Longitudinal trends in accelerated internationalization among start-ups: Born Global or Born Regional?

Sui Sui[1] and Zhihao Yu[2]

Abstract

A recent study by Lopez, Kundu, and Ciravegna (2009) on Costa Rican software companies finds that most conventional Born Global firms turn out to be Born Regional and that there are only a few true Born Global firms. Although it could be true that only a small proportion of firms are true Born Global, is there an increasing trend? This note investigates this question by providing a dynamic perspective on the secular trend of internationalization processes among Canadian small and medium-sized enterprise exporters between 1997 and 2004. We find that there is no increasing trend among start-ups to choose true Born Global internationalization except in 2003 and 2004. Rather, there is an increasing trend among start-ups to choose Born Regional internationalization.

[1] *Corresponding author:* Global Management Studies Department, Ted Rogers School of Management, Ryerson University, 575 Bay Street, Toronto, ON, M5G 2C5, Canada. Tel: + 1 416 979 5000 ext. 6710; Fax: + 1 416 979 5266; Email: sui.sui.66@gmail.com

[2] Department of Economics, Carleton University, 1125 Colonel By Drive, Ottawa, ON, K1S 5B6, Canada; Email: zhihao.yu@carleton.ca

INTRODUCTION

A Born Global company is also referred to as an International New Venture (INV) or a global start-up, and has been conceptualized as a small and medium-sized enterprise (SME) that "from or near its founding, seeks to derive a substantial proportion of its revenue from the sales of its products in international markets" (Knight, 1997, p1). The prevalence of the Born Global phenomenon—such that there has been an emergence of Born Global companies in great numbers worldwide—has been reported by numerous studies in the fields of international business and international entrepreneurship in the last two decades (e.g., Moen & Servais, 2002; Knight et al., 2004; Rialp et al., 2005). Moreover, due to macro-trends such as the globalization of markets and advanced information and communication technologies (ICT), it has been widely claimed in the literature that there will be an increasing trend among start-ups to choose the Born Global internationalization approach over time (Knight & Cavusgil, 1996; Aspelund & Moen, 2001; Rialp et al., 2001). For example, Rialp et al. (2001, p16) argue that "it can be expected that such trends will be even stronger in the next years, thus making the phenomenon of born-globalness more widespread in the future."[3]

A recent study published in the *Journal of International Business Studies* by Lopez, Kundu, and Ciravegna (2009) on Costa Rican software companies finds that there are only a few Born Global firms among their samples. Furthermore,

[3] One of the few studies that is able to provide such empirical evidence is written by Aspelund and Moen (2001). Specifically, investigating three generations of Norwegian exporters, Aspelund and Moen (2001) find that the number of Born Global firms has increased over generations.

most Born Global firms turn out to be Born Regionals,[4] in that their business activities are concentrated within the regional market. Given that the conventional definition of Born Global—firms with accelerated internationalization (i.e., exporting 25% of revenue within two years of inception)—does not distinguish the Born Regional (firms with accelerated internationalization, but only concentrated in the regional market) from true Born Global firms (firms with accelerated internationalization and with business activities in the global market), the finding of Lopez et al. (2009)'s study presents an important challenge to the argument about the prevalence of the Born Global phenomenon.

The purpose of this study is to investigate a question that arises naturally from Lopez et al. (2009)'s study: although only a small proportion of firms are true Born Global, could there be an increasing trend among start-ups to choose the true Born Global internationalization process over time? In order to answer this question, we constructed a unique longitudinal (1997–2004) data set by linking multiple large-scale administrative databases from Statistics Canada. Our data set includes all Canadian exporting enterprises that have at least one shipment to a foreign country between 1997 and 2004; this allows us to investigate the internationalization process of a representative sample of Canadian SMEs without having sample selection issues.

Consistent with established practice in the international business research,[5] we categorize the internationalization process of SME exporters into three subsets:

[4] Born Regionals are referred to as Born International by Gabrielsson et al. (2004) and apparent Born Global by Kuivalainen, Sundqvist & Servais (2007).

