Growth Determinants of Micro-Businesses in Canada

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I. Introduction

Job creation by small business is an important focal point for public policy and has been the subject of much empirical research[1]. If small businesses have the capacity to create jobs, then how will public policy help realize this potential for as many businesses as possible?

In order to address this issue it is helpful to better understand the factors involved in the growth of small businesses. However, the small business sector is hardly homogenous. Very small businesses include the self-employed, micro-businesses, most start-ups and many more. Not all of these businesses are equally capable or willing to grow. Blanket approaches to small business may therefore be less effective in understanding growth, given the different performance outcomes of different types of small businesses. Research efforts and policy discussion targeted at specific types of small businesses may be most helpful in fostering such understanding.

This study draws on the rich information obtained from the "Micro-Enterprises, 2000" survey, undertaken by Statistics Canada in collaboration with Industry Canada. The survey targeted owner-founders of micro-businesses in seven industries other than manufacturing that had between one and four employees in 1995 and were still in operation in 1999.

Given that micro-businesses comprise three-quarters of all Canadian businesses and make a significant contribution to job creation[2], this study focuses on that cohort. It undertakes a cross-

[1] Until the mid 90s, most job creation was accounted for by small businesses. However, most jobs created by small new businesses dissipate within five years, as businesses exit the market. Still, these findings do not negate the importance of small business in creating sustainable jobs. A Canadian study found that among surviving businesses, smaller businesses created more jobs than larger businesses (Brander et al., 1998).

[2] According to one data source (Employment Dynamics) during the period 1987-98 businesses with fewer than five employees created 23.5% of all net new jobs in Canada.

national examination of the growth determinants of micro-businesses, defined here as businesses with fewer than five employees[3]. The study concentrates on surviving businesses, defined here as businesses that have been in operation for at least four years. Due to their very small size, the owner-founder is still the manager of the firm. As such his/her management decisions, intentions for the business, and attitudes/aspirations could be intrinsically linked with the growth of the business itself.

The survey collected data on both owner and business characteristics. The study focuses on growth determinants that are internal to the business. Most commonly these are seen to be knowledge, managerial and technical capabilities, skills, networks, material facilities and capital.

The study only addresses in summary fashion external factors affecting the growth of the business, such as the regulatory environment, a demand for the businesses' products and services, and changing technology. Industry sector and province of operation are taken into account, as is the four-year growth in employment in the firm's industry.

The paper is structured as follows:

- Section II consists of a review of the economic literature on business size determination, growth and entrepreneurial choice;
- Section III justifies the choice of specific variables and formulates the hypotheses to be tested;
- Section IV summarizes the data;
- Section V describes the model and estimation procedure;
- Section VI presents and discusses the empirical results;
- Section VII discusses policy implications.

[3] The measure for growth used here is employment growth. Other measures of small firm performance include growth in profits, assets, revenues, market share and productivity. For a thorough discussion of small firm performance criteria see Gasse, 1998, pp. 33-36.

II. Literature Review

The relatively small body of business literature dealing with the reasons for small firm growth can be categorized into two schools of thought. The first adheres to an organizational life cycle perspective, which sees growth as a natural phenomenon in the evolution of the firm. The second school of thought sees growth as a consequence of strategic choice. In either case the attributes of the business owner, organizational resources and environmental opportunity are crucial in expanding the firm or in overcoming the barriers to the evolution of the firm from one stage to the next. Indeed, a distinction can be made between a business owner and an entrepreneur, the latter being a "special" individual, committed to the growth of his/her business**.** According to some authors, "growth is the very essence of entrepreneurship," and commitment to growth is what primarily distinguishes small business owners and entrepreneurs (Sexton and Smilor, 1997, Carland et al., 1984).

