economists call the "small size class bias".

A consequence of the size effect for international comparisons is that, when the industrial structure of some countries is relatively more concentrated in terms of small enterprises, the counts will display a disproportionate number of high-growth enterprises in small size class and few or no high-growth enterprises in medium size class. In response to this critique, Clayton et al. (2013) from the U.S. Bureau of Labor Statistics proposed an expansion of the OECD-Eurostat definition using a "kink point" approach in order to cover enterprises having between one and nine employees.

3.2 THE U.S. BUREAU OF LABOR STATISTICS' KINK POINT APPROACH

In the U.S. Bureau of Labor Statistics' kink point approach, a small enterprise with fewer than 10 employees at the beginning of the period needs to grow by eight or more employees over a three-year period in order to be classified as a high-growth enterprise. The threshold level of eight employees over a three-year period is equivalent to an employment growth rate of 72.8 percent or more over this period. Hence, the main contribution of this extension of the OECD-Eurostat definition is to allow the coverage of enterprises with less than 10 employees.

Applying this definition, Table 3 shows that the number of high-growth enterprises in 2012 was 11,400, representing 1.9 percent of all SMEs in Canada (total of Table 1). The size distribution has been established based on the size class of 2012. One immediately observes that there is no enterprise count in the first size class (enterprises having between one and four employees). This is due to the fact that an enterprise with only one employee in 2009 had to at least grow by eight employees between the period from 2009 and 2012 in order to be considered as a high-growth enterprise in 2012. The same pattern occurs for all enterprises who had between one and nine employees in 2009. In comparison with the approach adopted by the OECD-Eurostat, 5,230¹⁰ additional enterprises are classified in the group of high-growth enterprises for a total of 11,400. Thus, the kink point approach does allow for a wider coverage of micro-enterprises since an additional 5,230 enterprises with fewer than 10 employees in 2009 can be counted as high-growth enterprises in 2012.

3.3 THE TOP DECILE APPROACH

One of the main motivations behind recent measurement initiatives has been to propose an approach which deals with the small size class bias. In order to deal with this issue, the OECD-Eurostat approach excludes any enterprises with less than 10 employees, whereas the BLS imposes a specification, which requires that the latter enterprises must grow by at least eight employees over the period to be included in the sample. Of course, excluding a large proportion of enterprises – in this case nearly 78 percent as is particularly the case with the OECD-Eurostat – can be deemed problematic. Moreover, both the OECD-Eurostat and the BLS measures apply a percentage threshold evenly across industry sectors and enterprise sizes. Hence, these approaches face limitations in accounting for structural differences since their respective focus relies mostly on percentage growth.

Keeping these limitations in mind, there may potentially be another way to simultaneously take into consideration population coverage, business dynamics and small size class bias to an extent.

10. This number represents the difference between the total of high-growth enterprises based on the "kink point" approach and the total of high-growth enterprises based on the OECD-Eurostat approach ($11,400 - 6,170 = 5,230$), which is equivalent to the sum of the first two columns of the tables in the appendix.

Rather than taking a fixed value for employment growth rate as a criterion to define a high-growth enterprise, we take the value of the 10th decile for the distribution of the compound average employment growth rate by class size and industry over a three-year period (2009–2012). Then, we select all enterprises with a growth rate value at least equal to the 10th decile value. All enterprises responding to this criterion are classified as a high-growth enterprise. Moreover, to be included in the sample of HGEs, an enterprise must also be among the top decile and must be observed from 2009 to 2012, consecutively.

Although the decision to select the top 10th decile value may appear arbitrary, it is used to delimit the portion of the population of interest. In this approach, the growth rate is determined in terms of the distribution of the observed population in the top 10 percent. It comes from the actual distribution in the reference year for each industry and size class. This approach permits us to cover the whole population of enterprises as well as to take into account the observed distribution of industries by size. This approach is somewhat similar to what was proposed by Birch (1987) and Schreyer (2000).