[5] See Moen & Servais (2002), Gabrielsson, Sasi, & Darling (2004), Kuivalainen et al. (2007), and Lopez et al. (2009).

true Born Global, Born Regional and Gradual Global. As noticed by previous studies (e.g., Aspelund & Moen, 2001), there are significant distinguishing characteristics among different generations of exporters. Thus, the increase in the number of Born Global firms could be attributed to the changes in the characteristics of new firms rather than the globalization of markets. To overcome this limitation, we apply the multinomial logit model to control for the characteristics of firms and estimate their *ceteris paribus* predicted probability of choosing different internationalization processes if they were established in different years, not just the number and proportion of start-ups that choose different internationalization processes. As a result, our study is able to bring persuasive statistical results to our research question.

The rest of the paper begins with a review of data and methodology in section 2, and then moves to results and discussions in section 3. Concluding remarks are provided in section 4. Since this paper is intended to be a note following Lopez et al. (2009)'s study, we are not going to repeat the literature.

DATA AND METHODS

Data

The unique dataset that we constructed to examine our research question was extracted from the Exporter Register (ER), the Business Register (BR) and the Longitudinal Employment Analysis Program (LEAP). The ER, our main data source, is a large-scale administrative database of all merchandise trade transactions made by Canadian firms from 1993 to 2005. This data set allows us to track the first year in which a firm starts to export, the value of its exports, and the destinations and products it exports in each year between 1993 and 2005. We

use the BR database as a supplement to the ER database to obtain information on the age and annual revenue of the firms. The BR database is available for the years between 1987 and 2006. LEAP, the third data source, contains employment information for each employer business in Canada and is available for the years between 1997 and 2004.

Sample

We now present the criteria and procedure of selecting observations. First, we selected firms with fewer than 500 employees for the purpose of investigating the internationalization process of SMEs. Second, we decided to focus on firms that manufacture their own products and eliminated intermediation firms that sell products produced by other companies. For this purpose, we selected firms that belong to the manufacturing industry. Third, we selected firms that were established between 1997 and 2004. This study uses the founding condition to classify a firm as Born Global, Born Regional or Gradual Global. Because information on firm founding conditions from the LEAP database is only available for the years between 1997 and 2004, firms that were established prior to 1997 were excluded. Finally, to ensure observations in our sample are suitable for our research purposes, we selected enterprises with at least CAD$30,000 of revenue per year[6] and CAD$2,000 of exports per year.[7]

[6] It is a well-documented fact that in administrative databases, such as the ER database that is used in this study, the business behaviours of many firms are very irregular and are not suitable for research purposes. Therefore, this study uses CAD$30,000, the same threshold that is used in the ER database, to eliminate irregular firms.

[7] Export transactions to non-U.S. destinations that are valued at less than CAD$2,000 need not be reported to the Canada Revenue Agency. Therefore, this study uses CAD$2,000 as a threshold in order to eliminate irregular exporters.

Dependent Variable

Our dependent variable, the different *internationalization approaches* that have been adopted by Canadian firms, is categorized without implicit order, as follows: true Born Global, Born Regional and Gradual Global. Canada represents the interesting case of a developed country with an open economy. From the perspective of Canadian firms, there are lower risks and costs associated with entering the U.S. market because of the geographical advantage, as well as similarities between the two countries. As such, we propose that exporting to the U.S. should be considered as a regional rather than a global activity. Following the previous studies (Gabrielsson et al., 2004; Gabrielsson et al., 2008; Knight et al., 2004; Kuivalainen et al., 2007; Lopez et al., 2009), we classify a firm as true Born Global if it is two years old or younger, has an export intensity of 25% or higher and has exported to the global (non-U.S.) market during the first year of its export activity. We classify a firm as Born Regional if it is two years old or younger, has an export intensity of 25% or higher and has only exported to a regional (the U.S.) market during the first year of its export activity. And, finally, we classify a firm as Gradual Global if it cannot be classified as either Born Regional or true Born Global. It is important to note that, if we use the conventional definition of Born Global as developed by Knight et al. (2004), both true Born Globals and Born Regionals can be considered as Born Globals. In this study, we refer to these firms as conventional Born Globals or Born Globals.

