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## **The Growth Process in Firms: Job Creation by Firm Age**

**Growth Firms Project: Phase IV**



**Small Business Policy Branch  
Industry Canada**

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**Canada**

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## SUMMARY

Industry Canada's Small Business Policy Branch recently undertook the fourth phase of its ongoing Growth Firms Project. The study's goal was to examine job creation over the 1993 to 2003 period and to confirm previous results, including a follow-up investigation of whether growth is disproportionately concentrated in any particular industry. Additionally, new work examined firm survival by firm size and growth category, the ability to maintain growth and job creation by firm age.

Although this study covered 1993 to 2003, the results confirmed many earlier findings that covered the 1985 to 1999 period, suggesting that many of the conclusions are not specific to any time period or segment of the business cycle.

Some key results that confirm earlier work include:

- Firms continually enter and exit the market and this churn resulted in more than half of the net jobs created between 1993 and 2003.
- Hyper growth firms were responsible for nearly half of net job creation by continuing firms even though they accounted for only 4.4 percent of continuing firms.
- Although small businesses accounted for 80 percent of net job creation, high growth was not limited to micro or small firms.
- Growth did not appear to be disproportionately concentrated in any particular industry.

Furthermore, new results include:

- The bulk of net job creation comes from very young firms, while the oldest firms shed the most jobs.
- Approximately 15 percent of hyper and strong growth firms maintained a high level of growth over the full 10-year observation period.
- Among micro firms, strong growth firms had the highest survival rates, but for all other firm sizes, slow growth firms had the highest survival rates.

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## **Key Results of Phase IV: Firm Survival and Job Creation by Firm Age**

### **Introduction**

The Canadian economy underwent some significant changes during the 1990s, changing the environment in which Canadian businesses operated. Canada made great strides in eliminating its national deficit and reduced its debt burden to the lowest level among G7 countries. The unemployment rate fell after a small recession in the early 1990s and Canada's level of international trade more than doubled as a number of trade liberalization treaties came into full effect. These factors and others combine to present new opportunities and challenges for Canadian businesses.

The ongoing Growth Firms Project of Industry Canada's Small Business Policy Branch aims to look at how firms grow and, more specifically, at the job creation process. This fourth phase of the project examines job creation and firm turnover at the national level over the 1993 to 2003 period and compares the results with earlier findings that covered the 1985 to 1999 period. This study also follows up on earlier work by looking at job creation at the industry level. Additionally, in order to investigate the link between firm growth and the firm life cycle, the study looks at firm survival, the ability of firms to maintain growth over time and job creation by firm age.

This study was conducted with Statistics Canada's Science Innovation and Electronic Information Division and aims to answer the following questions:

- Who are the growth firms?
- What is the contribution of growth firms to overall job creation?
- How significant is churning (the process of firm entry and exit) to job creation?
- Is growth confined to certain industries or regions?
- Are fast-growing firms more likely to survive longer than slower growing firms?
- Are high-growth firms able to maintain their growth over an extended time period?
- Do young firms create more jobs than established firms?

This report begins with a discussion of the data and methodology used, followed by overall job creation results. Then, results on firm survival and job creation by firm age are presented, followed by a discussion of results and conclusions.

Although this work is limited to providing diagnostic statistics, there are strong policy ties. This research provides new evidence on where growth occurs, and dispels the myth that high-growth firms are only high-technology and high-knowledge companies. However, it also raises questions about the growth process itself and how policy should encourage growth. Informing policy-makers and the academic community with baseline data and facts is a necessary first step in identifying potential barriers to growth that government can address.

## **Data and Methodology**

### ***Data***

As in earlier phases of the Growth Firms Project, the data file used was Statistics Canada's *Longitudinal Employment Analysis Program* (LEAP). This longitudinal file covers the universe of employer firms in Canada over the 1993 to 2003 period (hence, there are no sampling issues). Data in LEAP report on employment and wages at the firm level, by province and by industry according to the North American Industrial Classification System (NAICS).

The employment metric used in this study is called the *Individual Labour Unit* (ILU), which has been used throughout this multi-year project. An ILU is assigned to each person that receives a T4 slip (i.e., earns wages at some point during the year) and if an employee receives more than one T4 slip in any given year, their unit is distributed among those employers in proportion to the wages paid by each employer. A firm's employment level, therefore, is the sum of its ILUs.

The main advantage of using the ILU is that it avoids defining employment based on industry averages as other employment measures do, such as the *Average Labour*

*Unit*; it seems likely that high-growth firms do not conform to industry standard hour and wage profiles. However, the ILU does have drawbacks. For example, it cannot account for hours-worked differentials, so a part-time employee will receive one ILU, as would a full-time employee. Another drawback of the ILU is that it cannot account for working owners unless they are on their own payroll. Currently, neither of these drawbacks can be addressed by any of Statistics Canada's labour measures.

### ***Methodology***

The methodology used in this study is consistent with that used in the previous phases of the project. First, the private sector was selected from the universe by removing public administration, education and health industries. Canada Post was also removed. Second, all firms were required to have operated for at least one full year to avoid capturing firms that were very early in the start-up stage. Therefore, data from 1991 and 1992 were used to verify that firms had operated for at least one full year by 1993. Employment growth of firms that operated over the 1993 to 2003 period was tracked and firms that exited before the end of the period, and firms that started operations after 1993, were tracked separately as "births" and "deaths." Continuing businesses were tracked by firm size, geographic region and industry.

Furthermore, firms were assigned to a growth group based upon their job creation performance over the first four years of the observation period (1993 to 1997) according to the following criteria:

- **Hyper Growth Firms:** those with at least 150 percent growth in employment,
- **Strong Growth Firms:** those with between 50 and 150 percent growth in employment,
- **Slow Growth Firms:** those with between 0 and 50 percent growth in employment, or
- **Declining Firms:** those with negative employment growth.