It should be noted, as explained in section 3, Measuring High-Growth Enterprises, that the distribution of enterprises' growth rate belonging to the same decile results in many enterprises having the same growth rate – this is particularly observed in small class size categories. This results in a slightly higher proportion than 10 percent (11.8 percent) in the selected sample. This also explains why, in Table 4, one can observe the same growth rate for different industries. In other words, in the top decile, there are many enterprises that go, for example, from one to two employees over a three-year period. In this case, they will consequently all have a CAGR of 26 percent.

At the aggregate, Table 3 confirms the evidence that our approach based on the top 10 decile provides a more comprehensive coverage of the population of high-growth enterprises (72,600) than that of the OECD-Eurostat (6,170) and BLS's kink point (11,400) approaches. This is largely due to its coverage of smaller enterprises: 44,070 (one to four) and 13,940 (five to nine). In fact, only the kink point and the top decile approaches propose methods which cover enterprises with less than 10 employees. Using the kink point approach based on the size class of 2012, less than 1 percent of HGEs between one and nine employees are covered, whereas the same figure using the top decile approach climbs to 80 percent, which is more representative of the actual distribution of enterprises by size in the Canadian economy.

While it would be a fair assessment that such an approach might not entirely eliminate the small size class bias, the use of an annualized growth rate over a three-year period – which accounts for four consecutive years (2009, 2010, 2011, and 2012) – imposes a restrictive condition which helps avoid the issue of short-run transitory growth. This, in turn, helps mitigate the small size class bias.

Another potential issue of having a measure which focuses on the size of employment gains is that it may also create a bias towards larger firms. Table 3, however, shows no evidence of this bias, as the enterprise population in both the 50–99 and 100–250 size class categories are fairly similar between all measurement approaches. In fact, the likelihood of observing a huge jump in the number of employees for larger enterprises is a relatively rare phenomenon except if it is the result of a merger or acquisition. However, as stated earlier, the enterprises that experienced any of those two events are excluded from our sample. This has a direct impact on those populations of larger enterprises in our sample and technically eliminates the possibility of this bias. Hence, on those two counts, the top decile approach appears to be comprehensive in its coverage and less biased in its distribution of both small and medium businesses.

While the results appear consistent at the aggregate, a further advantage of the top decile approach is that it also makes it possible to assess dynamics within size class and sectors. This enables us to observe the distribution of HGEs within sectors, but also to consider the structure of the sectors, which constitute the structure of economic activities. For instance, the value of each cell of Table 4 represents, for a given industry of a given size, the growth rate of employment required to be classified as a high-growth enterprise. While there is a positive relationship between the size of enterprises and the level of the CAGR of the top 10 percent (i.e. higher threshold of CAGR for larger enterprises), this relation is not systematic across industries. On the whole, the CAGR of the 10th decile is 14 percent for enterprises with one to four employees whereas the CAGR of the top decile distribution is 25 percent for enterprises with 100 to 250 employees. By contrast, the CAGR of some industries in larger SMEs is lower than for some industries of small ones, which is the case for Transportation and Warehousing and for Educational services. This statement is in line with the conclusions of some recent studies using different methodologies and datasets (Haltiwanger et al., 2010; Dixon and Rollin, 2012).

The top decile approach thus contrasts with those introduced by the OECD-Eurostat and the Bureau of Labor Statistics, which consist in setting a fixed threshold of employment growth rate in all countries as a criterion for identifying a high-growth enterprise. These measures can in fact be restrictive since they only allow the comparison of the number of high-growth enterprises across countries without considerations for the differences in economic situations and the structural distribution of employment across industries.

The top decile approach also has the advantage, in its definition of high-growth enterprises, to take into consideration the current employment structure of the economy. In this way, it is possible to compare a specific sector (i.e. chemical sector) in Canada with the same sector in another country in order to assess the dynamism of their respective growth. One could find that the growth rates are different in both instances even though the level of employees in these sectors may be similar. This outcome

could suggest that one of the two economies is more competitive or dynamic than the other. Such an approach may be of particular interest to policy-makers who want to know which industries or sectors are experiencing growth during various economic cycles and within a national context.