Classical economists and the Austrian School were the first to acknowledge the role of the entrepreneur as an individual with special characteristics, within the context of economic theory. Thus, according to Knight (1921) the entrepreneur has the willingness and superior ability to make decisions, raise capital and assume the risk of failure. Schumpeter (1939) added the superior ability to perceive new market opportunities – the entrepreneur as innovator. Recent interest in integrating the role of the entrepreneur into economic theory has been triggered by an effort to explain some empirical regularities: why do larger firms, in some industries, have higher and more stable rates of return than smaller business? Why do smaller firms have higher and more variable rates of growth than larger firms? Why are smaller firms and younger firms more likely to dissolve themselves during a given period of time than larger and older firms? Each of the theories that were developed, though abstract and somehow remote from the realities of the business world, shed light on some interesting aspect of business behaviour and provide an explanation of small business formation, growth and evolution.

In what follows we will briefly review theories from both the business and economic literature that recognize the role of the entrepreneur in business formation and growth. In these theories differences in attitudes and abilities among individuals are crucial in determining why some small firms grow and others do not. These theories are discussed under the following headings: A) The Entrepreneur in Theories of the Firm, B) Theories of Entrepreneurial Choice, C) Theories of Stage of Development.

A. The Entrepreneur in Theories of the Firm

In static theories of competitive equilibrium[4], the size of the firm is determined by the efficient allocation of given resources, including entrepreneurial resources, under given technologies. Accordingly, the observed firm size is the efficient size, in the sense that long run costs are minimized at that point. Growth follows from the assumption of profit-maximizing behaviour and from the shape of the cost functions. A firm will grow until it has reached the size where long run marginal costs equal price, which is assessed as the "optimum" size of the firm.

Thus, Lucas (1978) equates the firm with the entrepreneur or manager and he assumes that a firm's output is a function of managerial ability as well as capital and labour. Lucas postulates therefore one production technology subject to constant returns to scale, and a separate managerial technology with diminishing returns to scale or "span of control." Managers with higher abilities (i.e., higher efficiency levels) will have lower marginal costs and therefore will produce larger outputs. However, firm expansion will be limited due to decreasing effectiveness of the manager as the scale of the firm increases. An implication of the Lucas model is that, for a small business to grow, the small business owner must be willing and able to relinquish many day-to-day control functions and delegate those tasks to an enlarged, specialized management team.

[4] For an extensive review of the theory of the small firm, see You, 1995.

According to Lucas' theory, the variation in levels of business acumen is the major determinant of business growth (as well as of business formation and dissolution). Alternatively, as proposed by Kihlstrom and Laffont (1979), the major determinant of business growth is the differing taste for risk among individuals. Thus, Kihlstrom and Laffont assume that production technology is risky, and that entrepreneurs who have the ability or propensity to take risks in the face of uncertainty will produce more output. Firm size is therefore limited by the entrepreneur's willingness to take risks.

The theories discussed above are static. They say little about how an industry and the firms within it evolve over time and they ignore the fact that individuals can learn their business acumen by operating businesses over time.

Jovanovic (1982) addresses these deficiencies by developing a model of the firm life cycle based on learning. According to Jovanovic's life cycle model, individuals differ in their entrepreneurial abilities (as in Lucas), but they are unsure of their abilities. In his model, production technology is risky (as in Kihlstrom and Laffont), partly because individuals are uncertain about their abilities and partly because production is inherently risky. His model also assumes that individuals learn about their abilities over time by observing how well they perform in a tough business world. Individuals who find out that they have underestimated their abilities in one period will expand output in the next, while those that overestimated their abilities will dissolve their business.

Jovanovic's model has a rich set of empirical implications. Young firms have accumulated less information than older firms about their managerial abilities. Consequently, younger firms have more variable growth rates than older firms because they have less precise estimates of their true abilities. For the same reason it follows that there will be more exits among younger firms, but also that among surviving firms, younger firms will grow faster than older firms. As younger firms tend also to be smaller firms, Jovanovic argues that the same observations hold for small

firms as well. Surviving small firms are expected to grow faster than larger firms and to have more variable growth rates.