Some assumptions are required about the data used in this study. First, the data are assumed to accurately represent the universe of firms by firm size, geography and

industry. Second, corrective measures to eliminate false births and deaths<sup>1</sup> are assumed to catch all instances of false births and deaths. Finally, anomalies in the data are assumed not to contaminate the results.

## Results

### *National Job Creation*

There were nearly 800 000 employer firms operating in the private sector in 1993 and this number increased to approximately 893 000 by 2003 (see Table 1). Approximately 490 000 firms exited over this period, while 583 000 firms entered and 310 000 firms operated continuously. Net firm entry accounted for just over 1 million jobs, while continuing firms were responsible for the remaining 970 000 net new jobs. Therefore, total private sector employment increased by nearly 2 million jobs over this period.

**Table 1: Overall Employment Creation, Canada, 1993 to 2003**

	Number of Firms		Net Jobs Created/Lost	
All Firms in 1993	799 335			
All Firms in 2003	893 067			
<b>Total Net Job Creation</b>			<b>1 979 302</b>	
Firms Not Operating in 1993 But Operating in 2003 (births)	582 863		3 751 862	
Firms Operating in 1993 But Not Operating in 2003 (deaths)	489 131		-2 739 139	
<b>Total Net Effect of Churning</b>	<b>93 732</b>		<b>1 012 723</b>	
<b>Continuing Firms (those existing in 1993 and 2003)</b>	<b>310 204</b>		<b>966 579</b>	
Hyper Growth Firms	(4%)	13 586	(45%)	431 778
Strong Growth Firms	(13%)	39 269	(59%)	565 665
Slow Growth Firms	(41%)	127 920	(82%)	791 456
Declining Firms	(42%)	129 429	(85%)	- 822 320

Continuing firms were assigned to a growth group based on their job creation performance over the first four years of the period. Slightly more than 4 percent of continuing firms were hyper growth firms and these firms accounted for 45 percent of net jobs created by continuing firms. Strong growth firms also played a large role in the job creation process, accounting for 13 percent of continuing firms, but 59 percent of net jobs

<sup>1</sup> A false birth or death can occur when a business signals the creation of a new business or exit of an existing business when it undergoes an organizational change. This could include a name change or adding new payroll accounts.

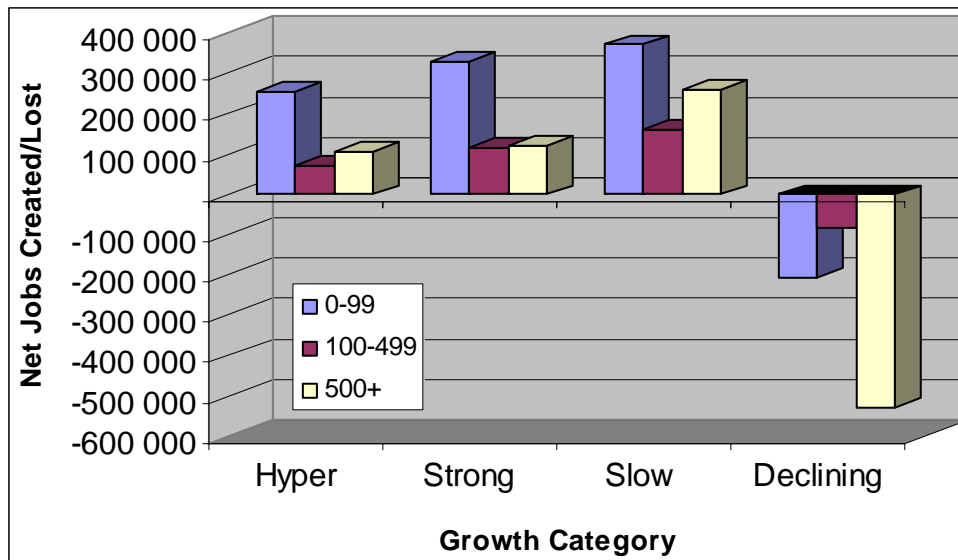


created. Slow growth and declining firms accounted for slightly more than 40 percent of continuing firms each and their job creation and job loss offset each other at 82 and negative 85 percent respectively.

***Job Creation by Firm Size and Growth Category***

The distribution of net job creation by firm size and growth group is illustrated in Figure 1. Small firms accounted for nearly 80 percent of net job creation, while medium-sized firms accounted for more than one quarter and large firms shed jobs, decreasing the total number of net jobs created by 5 percent. Micro firms (those with 1–4 employees, not shown in Figure 1) were also important job creators, creating approximately 20 percent of net jobs by continuing firms over this period. These findings are consistent with earlier work covering the 1985–1999 period, when small businesses accounted for the bulk of net job creation, medium-sized businesses contributed about one third of the number of jobs that small businesses contributed and large businesses shed jobs.

**Figure 1: Net Job Creation by Firm Size and Growth Category, Canada, 1993 to 2003**



Net job creation by hyper and strong growth firms more than offset the net jobs shed by declining firms. Although these firms accounted for less than 7 percent of all firms in 1993, they were responsible for 1 million jobs, which was approximately half of

the net jobs created over the 1993–2003 period. Slow growth firms also made a positive contribution to net job creation, creating nearly 800 000 jobs. However, declining firms shed more than 820 000 jobs, slightly more jobs than slow growth firms created.

Among hyper, strong and slow growth firms, small businesses accounted for most of the net job creation. However, medium-sized and large firms were still significant contributors to job creation and these two size categories combined to create the bulk of net new jobs created by slow growth firms. All declining firms shed jobs and large firms were responsible for the bulk of the jobs lost, accounting for 65 percent of net job losses by declining firms. Small and medium-sized firms accounted for 25 and 10 percent of jobs shed by declining firms respectively. Additional results by firm size are presented in the Appendix.