Principal Independent Variables: The year in which a firm was established

Because we do not have information on the actual year in which a firm was established, following Huynh et al. (2010) we construct the variable *BRBY* (BR birth year, the first year a firm appears in the BR database) to capture the year that a firm starts its business.

Control Variables

We want to know whether new firms are more likely to choose the Born Global strategy after we control for their characteristics. Firm-level control variables include firm *size* (number of employees in the first year that a firm was established) and *performance* (revenue per employee in the first year that a firm was established). In addition, we control for the potential influence of whether a firm belongs to the *ICT* sector (Jolly et al., 1992; Bell, 1995; Aspelund & Moen, 2004) and whether it has better *foreign knowledge* (Coviello, 2006). The ICT variable is equal to one if a firm belongs to the ICT sector. Because of the lack of commonly used measurements related to a firm's foreign knowledge, we propose that, compared to the firms located in other provinces, firms that are located in Quebec—the only Canadian province whose sole official language is French—have better foreign institutional knowledge because they have a greater affinity with European countries than with the U.S. in terms of language and culture (Florida and Stolarick, 2002). Based on this argument, we constructed a dummy variable (Quebec) that is equal to one if a firm is located in Quebec. Table A1 in Appendix A presents the definitions, means, standard deviations, minimums and maximums associated with the study variables.

Econometric Model: The multinomial logit model

Because firms are classified according to multiple criteria, a multinomial logit (MNL) model is more appropriate than an ordered logit model.[8] The probability

[8] Because the focus of this study is to investigate the differences between Born Regional and Born Globals, the multinomial logit model is more appropriate than the nested logit model. Furthermore, compared to the conditional logit model, which considers the effects of choice-specific characteristics on the determinants of choice probabilities, the multinomial logit model makes the choice probability depending on firm-specific characteristics.

that the i_{th} firm will choose the j_{th} internationalization approach (P_{ij}) is given by

$$P_{ij} = \Pr(U_{ij} > U_{ik}), \quad \text{for} \quad k \neq j, \quad i = 1,...,N, \; j,k = 0,1,2,3, \tag{1}$$

with U_{ij} being the maximum utility (return) attainable for firm i if the firm chooses the j_{th} internationalization approach, and

$$U_{ij} = x_i \beta_j + \varepsilon_{ij}, \qquad i = 1,...,N, \; j = 1,2,3 \tag{2}$$

where x_i is a set of explanatory variables and β_j is a vector of unknown parameters (Judge et al. 1985). If the stochastic term ε_{ij} is a random error that follows a log-Weibull[9] distribution, the multinomial logit model can be expressed as

$$P_{ij} = \exp(x_i \beta_j) / \sum_{j=1}^{J} \exp(x_i \beta_j), \qquad i = 1,...,N, \; j = 1,2,3 \tag{3}$$

The probability of a firm choosing an alternative internationalization approach m is

$$\Pr(y_i = m) = \exp(x_i \beta_m) / (1 + \sum_{j=1}^{J-1} \exp(x_i \beta_j), m = 1,2,3 \tag{4}$$

where, for firm i, y_i is the value of the outcome variable.

In order to interpret the estimation results more intuitively, we make use of the relative risk ratio to interpret the quantitative effect of the explanatory variables. The relative risk ratio is essentially the exponential value of the multinomial logit coefficients. The interpretation of the relative risk ratio is for a unit change in the

[9] The log-Weibull distribution, also known as the Gumbel distribution, is a special case of the Fisher-Tippett distribution.

independent variable x_i. The relative risk ratio of outcome m relative to the reference group is expected to change by a factor of the respective parameter estimate given that the other variables in the model hold constant.