Table 4: Minimum employment growth rate to be classified as a high-growth enterprise (size class 2012), according to the top decile approach, by industry and size in 2012

Industry	Enterprise size based on employment					
	[1–4]	[5–9]	[10–19]	[20–49]	[50–99]	[100–250]
	Average CAGR for the 10 th decile					
11 Agriculture, Forestry, Fishing and Hunting	26	26	29	29	27	26
21 Mining and Oil and Gas Extraction	14	36	44	51	68	53
22 Utilities	X	X	X	X	X	X
23 Construction	26	26	26	28	33	42
31–33 Manufacturing	14	21	20	20	21	22
41 Wholesale Trade	14	21	19	20	23	24
44–45 Retail Trade	14	19	16	16	14	14
48–49 Transportation and Warehousing	26	36	30	29	26	24
51 Information and Cultural Industries	26	26	26	26	31	40
52 Finance and Insurance	14	21	19	19	22	18
53 Real Estate and Rental and Leasing	14	26	26	33	35	29
54 Professional, Scientific and Technical Services	14	29	29	32	37	36
55 Management of Companies and Enterprises	X	X	X	X	X	X
56 Administrative and Support, Waste Management and Remediation Services	14	26	26	29	37	41
61 Educational Services	26	31	24	25	23	15
62 Health Care and Social Assistance	14	19	18	22	22	20
71 Arts, Entertainment and Recreation	14	21	20	17	16	15
72 Accommodation and Food Services	14	19	15	14	13	16
81 Other Services	14	19	19	26	25	25
Total (excluding 91)	14	21	21	22	23	25

Note 1: All rates have been rounded.

Note 2: Confidential data were indicated by "X" in the table.

Sources: Statistics Canada, Entrepreneurship Indicators Database, 2012; and authors' calculations.

3.4 SELECTED CHARACTERISTICS OF HIGH-GROWTH ENTERPRISES

The use of additional characteristics such as the average employment, age and sales gives further indications of the differences with the three measures of high-growth enterprises examined in this study.

Table 5 clearly indicates that the average employment, age and sales of high-growth enterprises based on the top decile approach are systematically lower for high-growth enterprises as compared with the averages obtained using the OECD-Eurostat or BLS kink point approaches. Those differences

in the total averages are due to the fact that the OECD-Eurostat approach does not cover high-growth enterprises with less than 10 employees and the Bureau of Labor Statistics' kink point approach has zero high-growth employees in the first size class. In contrast, the comparison of averages for high-growth enterprises with 10 or more employees is quite close for all indicators whatever the definition of high-growth enterprises. This table shows once again that the top decile approach gives similar results for high-growth enterprises with 10 or more employees in comparison with the two other approaches but with the advantage of having a more complete coverage of the population of micro high-growth enterprises.

Table 5: Average employment, age and sales of high-growth enterprises by size under different definitions

Size class 2012	Characteristics of high-growth enterprises by definition approach								
	OECD-Eurostat approach [HGE_OECD]			BLS' kink point approach [HGE_EXT]			Top decile approach [HGE_DIS]		
	Mean (EMP)	Mean (AGE)	Mean (SALES)	Mean (EMP)	Mean (AGE)	Mean (SALES)	Mean (EMP)	Mean (AGE)	Mean (SALES)
	# employees	Years	Million \$	# employees	Years	Million \$	# employees	Years	Million \$
[1-4]	n/a	n/a	n/a	n/a	n/a	n/a	3	12	0.51
[5-9]	n/a	n/a	n/a	9	11	1.75	6	11	1.13
[10-19]	18	13	3.54	15	11	2.71	13	12	2.52
[20-49]	32	13	8.69	30	13	7.70	30	12	5.68
[50-99]	69	14	14.30	68	14	13.92	68	13	12.50
[100-250]	147	14	30.41	147	14	29.99	147	14	28.55
Total (excluding 91)	55	13	12.64	39	12	8.44	9	12	1.65

Note 1: All means have been rounded.