### ***Job Creation by Industry***

As in previous work covering 1985–1999, job creation by industry was examined at approximately the three-digit NAICS level. Among hyper and strong growth firms, business services was the leading industry, accounting for 18 percent of employment creation. The top three industries account for only 30 percent of employment creation by hyper and strong growth firms, up slightly from 25 percent over the 1985–1999 period. Consequently, net job creation was spread over a large number of industries. It appears, therefore, that no single industry was predisposed to high growth. More detailed job creation results by industry are presented in the Appendix.

### ***Firm Survival Rates***

Business survival is influenced by many factors, including geographic location, type of industry, firm size and firm age. There are also several market factors that can greatly impact firms' survival, such as the number of competitors and new entrants, as well as general market and economic conditions.

Table 2 shows survival rates<sup>2</sup> for the 1994 cohort of entrants, by firm size, over their first nine years of operation. Micro firms from the 1994 cohort had a slightly higher chance of surviving one year than other small firms, but this reversed beyond the first year. Medium-sized businesses had a lower survival rate than other small businesses (excluding micro firms) over the nine-year period, while large firms typically had the highest survival rate, except for the first year, and year seven and beyond. That medium-sized firms had the lowest survival rate is somewhat surprising because it was expected that survival rates would improve as firm size increased. Possible explanations for this could include that medium-sized businesses may move to the United States more frequently than other firm sizes, which would appear as a death in the Canadian data.

**Table 2: Firm Survival Rates for the 1994 Cohort of Entrants, by Firm Size**

Firm Size	Number of Years (Percent)								
	1	2	3	4	5	6	7	8	9
Micro (1–4)	71.8	54.5	45.7	39.7	35.1	31.5	28.4	25.8	23.2
Other Small (5–99)	70.4	56.7	48.4	42.3	37.9	34.4	31.4	28.8	26.4
Medium (100–499)	55.9	48.4	42.6	37.7	32.4	28.7	25.7	22.4	19.7
Large (500+)	65.7	57.0	51.2	45.7	39.7	34.6	30.3	27.7	23.7
<b>All</b>	<b>71.3</b>	<b>54.8</b>	<b>46.1</b>	<b>40.1</b>	<b>35.5</b>	<b>31.9</b>	<b>28.9</b>	<b>26.3</b>	<b>23.7</b>

As mentioned earlier, industry could be a significant factor influencing firm survival because each has a unique market structure and competitive dynamics. Table 3 shows survival rates for the 1994 cohort of entrants over their first nine years of operation, by sector. As expected, public industries had the highest firm survival rates, likely because these firms often operate in markets that are free of, or sheltered from, competition. Firms in service-producing industries initially had higher survival rates than firms in goods-producing industries, but the difference between the two sectors diminished over time and after seven years survival rates of firms in the two sectors were nearly the same. The reason for this difference is likely due to lower operating costs in service-producing industries, which typically rely more on knowledge and have less capital than those producing goods.

<sup>2</sup> Survival rates were computed by tracking new entrants over time. Entrants were identified in each year and individually tracked annually to observe how many survived each year. Survival rates are the proportion of entrants that survived for any given length of time. It is assumed that all false births and deaths are identified and corrected for. However, each merger is unique and is dealt with on a case-by-case basis.

**Table 3: Firm Survival Rates for the 1994 Cohort of Entrants, by Sector**

Sector	Number of Years (Percent)								
	1	2	3	4	5	6	7	8	9
Public Industries	78.2	66.7	59.6	54.4	50.1	46.8	43.9	41.1	38.5
Goods-Producing Industries	69.0	52.5	44.6	39.2	35.1	31.9	29.1	26.5	23.9
Service-Producing Industries	75.0	57.6	48.2	41.6	36.6	32.7	29.4	26.6	23.8
<b>Overall</b>	<b>71.3</b>	<b>54.8</b>	<b>46.1</b>	<b>40.1</b>	<b>35.5</b>	<b>31.9</b>	<b>28.9</b>	<b>26.3</b>	<b>23.7</b>

Another factor that can influence firm survival is geographic location. Survival rates for the 1994 cohort of entrants are shown in Table 4 by region. Regional economic strength is reflected in these survival rates: firms in British Columbia, Alberta, Ontario and Quebec had the highest firm survival rates, while those in Atlantic Canada and the Prairies (Manitoba and Saskatchewan) had the lowest survival rates.

**Table 4: Firm Survival Rates for the 1994 Cohort of Entrants, by Region**

Region	Number of Years (Percent)								
	1	2	3	4	5	6	7	8	9
<b>Canada</b>	<b>71.3</b>	<b>54.8</b>	<b>46.1</b>	<b>40.1</b>	<b>35.5</b>	<b>31.9</b>	<b>28.9</b>	<b>26.3</b>	<b>23.7</b>
Atlantic Canada	58.9	43.6	36.0	30.7	26.8	23.8	21.3	19.3	17.1
Quebec	74.2	56.0	46.8	40.7	36.3	32.6	29.6	27.1	24.8
Ontario	74.7	57.8	49.0	42.8	38.2	34.4	31.2	28.5	25.6
Prairies	63.2	49.4	41.6	35.9	31.7	28.5	25.7	22.9	20.2
Alberta	72.3	56.8	48.8	42.9	38.2	34.6	31.5	28.6	25.7
British Columbia	74.7	57.7	48.7	42.1	37.0	32.9	29.6	26.7	24.0

### *Firm Survival Rates by Growth Category*

Firm survival rates by growth category were investigated to determine whether survival rates varied by level of growth. Firms had to operate over the triage period (1993–1997) so that they could be assigned to a growth category. Firms that survived the triage period but did not operate in 1998 appear as exits in column “0”; nearly 8 percent of firms exited at this point. Approximately 63 percent of firms that survived the triage period were still operating in 2003.