RESULTS AND DISCUSSIONS

As shown in Figure 1, based upon the classification method explained above, we find the share of true Born Global, Born Regional and Gradual Global firms is 6%, 25% and 69%, respectively. This evidence among Canadian manufacturers is similar to Lopez et al. (2009)'s study on Costa Rican software companies: most exporters (69%) followed a gradual approach to internationalization and the majority of firms (81%) that satisfy the conventional definition of Born Global are actually Born Regionals, engaging only in the U.S. market during the first two years of their export activity.

Figure 1. Distribution of firms, grouped by internationalization process

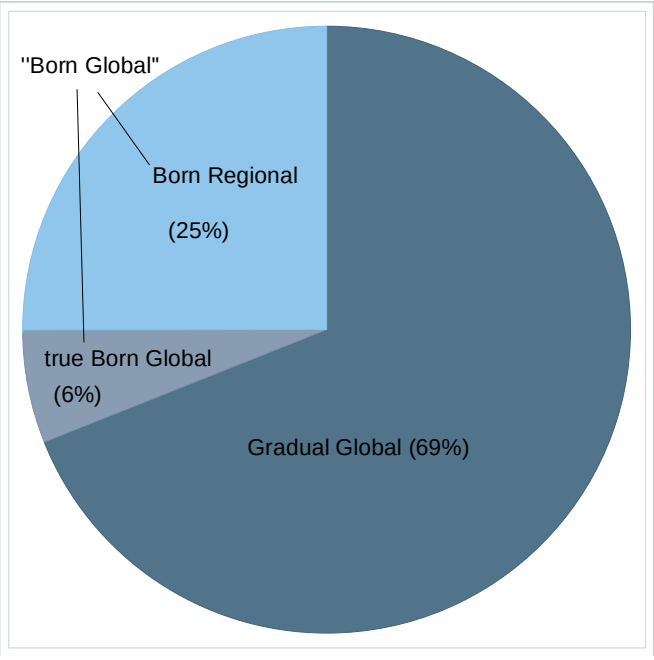


Table 1 provides the description statistics of our variables of interest, grouped by internationalization approaches. The results of Table 1 suggest that, compared to the other groups of firms, true Born Globals are (1) the most likely to belong to the ICT sector, (2) the most likely to be located in Quebec, and (3) the most competitive in terms of revenue per employee, value of exports and number of export destinations. Compared to the other groups of firms, Born Regionals are (1) the least likely to belong to the ICT sector, (2) the least likely to be located in Quebec, and (3) the least competitive in terms of number of employees, revenue and revenue per employee. As such, the result in our study based on Canadian firms is consistent with Gabrielsson et al. (2004) and Kuivalainen et al. (2007)'s studies on Finnish Born firms, namely that Born Regional and true Born Global firms have very different characteristics.

Table 1. Descriptive statistics, grouped by internationalization approaches

Name	True Born Global	Born Regional	Gradual Global
BRBY	**1999.87** (2.10)	**1999.78** (2.80)	**1997.60** (2.61)
ERBY	**2000.69** (2.07)	**2000.36** (2.03)	**1999.68** (2.71)
ExAge	**0.72** (0. 97)	**0.58** (0.86)	**2.08** (2.13)
EI	**0.61** (0.25)	**0.55** (0.24)	**0.09** (0.12)
Global Share	**0.67** (0.42)	**0.00** (0.00)	**0.14** (0.33)
ICT	**0.15** (0.34)	**0.05**(0.23)	**0.08** (0.26)
Quebec	**0.30** (0.46)	**0.21** (0.41)	**0.21** (0.41)
Revenue (millions CAD)	**0.93** (4.33)	**0.60** (1.88)	**1.28** (3.40)
Employees	**17.01** (24.72)	**14.80** (26.91)	**20.72** (28.80)
Revenue/Employee	**89.45** (62.32)	**72.04** (52.39)	**85.02** (54.13)
Exports (millions CAD)	**1.05** (8.55)	**0.46** (1.14)	**0.11** (0.34)
Destinations	**2.60** (2.41)	**1.0** (0.00)	**1.19** (1.17)