Note 2: Confidential data were indicated by "n/a" in the table.

Sources: Statistics Canada, Entrepreneurship Indicators Database, 2012; and authors' calculations.

While the three measures compare relatively well, it appears less so in terms of sales. For instance, in the OECD-Eurostat approach, the average sales of HGEs are 12.6 million dollars, while they are only 1.6 million dollars for HGEs using the top decile approach. This essentially corresponds to a difference of 11 million dollars. Since the average employment in this sample is lower for HGEs using the top decile approach in comparison with the OECD-Eurostat definition, this does not necessarily imply a performance gap between the two measurement approaches. A way to assess this issue is to estimate an econometric model that tests the relation between HGEs and sales growth controlling for the size of the enterprise. This is the purpose of the next section.

4. ECONOMETRIC ANALYSIS

4.1 THE ECONOMETRIC MODEL

In order to assess the effect of high-growth enterprises as compared with non-high-growth enterprises on sales growth rates, this study investigates the relationship between high-growth enterprises definitions and the sales compound annual growth rate (SALES_GROWTH) at the enterprise level by the following econometric model:

$$SALES_GROWTH_i = \alpha_1 + \alpha_2(HGE)_i + \delta \begin{bmatrix} AGE_i \\ SMALL_SIZE_i \\ MED_SIZE_i \\ LARGER_SIZE_i \\ \sum_{j=1}^{19} IND_{ij} \end{bmatrix} + \varepsilon_i \quad (1)$$

This econometric model (1) will be estimated three times, where the dummy variable representing a generic definition of high-growth enterprises (HGE) will be replaced in each equation by one of the dummy variables referring to a specific definition of high-growth enterprises. In this model the index (*i*) represents the enterprise and (*j*) the industry.

The explanatory variable of interest of the first equation [EQ 1] will be based on the conventional OECD-Eurostat definition (HGE_OECD) presented in section 3.1. The explanatory variable of interest for the second equation [EQ 2] will be based on the BLS “kink point” approach (HGE_EXT) presented in section 3.2. Finally, the explanatory variable of interest for the last equation [EQ 3] will be based on the top decile approach (HGE_DIS) presented in section 3.3.

The estimated marginal effects from an ordinary least square (OLS) regression for the full sample of observations, and a Seemingly Unrelated Regression (SUR) for the subset of observations for which the total sales are inferior to the sales mean of the full sample [SUR 1] and for the subset of observations for which the total sales are superior to the sales mean of the full sample [SUR 2] will be reported in Table 6. The SUR estimator estimates simultaneously the variance-covariance matrix of the coefficients of each subsample (i.e. medium and small high-growth enterprises in terms of sales). The hypothesis stating that the effects of larger HGEs that sell more are equal to the effects of HGEs selling less than the average will subsequently be tested.

4.2 THE OTHER INDEPENDENT VARIABLES

The age of the enterprise (variable AGE), in theory, is an important determinant of sales growth because it should reflect a more mature stage of an enterprise in the production process (Haltiwanger et al., 2010). The age is determined by the difference between 2012 and the year of start-up. The model also

accounts for usual controls like the size of the enterprise and industrial sectors. To control for sector differences is important because the number of HGEs varies among sectors for several reasons including the lifecycle stage, technological intensity, short-term macro-economic factors, etc. (Moreno and Casillas, 2007). Small businesses are enterprises with one to nine employees (SMALL_SIZE); medium enterprises with 10 to 99 employees (MED_SIZE); and larger enterprises have between 100 and 250 employees (LARGER_SIZE). The industrial sectors are defined by the North American Industry Classification System (NAICS) at two digits, excluding public administration.