Table 5 shows firm survival rates by firm size and growth category. Survival rates varied across growth categories, reflecting the different levels of risk associated with each level of growth. In year 0, there was very little difference between the survival rates of hyper, strong and slow growth firms, but survival rates of declining firms lagged

behind. Over time, however, survival rates of hyper growth firms declined relative to strong growth and slow growth firms, and by 2003 survival rates were highest in strong and slow growth firms. These results suggest that there may be a trade-off between survival and growth.

**Table 5: Survival Rates for Firms Surviving the Triage Period (1993–1997), 1997–2003**

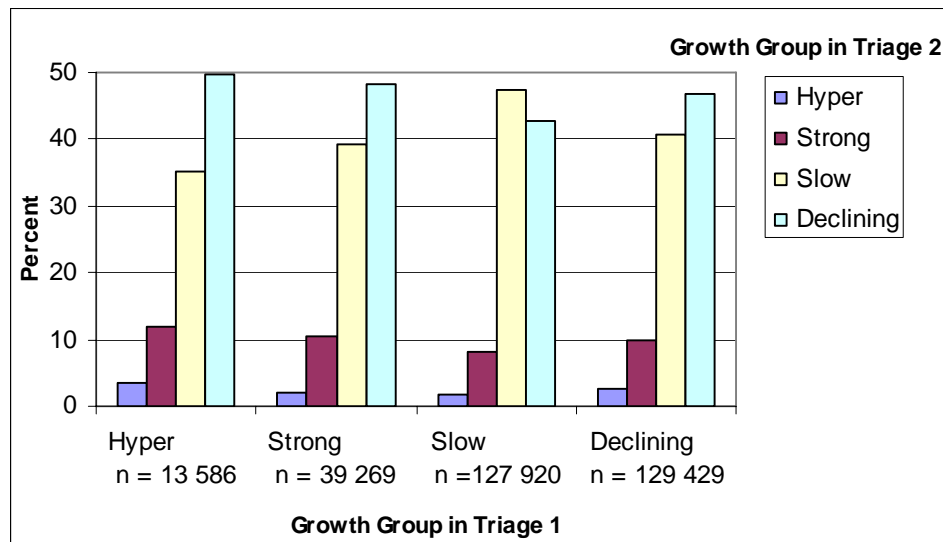
		Number of Years						
		0	1	2	3	4	5	(Still alive)
<b>All Firms</b>	Hyper	94.9	88.6	82.9	77.7	72.8	68.2	63.5
	Strong	96.4	91.2	86.2	81.7	77.2	73.1	68.9
	Slow	95.2	89.6	84.5	79.8	75.4	71.3	66.9
	Declining	89.1	82.4	76.7	71.7	67.3	63.2	59.0
	<b>All</b>	<b>92.6</b>	<b>86.5</b>	<b>81.1</b>	<b>76.3</b>	<b>71.8</b>	<b>67.7</b>	<b>63.4</b>
<b>Micro (1–4 Employees)</b>	Hyper	94.1	87.2	81.1	75.7	70.6	65.8	60.8
	Strong	95.3	89.2	83.7	78.5	73.7	69.1	64.4
	Slow	93.0	85.9	79.5	74.0	68.7	63.9	58.8
	Declining	85.9	78.0	71.5	65.9	60.9	56.4	51.6
	<b>All</b>	<b>90.7</b>	<b>83.4</b>	<b>77.1</b>	<b>71.6</b>	<b>66.6</b>	<b>61.9</b>	<b>57.0</b>
<b>Other Small (5–99 Employees)</b>	Hyper	97.9	93.3	88.6	84.2	79.9	75.6	71.9
	Strong	98.4	94.8	90.7	87.1	83.3	79.9	76.4
	Slow	98.5	94.8	91.3	87.7	84.3	81.1	77.8
	Declining	91.7	85.6	80.4	75.9	71.7	68.0	64.1
	<b>All</b>	<b>94.8</b>	<b>89.8</b>	<b>85.2</b>	<b>81.1</b>	<b>77.2</b>	<b>73.7</b>	<b>70.0</b>
<b>Medium (100–499 Employees)</b>	Hyper	97.6	94.0	89.2	84.4	80.5	76.0	72.4
	Strong	97.7	94.3	90.8	86.9	82.9	80.4	77.5
	Slow	98.4	95.6	92.3	89.2	86.2	83.5	80.1
	Declining	93.9	89.2	85.3	80.9	76.8	73.1	69.7
	<b>All</b>	<b>96.2</b>	<b>92.4</b>	<b>88.7</b>	<b>84.9</b>	<b>81.2</b>	<b>78.0</b>	<b>74.6</b>
<b>Large (500+ Employees)</b>	Hyper	98.8	95.4	93.9	92.0	89.0	85.9	81.0
	Strong	99.1	97.0	95.0	92.7	90.3	88.0	84.3
	Slow	98.9	97.8	95.4	93.3	90.9	88.5	86.2
	Declining	96.0	93.6	90.4	87.8	84.0	81.4	78.9
	<b>All</b>	<b>97.4</b>	<b>95.4</b>	<b>92.7</b>	<b>90.3</b>	<b>87.2</b>	<b>84.6</b>	<b>82.0</b>

### *Ability to Maintain Growth Over the Medium Term*

The methodology used in this study assigns firms to a growth category over the first four years of the 1993–2003 period and tracks them over the remainder of the period. Although it is known how the firms performed as a growth category, there may be firms that alter their growth path over the period. Therefore, a second triage period was added at the end of the 1993–2003 period to see whether firms maintained their growth path from the beginning of the period. This second triage period covered the years 1999–2003.

Figure 2 illustrates the distribution of firms in the second triage period (1999–2003) relative to the distribution of firms in the first triage period (1993–1997). For example, of the 13 000 firms that were hyper growth firms in the first triage period, fewer than 4 percent were hyper growth firms in the second triage period, approximately 12 percent were strong growth firms, and 35 and 50 percent became slow growth and declining firms respectively.