B. Theories of Entrepreneurial Choice

In theories of entrepreneurial choice, people have certain characteristics that are associated with the propensity for entrepreneurship. Individuals who have more of these characteristics are more likely to become entrepreneurs than those who have fewer. An individual chooses to create a new business so as to maximize his expected utility. Utility, in turn, is a function of entrepreneurial or wage income, and of attitudes that affect the utility that the person derives from entrepreneurial activity, such as one's taste toward work effort, risk, independence, working close to customers, etc. Income, in turn, depends on the individual's ability to generate profit, such as managerial abilities to raise capital, and abilities to perceive new market opportunities and to innovate.

Theories of small business growth have extended analysis of the decision to start a business to that of the decision to grow the business. According to Davidsson (1989, 1991), firm growth is an indication of *continued* entrepreneurship. Davidsson notes that economic theories take the *willingness* to grow a business for granted, by assuming profit maximization. However, empirical evidence suggests that small business owners are reluctant to grow even if there is room for profitable expansion and that profitable firms of different sizes co-exist within industries. Thus, Davidsson argues that growth is a choice of the owner-manager and that profit maximization is only one of the possible motives for business growth. Davidsson draws from psychological theories of motivation, which recognize that individuals differ in their motivational make-up. According to the "Need for Achievement" motivation theory, individuals differ in the degree they strive for achievement satisfaction. If profit is used as a measure of success, then the striving for achievement coincides with the behaviour predicted by profit maximization, but he stresses that the latter is neither the sole nor the dominant motive for growth.

Indeed, in empirical models of small firm growth, the characteristics of founders of businesses were linked to their growth aspirations (Davidsson 1989, Kolvereid, 1990, Gundry and Welsch, 1997), and the growth performance of their ventures (Kimberly 1979, Cooper et al., 1994).

C. Theories of Stage of Development

According to the influential theory of Churchill and Lewis (1983), growth is part of the natural evolution of a firm. The authors identify five stages of growth: existence, survival, success, take-off and resource maturity. In each stage of development a different set of factors is critical to the firm's survival and success. Growth thresholds may exist as obstacles to the transition from one stage to another. Accordingly, in the take-off stage – most relevant in a study of rapid growth – there are two major concerns or obstacles to firm growth: the ability of the owner to a) hire new people and b) delegate responsibility. The business will also need enough cash to satisfy the greater demand for financial resources brought about by growth.

III. Determinants of Small Firm Growth

The theories discussed so far all recognize that the attitudes and abilities of the business owner have an important impact on small firm growth and will be reflected in strategic choices and the ways in which he or she operates the business. The following section will draw from a variety of theoretical and empirical sources on small firm growth for the purpose of developing expected theoretical relationships between particular sets of variables, or factors of growth, and business growth.

We have classified the factors of growth in three categories: a) owner-manager characteristics – factors that have a potential impact on the abilities and attitudes of the business owner or are indicators of entrepreneurial attitudes; b) business practice characteristics – factors reflecting the way the owner operates his business; and c) firm characteristics – variables traditionally encountered in the empirical studies of firm growth in economic literature: firm size and age,

industry and province. We have added to this list the legal status of the firm.

A. Owner-Manager Characteristics

Within the broad category of owner-manager characteristics, we have chosen variables that have an impact on the owner-manager's ability to manage the growth of a micro-enterprise as well as variables that are indicators of the owner's growth motivation. These variables are discussed under the following headings: general background, management know-how, and growth motivation of the owner.

1. General background

The growth performance of a firm may reflect the problem solving skills and favourable access to networks associated with the general background of the entrepreneur. General background variables – gender and age, immigration status and education – serve as proxies for life experiences and access to networks that affect the success of the individual entrepreneur.

a) Gender and age

It has been proposed in the literature that women may have fewer opportunities to develop relevant experiences, may have fewer networks to get assistance and may have greater difficulty in assembling resources (Sexton and Robinson, 1989).

There is some evidence that banks may impose more stringent requirements on women business owners in regard to collateral for loans, and therefore limit their ability to grow (Riding and Swift, 1990). Women may also be more family oriented and be less keen in pursuing economic goals related to expansion of the firm (Brush, 1992). Cooper et al., (1994) found that being

female had a negative impact on the growth of small ventures but had no impact on the survival of the firm.