5. RESULTS AND INTERPRETATION

5.1 RESULTS FOR THE FULL SAMPLE

Table 6 presents, at the enterprise level, the estimation results for the analysis. The coefficients for HGEs measure the relative differences in expected sales growth performance between HGEs and non-HGEs. The results of the OLS regressions for the full sample show that high-growth enterprises, as defined by the OECD-Eurostat (HGE_OECD), the kink point (HGE_EXT) and the top decile (HGE_DIS) approaches, have respectively a sales growth rate of 19.8, 25.2, and 12.4 percent higher than non-high-growth enterprises (results from the first column). The relative effects of HGEs compared with non-HGEs on sales growth are positive and significant whatever the definition used. Those differences in the relative effects between HGEs definitions mainly reflect the differences in the quality of the sample coverage for enterprises with less than 10 employees. Indeed, as shown earlier in Table 5, the level of sales seems to be correlated with the size of enterprises.

Other noteworthy findings show that larger HGEs sell more, on average, than small HGEs. In fact, the relatively larger effect on sales growth for HGEs using the OECD-Eurostat approach reflects the higher portion of larger HGEs as compared with the other approaches. Moreover, HGEs age (see the parameter for the variable AGE), however, does not seem to be a differentiating factor in terms of HGEs sales growth performance. Although the effect of this variable is statistically significant, its impact is quite small whatever the HGE definition used. Finally, the size of enterprises clearly has a significant effect on the sales growth performance of enterprises. Thus, the relative impact on sales growth of HGEs with one to nine employees (see the parameter for the variable SMALL_SIZE) is between 7 and 9 percent below HGEs with 100 to 250 employees. Usually because the larger HGEs sell relatively more than small HGEs, it is expected that larger HGEs have more impact on sales growth than smaller ones. The econometric specification of this model does not, however, allow for the differentiation in terms of size (i.e. whether the effects attributable to HGEs are simply the result of the size of the enterprise –

as larger enterprises have a further influence on sales growth). To answer this issue, in the next section, enterprises will be separated into two subsamples according to the level of enterprise sales.

5.2 RESULTS FOR THE SUBSAMPLES OF THE SMALL AND LARGE SELLERS

To disentangle the enterprise size effect, we separate the full sample into two subsamples, a subsample representing enterprises selling less than the average (second column) and another subsample representing enterprises selling more than the average (third column). The two subsamples have been estimated simultaneously using a SUR estimator. This estimator leads to a more efficient measure because it correlates the unobserved information in both subsamples. In other words, the estimates take into account the common unobserved factors in both subsamples.

As seen in Table 6, the differential in effects between HGEs and non-HGEs is significantly and statistically more pronounced for enterprises selling more than the average (third column) as compared with the enterprises that sell less than the average (second column).¹¹ The results of the SUR regressions for the subsample of enterprises selling more than the average show that high-growth enterprises, as defined by the OECD-Eurostat (HGE_OECD), the kink point (HGE_EXT) and the top decile (HGE_DIS) approaches, have respectively a sales growth rate of 19.8, 28.9, and 26.6 percent higher than non-high-growth enterprises. In return, the estimated results for the subsample of enterprises selling less than the average are respectively, 9.2, 16.4, and 9.9 percent higher than those of non-high-growth enterprises. Thus, estimates on sales – using the top decile approach – show the most significant differences in terms of impact between the full sample and the two subsamples.

The estimates of the two subsamples show that the signs of the parameters for the size effects are reversed compared with the full sample. In fact, small enterprises have a relatively positive effect on sales growth compared with larger enterprises. This reversal of the size effects reveals the importance of separating enterprises according to their performance level in terms of sales. The differential of impacts on sales growth between small enterprises and larger ones is mitigated, as it is currently between 5.3 and 5.9 percent. Based on the top decile approach, the impact of small enterprises on sales growth is 3.1 percent higher in comparison with larger enterprises. It should also be noted that, for enterprises selling more than the average, the differential in effects between enterprises of small and medium size is negligible.