**Figure 2: Distribution of Growth Categories in Triage 2 Relative to Triage 1, Canada, 1993 to 2003**



The distributions were surprisingly similar across the four growth categories. Nearly half of the hyper growth firms declined over the second triage period, which was also true for strong growth firms. Fewer than 5 percent of firms that were hyper and strong growth firms in the first triage period were hyper growth firms in the second triage. Furthermore, only slightly more than 10 percent of hyper and strong growth firms were strong growth firms in the second triage. Nearly half of the slow growth firms remained slow growth firms in both triage periods and slightly more than 40 percent declined over the second triage period. On the other hand, approximately 10 percent of slow growth firms in the first triage period became hyper or strong growth firms in the second triage period.

Firms that declined in the first triage period showed the most surprising distribution in the second triage period. Nearly 13 percent of firms that shed jobs in the first triage period became hyper or strong growth firms in the second triage period, approximately 40 percent improved to become slow growth firms and 47 percent continued to decline. This indicates that half of the declining firms were able to address their weaknesses or reinvent themselves, likely by improving their efficiency, introducing new products or services, or reaching new markets.

These data were also computed by region and reveal that all regions except for Alberta and British Columbia mirror the overall Canadian results. Strong economic growth in Western Canada over this period is evident in the data because more firms were hyper and strong growth firms and fewer were declining firms in the second triage period. Regional economic strength plays an important role in the churning process and growth of continuing firms because most firms, particularly small firms, operate in a very local market.

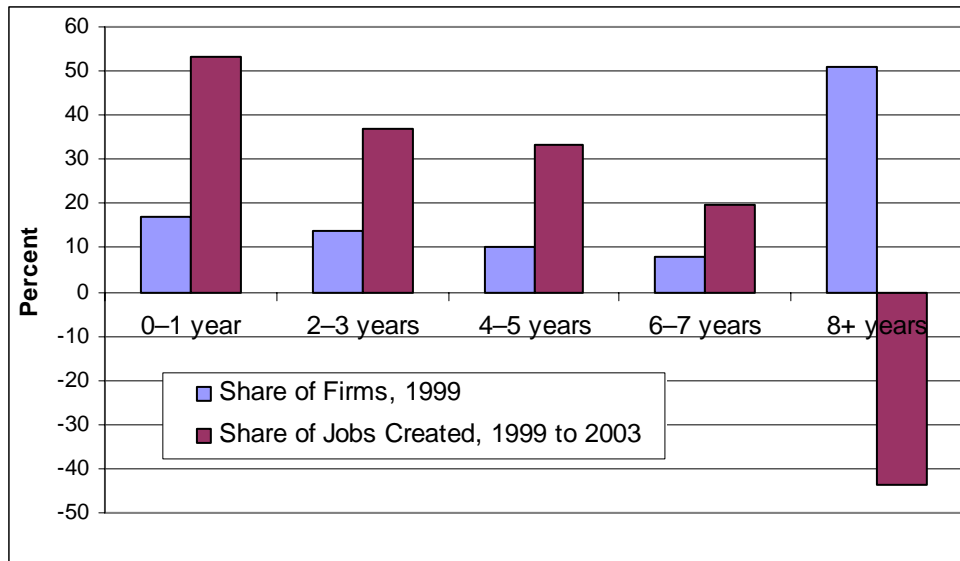
### ***Job Creation by Firm Age***

The previous two sections present ways to compare growth categories, but these include all firms operating in 1993, so firm age is not accounted for, which is likely a strong determinant in the level of job creation. The LEAP file does not contain a firm age variable, so one was constructed relative to 1999 using data from 1993 to 1999 and employment creation by firm age was measured between 1999 and 2003. The firm's first year of operation was subtracted from 1999 and growth was tracked between 1999 and 2003. The start year of those firms operating in 1993 is not known, so they were assigned the label "8 years or older." Growth categories are defined in the same manner as discussed throughout this report.

Distributions of firms in 1999 and their net job creation over the 1999 to 2003 period, by firm age, are illustrated in Figure 3. The "8 years or older" group accounted for approximately half of the firms and the next biggest cohort was made up of the

youngest firms. Those firms aged 0 or 1 year represented nearly 20 percent of the firms and each successive age cohort accounted for a slightly lower share of firms.

**Figure 3: Distribution of Firms and Net Job Creation by Firm Age, Canada, 1999 to 2003**



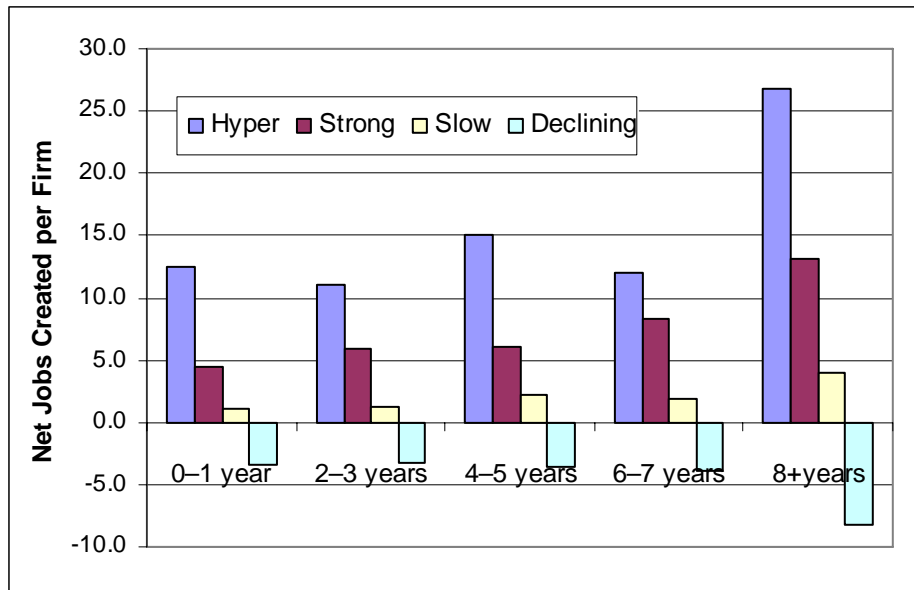
Consistent with earlier findings over the 1985 to 1999 period, the majority of firms are in the oldest firm age cohort. This is not surprising given that this cohort includes any firm that started in 1993 or earlier. Furthermore, distribution of net job creation is also consistent with earlier results showing that the youngest firms accounted for the bulk of net job creation, while the oldest firms shed jobs. The youngest firms accounted for nearly 55 percent of net job creation by firms operating over the 1999 to 2003 period. Firms in the 2 and 3 year and 4 and 5 year cohorts accounted for 37 and 33 percent of net job creation respectively. The 6 and 7 year cohort accounted for 20 percent of net job creation, while those firms aged 8 years and older shed jobs equivalent to 43 percent of total net job creation.