It is also suggested in the literature that younger individuals may be more willing to assume risks and grow their business. Following Davidsson's argument, a younger individual may have a higher need for additional income. The burden of supporting a family and meeting mortgage payments generally declines with age. An older individual who continues to be the owner-manager of a small firm is more likely to have reached his/her initial aspirations. However, while younger individuals have more motivation to expand their business they also may have fewer financial resources and fewer networks. The limited empirical evidence suggests that the owner-manager's age tends to be negatively related to growth (Boswell, 1973; Davidsson, 1991).

b) Immigration status

Evidence from the U.S. (Borjas, 1986) suggests that immigrants are more likely to become self-employed and that they are more likely to create higher incomes from this activity than will native entrepreneurs. The explanation for this differential is that immigrants create enclaves by concentrating in specific geographic areas, which in turn create and expand opportunities for small entrepreneurial ventures, in particular for immigrants of the same national background as the residents of the enclave. However, it is suggested that there may be limits to the growth of entrepreneurial ventures owned by immigrants as enclaves are in poor locations and offer limited access to the general market. It is also suggested that immigrants may have fewer contacts and more difficulty in obtaining insurance, credit from suppliers and access to prosperous customers. No study has linked immigration status to business growth. However, there is some empirical evidence that suggests that being part of a racial minority is linked to lower probabilities of both survival and growth (Cooper et al., 1994).

c) Education

The effect of education has been widely studied. Education is presumably related to knowledge and skills, motivation, self-confidence, problem solving ability, commitment and discipline. Higher education is expected to increase the ability of the entrepreneur to cope with problems and seize opportunities that are important to the growth of the firm. Empirical evidence on the effects of education on firm performance is mixed. In ten out of seventeen empirical studies surveyed, Cooper et al. (1992), found a positive relationship between prior level of education and firm performance. Cooper et al. (1994) found that having a Bachelor's degree has a positive impact on both survival and growth of small ventures.

To summarize, and put in terms of the data available in the Micro-enterprises, 2000 Survey, the hypotheses to be tested with regard to the general background variables are:

Hypothesis 1: Male-owned businesses exhibit higher growth than female-owned businesses.

Hypothesis 2: Growth is higher for business owners who are less than 30 years old.

Hypothesis 3: Immigrant-owned businesses exhibit lower growth than businesses owned by Canadian citizens.

Hypothesis 4: Businesses whose owners do not have a high school diploma exhibit lower growth than businesses whose owners do.

Hypothesis 5: Businesses whose owners have a post-secondary degree (i.e. a college or university degree) exhibit higher growth than businesses whose owners had only secondary education.

2. Growth motivation

According to the small business literature, there is a distinct difference between the small business owner and the entrepreneur**.** Birch (1987) distinguishes between "income substituters" and "entrepreneurs", the former substituting paid-employment income with business income, the latter being committed to the growth of their business. Similarly, Hay (1994) makes the distinction between "value builders" and "life-stylers." The latter seek long-term stability instead of growth, and use the business as a means of generating income sufficient to support a certain "life-style." Canadian evidence supports this finding. In an Ontario survey of small business start-ups, half of new firm owners intended that their business would simply generate enough income to make a living for themselves (Blatt, 1993, in Orser et al., 1996). We may conclude, therefore, that for entrepreneurial ventures the willingness of the owner-manager to grow is as important as his ability to foster and manage growth.

We have chosen the following indicators of entrepreneurial attitudes and motivation to grow: a) the owner's entrepreneurial intensity (active risk taking), b) his/her desire for independence, c) whether he/she is "pushed" by unemployment and d) whether he/she is pursuing a certain "lifestyle."

a) Entrepreneurial intensity (Active risk taking)