11. Based on the F-test, we checked the compatibility of the subsample information to determine whether, from a statistical point of view, it makes sense for the relation to be aggregated. According to the test results, the Chi square (χ^2) were, for the three equations, respectively 2,229, 1,380 and 1,380, and for all of them the Prob > χ^2 = 0.0. As a result, we can reject the equality of common coefficients.

As expected, this analysis has shown that HGEs have a higher impact on sales growth as compared with non-HGEs, no matter which definition is used. Indeed, the impact of HGEs is quite similar between the three HGEs approaches when the full sample is separated between small and large sellers. However, the estimates related to the model using the top decile approach show more differences in terms of the impacts between large and small sellers than compared with the other HGEs definitions. Again, these differences in results reinforce the idea of a better coverage of smaller enterprises by the top decile approach.

Finally, the analysis has shown that the size of enterprises is an important determinant of sales growth performance, whereas enterprise age is not as important a determinant of enterprise performance.

Table 6: Econometric results for the three models based on the OECD-Eurostat, the Bureau of Labor Statistics' kink point, and the top decile high-growth enterprises definitions

Sample	Full sample		Enterprises where total sales < mean (sales)		Enterprises where total sales > mean (sales)		
Estimator	OLS		SUR[1]		SUR[2]		
Number of obs.	615,340		514,029		101,311		
Equation	Marginal effect	T-Test	Marginal effect	T-Test	Marginal effect	T-Test	Chow tests
Variables							
EQ 1							
HGE_OECD	19.800***	41.80	9.238***	11.13	19.842***	36.11	HGE_OECD [SUR1] = HGE_OECD [SUR2] $\chi^2 = 113.42$ Prob > $\chi^2 = 0.0$
AGE	-0.393***	-88.80	-0.369***	-87.07	-0.614***	-40.44	
SMALL_SIZE	-7.181***	-18.49	3.708**	2.78	3.353***	7.11	
MED_SIZE	-2.085***	-5.34	5.699***	4.26	-0.446	-1.07	
CONSTANT	14.271***	35.09	2.942**	2.20	21.049***	30.75	
INDUSTRY CONTROL	YES		YES		YES		
EQ 2							
HGE_EXT	25.210***	59.54	16.432***	30.09	28.926***	50.29	HGE_EXT [SUR1] = HGE_EXT [SUR] $\chi^2 = 248.11$ Prob > $\chi^2 = 0.0$
AGE	-0.366***	-84.65	-0.359***	-84.40	-0.507***	-35.35	
SMALL_SIZE	-6.169***	-16.02	4.921***	3.64	5.209***	11.19	
MED_SIZE	-2.360***	-6.07	5.966***	4.41	-0.325	-0.79	
CONSTANT	12.880***	32.03	1.606	1.19	17.665***	26.95	
INDUSTRY CONTROL	YES		YES		YES		
EQ 3							
HGE_DIS	12.380***	152.57	9.97***	99.58	26.592***	57.34	HGE_DIS [SUR1] = HGE_DIS [SUR2] $\chi^2 = 1,227.43$ Prob > $\chi^2 = 0.0$
AGE	-0.330***	-81.46	-0.315***	-76.24	-0.447***	-31.76	
SMALL_SIZE	-9.750***	-36.21	3.123**	2.35	0.659	1.41	
MED_SIZE	-3.750***	-13.79	5.289***	3.98	-1.577***	-3.81	
CONSTANT	14.260***	48.76	1.432	1.08	17.714***	27.28	
INDUSTRY CONTROL	YES		YES		YES		

Note: Coefficients signification at 1% *** $p < 0.01$, 5% ** $p < 0.05$, and 10% * $p < 0.1$.
Estimators: Ordinary Least Square (OLS); and Seemingly Unrelated Estimation (SUR).

Sources: Statistics Canada, Entrepreneurship Indicators Database, 2009–2012; and authors' calculations.