As illustrated in Figure 4, however, the picture is more complicated than Figure 3 suggests. Figure 4 shows the average number of net jobs created per firm by growth category and firm age and, not surprisingly, the number of jobs created or destroyed in each growth category increases as age cohort increases. Generally, firms are larger in older cohorts so, by definition, meeting the growth criteria means that these firms would



create more jobs. Clearly, one cannot conclude that all older firms shed jobs, but because of the distribution of firms across growth categories, the oldest cohort is a net job loser.

**Figure 4: Average Net Jobs Created per Firm, by Growth Category and Firm Age, Canada, 1999 to 2003**



### Discussion

All of these results are based on growth as measured in terms of employment and could be different if growth were measured in terms of revenue. One advantage of measuring growth based upon employment is that there would likely be less variation between industries and over time because employment is less volatile than revenue. However, revenue is favoured by some researchers because it has more of a sense of value than employment, and one can see more directly the contribution that growth makes to the economy in terms of gross domestic product (GDP).

A second limitation relates more directly to the employment unit. The ILU is derived and cannot account for the quantity of hours worked by each employee, which is common to all currently available employment units. Consequently, it is possible that employment growth could be observed when a business is altering its ratio of full-time and part-time employees.

Despite these limitations, several policy implications arise from the study's results. First, it is clear that survival rates of hyper growth firms are lower than those firms that have ambitious, but controlled, growth. This suggests that there are substantial risks associated with extreme levels of growth, so encouraging firms to pursue very high levels of growth may not be optimal because these firms have a higher risk of exiting and, thereby, losing jobs.

In addition to being risky, extremely high growth appears to be short-lived. Approximately half of the hyper growth firms declined (in employment) after the first triage period (1993–1997) and only 3.5 percent continued to meet hyper growth criteria over the later triage period (1999–2003), indicating that it is very difficult to maintain extremely high growth rates over a longer time period. Strong growth firms were more likely than hyper growth firms to have positive growth over the full 10-year period, so they are more likely to be net job contributors over the medium and long term. This also suggests that hyper growth may not be the most desirable outcome because even if it is achieved, the benefits (in terms of job creation) last only a short while. However, results by revenue growth may paint a different picture.

Compared with evidence from other countries, the data in this study indicate that older firms in Canada contributed more to the job creation process than older firms in the United States and Europe. Despite this, the majority of job creation was still generated by the youngest firms in their first few years of operation, suggesting that growth is short-lived because of the declining positive net contribution to job creation as firm age increases. Canada is a world leader in creating businesses, but these results indicate that improvements could be made in the way that firms are supported throughout their life cycle.

Several results from this study suggest that innovation may be crucial to a firm's growth process. The bulk of job creation came from the youngest firms, which are often firms that enter the market to exploit a new idea or process. Furthermore, a large number of firms that were declining at the beginning of the observation period were able to

reverse their path of decline and grow over the final four years of the period. It is possible that these firms were able to turn around their business by innovating in some way.

## **Conclusions**

This phase of the Growth Firms Project looked at the 1993–2003 period. In addition to examining job creation by growth category and firm size, it looked at job creation by firm age and industry, firm survival and the ability of firms to maintain their growth rates. It also looked at firm survival by growth category and the extent to which high-growth firms are able to maintain their growth over the 10-year period. This study confirmed many of the project’s previous findings that covered the 1985 to 1999 period, indicating that the results are not likely time-period specific. However, there are some data limitations that need to be addressed to ensure that the results are interpreted in the correct context.

As found in earlier work, a small number of high-growth firms were responsible for the bulk of net job creation. While the majority of these firms were small, high growth was not limited to micro and small businesses as medium and large high-growth firms accounted for 20 percent of net job creation. Also, although very young firms created the highest number of net jobs, all other age groups made strong contributions to net job creation. This confirms earlier findings from the 1985 to 1999 period. In contrast, evidence from the United States indicates only the youngest firms create jobs.<sup>3</sup>

Results show that declining firms have the lowest survival rate, followed by hyper growth firms. This suggests that greater risk may be attached to a high-growth strategy, and that survival and growth are substitutes, not complements. Strong growth firms had the highest survival rate, followed closely by slow growth firms. Additionally, only 15 percent of hyper and strong growth firms maintained their growth rates over the full 10-year period, while nearly half of them declined over the second half of the period. Surprisingly, this result also holds for slow and declining firms. Of those that declined

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<sup>3</sup> Acs, Zoton, J. “Entrepreneurship (What’s the big deal) and the Macro economy in the 21<sup>st</sup> Century, Understanding Entrepreneurship: Issues and Numbers.” Paris: OECD, October 2005.

over the first triage period (1993–1997), nearly 15 percent were hyper or strong growth firms over the second triage period (1999–2003).