Note: N = 1959; standard deviations are reported in parentheses

Source: ER, BR and LEAP from Statistics Canada

Table 2 reports the regression results on the relative risk ratio from the multinomial logit model. The diagnostic assessments are provided in Table B in Appendix B. Compared with firms that were established in 1997, firms that were established in 2000, 2003 and 2004 have a significantly higher probability of choosing the Born Global relative to the Gradual Global strategy. For example, compared with firms that were established in 1997, the probability of firms that were established in 2000 to choose the Born Global relative to the Gradual Global strategy is 2.1746 times higher ($p < .05$) when other variables in the model are held constant. It also appears that compared with firms that were established in 1997, firms that were established in 1998, 2001 and 2002 also have a higher probability of choosing the Born Global relative to the Gradual Global strategy; however, these results are statistically insignificant ($p > .10$). Therefore, we can not find a clear trend among new firms related to their choice of the Born Global relative to the Gradual Global process over time. Figure 2, showing the trend study, appears later in this study.

Next, compared with firms that were established in 1997, firms that were established in every year except 1998 have a statistically significant higher probability of choosing the Born Regional relative to the Gradual Global internationalization process ($p < .05$). In general, the later a firm was established, the higher the probability of it choosing the Born Regional relative to the Gradual Global internationalization process. For example, compared with firms that were established in 1997, the probability of firms that were established in 1999 to choose the Born Regional relative to the Gradual Global strategy is 1.5399 times higher; in 2000 it is 1.5840 times higher; in 2001 it is 1.9674 times higher; in 2002 it is 2.4936 times higher; in 2003 it is 3.4987 times higher; and in 2004 it is 3.4902 times higher. Since all these results are statistically significant, we can

conclude that there is an increasing trend among new firms to choose the Born Regional process relative to the Gradual Global over time.

Table 2: Regression results on the relative risk ratio from the multinomial logit model

	True Born Global vs. Gradual Global		**Born Regional vs. Gradual Global**	
	RRR	p-value	**RRR**	p-value
Year start business (reference: 1997)				
1998	**1.7316**	0.1210	**1.1977**	0.3360
1999	**1.8726**	0.0860	**1.5399**	0.0200
2000	**2.1746**	0.0400	**1.5840**	0.0200
2001	**1.8734**	0.1070	**1.9674**	0.0010
2002	**2.0097**	0.1060	**2.4936**	0.0000
2003	**4.0089**	0.0010	**3.4987**	0.0000
2004	**5.6490**	0.0010	**3.4902**	0.0000
Size	**0.5735**	0.0000	**0.5968**	0.0000
Performance	**0.8911**	0.4710	**0.5239**	0.0000
ICT	**1.9427**	0.0240	**0.6824**	0.1010
Foreign Knowledge	**1.7991**	0.0100	**0.9555**	0.7410

Note: Number of observations=1959; size is measured by $\log(employee)$; performance is measured by $=\log(revenue/employee)$; log likelihood = -1388.2742; pseudo R2 = 0.0734
Source: ER, BR and LEAP from Statistics Canada

Table 2 also shows that the larger the firm, the less likely it is that it will choose the Born Global over the Gradual Global internationalization approach and the larger the firm, the less likely it is that it will choose the Born Regional over the Gradual Global internationalization approach. In our regression, the size of the firm is measured by the log value of number of employees. For example, compared to a firm with 10 employees (log10=1), the probability of a firm with 100 employees (log100=2) choosing the Born Global relative to the Gradual Global strategy is 0.5735 times lower and the probability for a firm with 100 employees choosing the Born Regional relative to the Gradual Global strategy is