6. CONCLUSION AND DIRECTIONS FOR FUTURE RESEARCH

For decades, and even more since the recent financial crisis, policy-makers and academics have been interested in high-growth enterprises along with the conditions that foster their growth particularly in terms of employment. Because of the complexity of measuring high-growth enterprises, debates continue to exist on the optimal way to capture the phenomenon that is supposed to be reflected, as well as the impact that HGEs have in terms of business and economic performance.

The most interesting contribution of this paper has been its comparison of different measures of high-growth enterprises. Indeed, by comparing the OECD-Eurostat and the BLS' kink point approaches to defining high-growth enterprises, this study has attempted to offer a comparative context allowing for a more comprehensive coverage of all size classes, including enterprises with less than 10 employees, while, at the same time, mitigating the size class bias and taking into consideration the unique national context of an economy. Perhaps, more importantly, this paper suggests that the number of high-growth enterprises can differ significantly depending on the definition adopted.

At the same time, the findings of this paper appear to be in agreement with Coad et al. (2014), which noted that different research questions require different definitions of firm growth and thus different definitions of HGEs. At first glance, our measurement approach based on the top decile may appear particularly designed for the analysis of HGEs in a national context, while the OECD-Eurostat definition may be more appropriate in a comparative international context. However, one should not underestimate the potential of the top decile approach in assessing and comparing the dynamic impact of growth across enterprise sizes and sectors. In fact, such an approach may be of particular interest to policy-makers who may want to know, within a given national context, which enterprise is experiencing growth during various economic cycles.

Thus, it is important that future work on the subject take into consideration the multidimensional aspects of HGEs by using several rather than a single measure. In line with this point of view, a potentially interesting avenue for research would be to analyze the effects of different common definitions of high-growth enterprises on economic performance indicators. To our knowledge, no international comparative study has explored this approach. To do so, a longitudinal model analysis could be used to evaluate how high-growth enterprises react to variations of economic cycles.

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APPENDIX

Table A1: Number of small and medium Canadian high-growth enterprises in 2012 (size class 2012), by industry and size based on the OECD-Eurostat approach

Industry	Medium enterprises				Total by industry
	[10–19]	[20–49]	[50–99]	[100–250]	
11 Agriculture, Forestry, Fishing and Hunting	10	100	40	10	150
21 Mining and Oil and Gas Extraction	X	60	40	X	130
22 Utilities	X	X	X	X	10
23 Construction	30	640	250	120	1,040
31–33 Manufacturing	30	460	220	120	830
41 Wholesale Trade	10	260	100	50	430
44–45 Retail Trade	30	360	130	50	570
48–49 Transportation and Warehousing	10	210	80	30	330
51 Information and Cultural Industries	X	50	40	X	120
52 Finance and Insurance	10	50	40	10	100
53 Real Estate and Rental and Leasing	10	90	40	10	140
54 Professional, Scientific and Technical Services	20	320	130	70	540
55 Management of Companies and Enterprises	X	X	10	X	50
56 Administrative and Support, Waste Management and Remediation Services	10	240	140	100	490
61 Educational Services	X	50	X	X	90
62 Health Care and Social Assistance	10	130	70	40	240
71 Arts, Entertainment and Recreation	10	70	30	10	110
72 Accommodation and Food Services	20	330	140	50	540
81 Other Services	10	160	60	30	260
Total (excluding 91)	210	3,640	1,560	770	6,170

Note 1: All counts of enterprises are rounded to the nearest 10. Each total is calculated before rounding to the nearest 10, so it may not quite equal the sum of its parts.

Note 2: Confidential data were indicated by "X" in the table.

Sources: Statistics Canada, Entrepreneurship Indicators Database, 2012; and authors' calculations.