Although this research continues to shed light on the dynamics of job creation and the role of high-growth firms, the future of this work lies in file linkages and adding additional data to the existing LEAP file. Adding revenue from corporate tax files would allow a comparison of growth by revenue and employment. Furthermore, it would allow computation of a productivity proxy (revenue per employee) and productivity levels and changes could be compared across firm sizes and over time. Additional work could be conducted on examining the employee unit and the possibility of correcting the data for part-time employment. Linking the LEAP file to Statistics Canada’s innovation surveys could add insights on how innovative behaviour impacts firm performance, growth and survival. Follow-up work could also look further into the growth/risk trade-off.

## **APPENDIX: Additional Results**

### ***Job Creation by Industry***

Job creation by industry was examined in detail to validate results from earlier work that covered the 1985 to 1999 period. There are 104 industries at the three-digit NAICS level, which led to difficulty disclosing data due to confidentiality restrictions. To eliminate data suppression, NAICS data were mapped to the two-digit Standard Industrial Classification (SIC) scheme, which reduced the number of industries to 70.

Table A1 shows the 25 industries with the highest net job creation by hyper and strong growth firms. As in the earlier phase of work, covering the 1985 to 1999 period, the industry with the most net jobs was business services. Between 1993 and 2003, this industry accounted for 18 percent of net job creation by hyper and strong growth firms, which was only slightly above its representation among high-growth firms at 15 percent of all firms. The other industries in the top five industries for net job creation by hyper and strong growth firms are Accommodation Service Industries, Amusement and Recreational Service Industries, Transportation Industry, and Shoe, Fabric and Yarn Stores. The top eight industries account for half of the net jobs created and the top 23 industries account for 80 percent.

**Table A1: Net Job Creation by Hyper and Strong Growth Firms, Canada, 1993 to 2003**

Rank	Industry	ILU Change 1993–2003	No. of Hyper and Strong Growth Firms	Jobs Created per firm
	<b>All Industries (NAICS)</b>	<b>997 443</b>	<b>52 855</b>	<b>18.9</b>
1	Business Services	183 026	7 822	23.4
2	Accommodation Service Industry	63 280	2 585	24.5
3	Amusement and Recreational Service Industries	54 594	1 150	47.5
4	Transportation Industry	47 992	2 691	17.8
5	Shoe, Fabric and Yarn Stores	40 884	656	62.3
6	Metal, Hardware, Plumbing, Heating and Building Supplies	39 853	947	42.1
7	Trade Contracting	37 731	4 316	8.7
8	Department Stores and General Merchandise Stores	35 296	1 397	25.3
9	Machinery Equipment and Supplies Wholesale	27 044	1 130	23.9
10	Transportation Equipment Industries	26 435	261	101.3
11	Fabricated Metal Products	26 299	1 072	24.5
12	Grocery Stores, Pharmacies, Beer and Alcohol Stores	25 919	1 367	19.0
13	Publishing and Printing Industries	23 258	637	36.5
14	Machinery Industry	22 913	729	31.4
15	Food Industries	22 114	414	53.4
16	Rubber Products Industries	20 119	285	70.6
17	Membership Organizations	19 250	3 241	5.9
18	Furniture and Fixture Industries	16 617	395	42.1
19	Agriculture	14 573	3 128	4.7
20	Building Developing and General Contracting	13 795	1 944	7.1
21	Insurance Industries	13 522	683	19.8
22	Mineral Extraction Services	12 082	369	32.7
23	Automobile Dealers, Parts and Accessories	11 632	1 132	10.3
24	Apparel and Dry Goods Wholesale	10 984	472	23.3
25	Wood Industries	9 411	317	29.7
	<i>45 Remaining Industries</i>	<i>178 820</i>	<i>13 715</i>	<i>13.0</i>

To see whether high-growth firms are disproportionately concentrated in any industries, a ratio was computed to measure each industry's share of net job creation by hyper and strong growth firms relative to each industry's share of hyper and strong growth firms. The top 20 industries are shown in Table A2 and Transportation Equipment Industries had the highest ratio, with its share of net job creation 5.4 times greater than its share of hyper and strong growth firms. All industries in the top 11 created more than double their share of jobs. However, all of these industries had very few hyper and strong growth firms, so the economic impact of this job creation is not very significant. Only five of the top 20 industries had more than 1000 hyper and strong growth firms and only one, Accommodation Service Industries, had more than 2000 hyper and strong growth firms (however, this still represents less than 5 percent of all hyper and strong growth firms).

**Table A2: Ratio of Share of Jobs Created to Share of Firms for Hyper and Strong Growth Firms, Canada, 1993 to 2003**

Rank	Industry	No. of Hyper and Strong Growth Firms	Share of Job Creation to Share of Firms	Knowledge Level
	<b>Total NAICS</b>	<b>52 855</b>	<b>1.0</b>	<b>-</b>
1	Transportation Equipment Industries	261	5.4	Low
2	Other Service Industries	38	4.7	Medium
3	Rubber Products Industries	285	3.7	Medium
4	Shoe, Fabric and Yarn Stores	656	3.3	Low
5	Beverage Products Industry	27	2.8	Low
6	Food Industries	414	2.8	Low
7	Amusement and Recreational Service Industries	1 150	2.5	Medium
8	Metal, Hardware, Plumbing, Heating and Building Supplies	947	2.2	Medium
9	Furniture and Fixture Industries	395	2.2	Low
10	Oil and Gas Industry	86	2.1	Medium
11	Non-Metallic Mineral Products	160	2.1	Medium
12	Publishing and Printing Industries	637	1.9	Medium
13	Mineral Extraction Services	369	1.7	Medium
14	Machinery Industry	729	1.7	High
15	Clothing Industry	183	1.7	Low
16	Wood Industries	317	1.6	Low
17	Department Stores and General Merchandise Stores	1 397	1.3	Low
18	Fabricated Metal Products	1 072	1.3	Medium
19	Accommodation Service Industry	2 585	1.3	Low
20	Machinery Equipment and Supplies Wholesale	1 130	1.3	Medium

It is often believed that high growth occurs in high-technology or high-knowledge companies, so a knowledge level<sup>4</sup> was assigned to each industry to evaluate whether high growth is, indeed, concentrated in high-knowledge areas. Only one of the top 20 industries, Machinery Industry, is considered a high-knowledge industry and it ranked 14<sup>th</sup>. Low-knowledge industries accounted for nine of the top 20, including four of the top six, while medium-knowledge industries accounted for 10 industries. Based on this analysis, high growth does not appear to be concentrated in high-knowledge or high-tech industries; however, this finding may be different if revenue growth were examined.