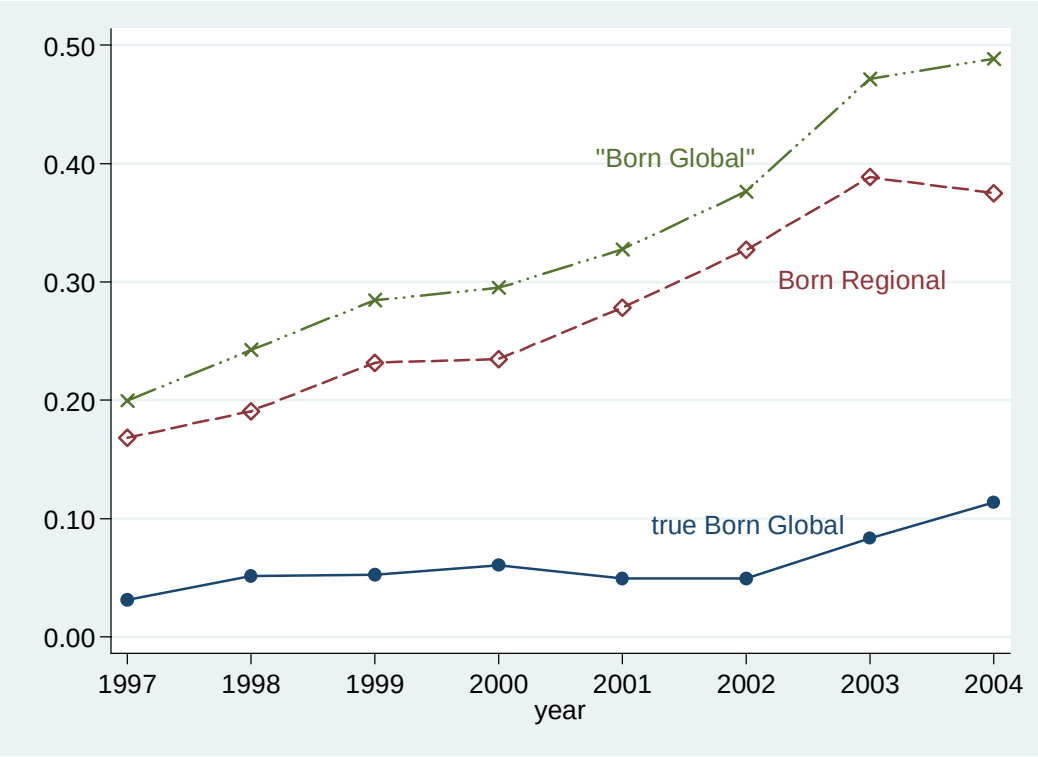
0.5968 times lower. These results support Cavusgil et al. (2008)'s argument that, compared to larger firms, smaller firms are more adaptable and have quicker response times to new ideas and technologies. Consequently, smaller firms are more likely to export intensively at the founding of the company by adopting either the Born Global or Born Regional internationalization processes.

Furthermore, when other variables in the model are held constant, the probability of a firm choosing the Born Global relative to the Gradual Global strategy is 1.9427 times higher if it belongs to the ICT sector and the probability of a firm choosing the Born Global relative to the Gradual Global strategy is 1.7991 times higher if it has better foreign knowledge.

Next, we set the control variables at their mean values[10] and, in Figure 2, we plot a firm's predicted probability of choosing different internationalization processes if it was established in different years. It is shown that a firm's predicted probability of choosing the conventional Born Global internationalization approach increased from approximately 20% in 1997 to almost 50% in 2004. This evidence seems to support Rialp et al. (2002)'s argument that the Born Global phenomenon is getting more widespread over time. However, if we take a closer look by separating the Born Regional from the true Born Global companies, the majority of Born Global companies are actually Born Regionals in each year between 1997 and 2004. Moreover, there is no clear trend among new firms of choosing the true Born Global process except in years 2003 and 2004. There is, surprisingly, an increasing trend among new firms of choosing the Born Regional process between 1997 and 2003.