Table A2: Number of high-growth enterprises in 2012 (size class 2012), by industry and size based on the U.S. Bureau of Labor Statistics' kink point approach

Industry	Small enterprises		Medium enterprises				Total by industry
	[1-4]	[5-9]	[10-19]	[20-49]	[50-99]	[100-250]	
11 Agriculture, Forestry, Fishing and Hunting	0	10	180	160	40	10	390
21 Mining and Oil and Gas Extraction	0	0	70	100	40	30	240
22 Utilities	0	0	X	X	X	0	10
23 Construction	0	10	680	840	260	120	1,920
31-33 Manufacturing	0	10	280	540	230	120	1,170
41 Wholesale Trade	0	10	250	350	110	50	770
44-45 Retail Trade	0	10	340	480	140	50	1,010
48-49 Transportation and Warehousing	0	10	250	290	80	30	670
51 Information and Cultural Industries	0	X	60	70	40	X	200
52 Finance and Insurance	0	0	50	70	40	20	170
53 Real Estate and Rental and Leasing	0	10	150	160	40	20	380
54 Professional, Scientific and Technical Services	0	20	420	470	150	70	1,130
55 Management of Companies and Enterprises	0	X	X	X	X	X	120
56 Administrative and Support, Waste Management and Remediation Services	0	10	250	350	160	110	870
61 Educational Services	0	1	70	80	20	10	180
62 Health Care and Social Assistance	0	10	200	190	70	40	510
71 Arts, Entertainment and Recreation	0	X	80	90	30	X	210
72 Accommodation and Food Services	0	10	290	450	150	50	950
81 Other Services	0	X	200	230	60	X	520
Total (excluding 91)	0	110	3,840	4,970	1,680	800	11,400

Note 1: All counts of enterprises are rounded to the nearest 10. Each total is calculated before rounding to the nearest 10, so it may not quite equal the sum of its parts.

Note 2: Confidential data were indicated by "X" in the table.

Sources: Statistics Canada, Entrepreneurship Indicators Database, 2012; and authors' calculations.

Table A3: Number of high-growth enterprises in 2012 (size class 2012), by industry and size based on the top decile approach

Industry	Small enterprises		Medium enterprises				Total by industry
	[1-4]	[5-9]	[10-19]	[20-49]	[50-99]	[100-250]	
11 Agriculture, Forestry, Fishing and Hunting	2,730	610	230	110	20	10	3,700
21 Mining and Oil and Gas Extraction	440	100	50	30	10	10	640
22 Utilities	20	20	10	X	X	X	50
23 Construction	6,090	2,010	1,100	510	130	50	9,880
31-33 Manufacturing	1,780	920	660	570	210	100	4,240
41 Wholesale Trade	2,520	910	640	360	100	40	4,570
44-45 Retail Trade	4,640	2,140	1,140	680	240	90	8,940
48-49 Transportation and Warehousing	2,450	470	300	190	60	20	3,480
51 Information and Cultural Industries	410	140	90	60	20	10	730
52 Finance and Insurance	920	230	110	80	30	20	1,390
53 Real Estate and Rental and Leasing	2,220	480	230	100	30	10	3,060
54 Professional, Scientific and Technical Services	7,780	1,010	560	280	70	30	9,740
55 Management of Companies and Enterprises	400	90	60	X	X	X	600
56 Administrative and Support, Waste Management and Remediation Services	2,440	730	390	230	80	50	3,930
61 Educational Services	280	130	90	60	20	20	600
62 Health Care and Social Assistance	2,280	990	470	190	60	40	4,020
71 Arts, Entertainment and Recreation	600	230	180	120	40	10	1,190
72 Accommodation and Food Services	1,750	1,320	1,130	800	230	70	5,300
81 Other Services	4,320	1,410	550	200	50	20	6,550
Total (excluding 91)	44,070	13,940	7,980	4,610	1,410	600	72,600

Note 1: All counts of enterprises are rounded to the nearest 10. Each total is calculated before rounding to the nearest 10, so it may not quite equal the sum of its parts.

Note 2: Confidential data were indicated by "X" in the table.

Sources: Statistics Canada, Entrepreneurship Indicators Database, 2012; and authors' calculations.