### ***Job Creation by Firm Size***

Further details on net job creation by firm size are provided in Table A3. Of the nearly 53 000 hyper and strong growth firms, nearly 99 percent were small businesses and these firms were responsible for 59 percent of the net jobs created by hyper and strong growth firms. Micro firms accounted for 67 percent of hyper and strong growth firms and nearly 30 percent of the net jobs created. In contrast, large firms accounted for

<sup>4</sup> The knowledge intensity classification system used is the same as was used in the following report: Kanagarajah, Sri. "Business Dynamics in Canada, 2003." Ottawa: Statistics Canada (2006), 61-534-XIE.

0.2 percent of hyper and strong growth firms, but nearly one quarter of the jobs created by these two groups of firms. Although approximately 9 percent of large firms were hyper or strong growth firms, these large businesses contributed far more jobs per firm than small businesses. This indicates that high growth is not a small business phenomenon.

**Table A3: Net Job Creation by Firm Size, Canada, 1993 to 2003**

	Hyper Growth Firms		Strong Growth Firms		Slow Growth Firms		Declining Firms		All Continuing Firms	
	Job Creation	Percent	Job Creation	Percent	Job Creation	Percent	Job Creation	Percent	Job Creation	Percent
1-4	83 348	19.3	57 744	10.2	46 631	5.9	-12 112	1.5	175 611	18.2
5-19	86 250	20.0	114 180	20.2	117 788	14.9	-85 816	10.4	232 402	24.0
20-49	58 617	13.6	93 467	16.5	114 951	14.5	-62 558	7.6	204 477	21.2
50-99	26 245	6.1	65 146	11.5	91 136	11.5	-47 533	5.8	134 994	14.0
1-99	254 460	58.9	330 537	58.4	370 506	46.8	-208 019	25.3	747 484	77.3
100-499	72 160	16.7	114 521	20.2	161 789	20.4	-85 259	10.4	263 211	27.2
500+	105 157	24.4	120 607	21.3	259 162	32.7	-529 041	64.3	-44 115	-4.6
Total	431 777	100.0	565 665	100.0	791 457	100.0	-822 319	100.0	966 580	100.0

***Changes in Firm Size for Hyper and Strong Growth Firms, by Age***

As in earlier phases of this project, growth matrices were tabulated to measure firm growth through size categories over time. Table A4 shows two growth matrices over the 1999 to 2003 period for hyper and strong growth firms — one is for the youngest age cohort (0 or 1 year old) and the other for the oldest cohort (8 years or older).

The shaded diagonal indicates the proportion of firms that remained in the same size category in both 1999 and 2003. Those values above and to the right of the diagonal represent the percentage of firms that grew over this period. Those below and to the left of the diagonal decreased; however, because the triage and tracking periods are the same, it is impossible for hyper and strong growth firms to decrease, so all these values are zero.



**Table A4: Growth Matrix for Hyper and Strong Growth Firms by Firm Age, 1999 to 2003, Canada**

Hyper and Strong Growth Firms Aged 0 or 1 year										
		Firm Size in 2003 (Percent)							Total	No. of Firms
		1-4	5-19	20-49	50-99	100-299	300-499	500+		
Firm Size in 1999 (Percent)	1-4	67.8	31.1	1.0	0.1	0.0	0.0	0.0	100.0	17 765
	5-19	0.0	64.7	32.5	2.4	0.4	0.0	0.0	100.0	3 676
	20-49	0.0	0.0	34.7	54.5	10.3	0.2	0.4	100.0	554
	50-99	0.0	0.0	0.0	22.3	76.4	0.7	0.7	100.0	148
	100-299	0.0	0.0	0.0	0.0	47.3	36.4	16.4	100.0	55
	300-499	0.0	0.0	0.0	0.0	0.0	6.3	93.8	100.0	16
	500+	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	5
	Total	54.2	35.6	7.0	2.0	1.0	0.1	0.1	100.0	22 219

Hyper and Strong Growth Firms Aged 8 Years or Older										
		Firm Size in 2003 (Percent)							Total	No. of Firms
		1-4	5-19	20-49	50-99	100-299	300-499	500+		
Firm Size in 1999 (Percent)	1-4	69.0	30.4	0.5	0.1	0.0	0.0	0.0	100.0	21 768
	5-19	0.0	65.8	32.6	1.4	0.2	0.0	0.0	100.0	7 751
	20-49	0.0	0.0	45.3	49.5	4.8	0.2	0.3	100.0	1 951
	50-99	0.0	0.0	0.0	25.6	73.2	1.1	0.2	100.0	652
	100-299	0.0	0.0	0.0	0.0	62.7	27.7	9.6	100.0	343
	300-499	0.0	0.0	0.0	0.0	0.0	11.3	88.7	100.0	53
	500+	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	94
	Total	46.1	35.9	10.8	3.9	2.5	0.3	0.6	100.0	32 612

The growth matrices for the two age cohorts are very similar, especially for small firms. Approximately one third of firms with fewer than 20 employees increased in size over the period in both cohorts. More than half of the firms with 20 to 99 employees increased at least one firm size category.

The most substantial differences were found in firms with more than 20 employees: more firms in the oldest age cohort stayed along the diagonal and fewer firms increased to the next firm size category. Moreover, approximately half of the youngest firm cohort increased more than one firm size category. Medium-sized and large firms were somewhat different between the two age cohorts: more of these firms grew in the younger firm cohort.