[10] In our sample, the average size of firms is 10 employees; the average revenue per worker is CAD$66,200.

Figure 2. Predict probability for start-up companies of choosing different internationalization processes



CONCLUDING REMARKS

Motivated by Lopez et al. (2009)'s study on the regional rather global nature of the so-called Born Global companies, the purpose of this study is to provide a dynamic perspective on the secular trend of implementing the true Born Global internationalization process among Canadian SME exporters between 1997 and 2004. Our results indicate that the trend among start-ups to choose the true Born Global internationalization process is flat between 1997 and 2002 and then increases in 2003 and 2004. Conversely, the trend among start-ups to choose the Born Regional internationalization process increases between 1997 and 2003 and then decreases in 2004. These findings suggest that it is desirable to add more

recent data[11] to investigate the trend of the true Born Global and Born Regional phenomenon, since both trends changed their direction by the end of our research period. Nonetheless, we believe our study provides compelling statistical evidence for a better understanding of the Born Global and Born Regional phenomenon.

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[11] The data set used in this study is part of a database constructed by Sui Sui under the Tom Symons Research Fellowship of Statistics Canada in 2006. One of the databases we used to construct our data set, the LEAP database, is only available for the years between 1997 and 2004. Therefore, we are not able to conduct this research over a long period of time.

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Appendix A: Table A. Variables of interest, definitions and descriptive statistics grouped by internationalization process

Name	Definition	Mean	Std. Dev.	Min	Max
BRBY	The first year a firm appears in the BR database	1999.43	1.95	1997	2004
ERBY	The first year a firm appears in the ER database	2000.75	2.00	1997	2004
ExAge	=ERBY-BRBY+1, the firm's export start-up age	1.32	1.59	0	7
EI	Exports/Revenue, export intensity	0.24	0.28	0	1
Global Share	Exports to the global. markets/Total Exports	0.14	0.34	0	1
ICT	=1 if the firm belongs to the information and communication sector and 0 otherwise	0.08	0.26	0	1
Quebec	=1 if the firm is located in Quebec and 0 otherwise	0.22	0.41	0	1
Revenue (millions CAD)	Annual value of revenue, deflated by annual industry price indexes, base year 2000	1.09	3.11	0.03	60.89
Employees	number of employees the firm hired	18.40	28.08	1	331.32
Revenue/Employee	Revenue/Employee, in thousands of CAD	82.00	56.05	16.86	312.27
Exports (millions CAD)	Annual value of exports, deflated by annual merchandise exports customs-based price indexes, base year 2000	0.22	0.60	0.00	9.95
Destinations	Number of export destinations	1.22	1.35	1	45

Note: N = 1959

Source: ER, BR and LEAP from Statistics Canada

Appendix B: Diagnostic assessment and the fitness of the model

The most powerful assessment of a single predictor in logistic regression is the likelihood-ratio (LR) test, which follows approximately the chi-squared distribution. The LR test is computed by comparing the log likelihood from a full model that includes all the explanatory variables with that of a restricted model that excludes the tested variable x_k. An insignificant test at a conventional level, such as 0.05, suggests that the variable x_k should not be used in the model (our data supports the hypothesis that $\beta_{jk} = 0,\ j = 1,\ldots, J$). According to Table 4, the effect of variables such "revenue per employee," "employees," and "first year of business" are statistically significant at the 0.01 level; the effect of variables "ICT" and "Quebec" are statistically significant at the 0.05 level.

Table B. Likelihood-ratio test of coefficients

Variables tested	**LR Chi2**	**Prob > Chi2**
ICT	9.14	0.0104
Quebec	6.93	0.0313
Revenue per employee	28.80	0.0000
Employees	120.05	0.0000
First year of business	171.34	0.0000

Source: ER, BR and LEAP from Statistics Canada