Entrepreneurial intensity refers to the willingness of the individual to assume risk and be pro-active as an indicator of commitment to growth (McCelland, 1961; Timmons et al., 1985; Chell et al., 1991; Morris and Sexton, 1996). The level of active risk taking by the owner-manager may also determine how willing he/she is to tap the various resources necessary for developing the firm. Active risk taking is demonstrated by the owner-manager's willingness to accept personal financial risk. Entrepreneurial intensity is often measured by the entrepreneur's agreement on statements such as "My business is the most important activity in my life" and "I would do whatever it takes to make my business grow." Indeed Gundry and Welsch (1997)

found that commitment to growth differentiated "high" growth from "low" growth entrepreneurs. Perren (2000), in sixteen case studies of micro-enterprises, found that active risk taking was a key factor that conditioned the owner-manager's willingness to tap the physical, material, financial and intangible resources necessary for firm growth beyond the micro-enterprise phase.

b) Desire for independence

Many researchers have suggested that successful owner-managers have a high "internal locus of control" and believe they have command over their destiny (Brockhaus and Horwitz, 1986; Caird, 1990; Chell et al., 1991). Keeleu and Knapp (1994) found that founders of "high performing companies" were drawn by a strong desire for independence. Perren (2000) found that the desire to be "one's own boss" was an important factor in stimulating the growth motivation of owner-managers of micro-enterprises.

c) "Pushed" by unemployment

Alternatively, it is also suggested by the literature that some individuals may have become small business owners because they were driven to it by unemployment – the "push" hypothesis – and not because they have entrepreneurial attitudes and abilities – the "pull" hypothesis (Zhenxi et al., 1999). It would therefore be reasonable to expect lower growth from businesses that were started by individuals who were pushed by unemployment.

d) "Lifestyle" businesses: Currently employed in another business

Similarly, it is likely that individuals who hold a concurrent paid-employment job may have neither the time nor the motivation to invest in the growth of their business. It is likely that some of these individuals are complementing their paid-employment income with some independent

business income, in order to support a certain lifestyle (Riding et al., 1998).

To summarize, the following hypotheses will be tested with regard to entrepreneurial attitudes:
Hypothesis 6: Businesses whose owners agree with the statement "I am prepared to risk my major personal assets (such as my house) if that is what it takes to make my business grow" exhibit higher growth than businesses whose owners disagree with this statement.
Hypothesis 7: Growth is higher for businesses whose owners started the venture to be their own boss.
Hypothesis 8: Growth is lower for businesses whose owners started the venture because they could not find a suitable paid job.
Hypothesis 9: Growth is lower for businesses whose owners indicate that they are currently working for another business.

3. Management know-how

Management know-how embodied in the entrepreneur may be an important factor in the growth of the firm. Management know-how may result from having had parents who were entrepreneurs themselves, or from previous paid-employment experience in a similar business, or by previous management experience of the owner. Furthermore, management know-how may be acquired through the owner-manager having access to professional advisors or a network of contacts such as suppliers, customers, business associations, etc., or from involvement of partners.

a) Family who owned a business

A number of studies have shown that entrepreneurs are more likely to be from families in which the parents owned a business. It is assumed that young individuals develop knowledge of what is involved in running a business (Dushenseau and Gardner, 1988), and that they are more likely to perceive entrepreneurship as a viable career choice. There is indeed some empirical evidence to suggest that coming from an entrepreneurial family background increases the likelihood of

survival (Cooper et al., 1994, Papadaki et al., 2000). However, there is little evidence on the impact of family background on the growth prospects of an entrepreneurial venture. Though one study has found no relationship between entrepreneurial background and growth of a small venture (Cooper et al., 1994), we will test whether coming from a family of entrepreneurs has a positive impact on business growth.

b) Industry-specific know-how: Prior paid-employment experience in businesses

Empirical evidence suggests that business similarity can have a significant impact on the success of a business venture in terms of both the survival and growth of the business (Perren, 2000, Cooper et al., 1994, Bruderl et al., 1992, Bosworth and Jacobs, 1989, Hofer and Charan, 1984). Reynolds (1993), in a study of fast growing young companies found that those companies were more likely to be started by founders who had experience in the industry. It is assumed that industry-specific know-how, ranging from tacit knowledge of the products, processes and technology, to specific human capital investment in relationships and goodwill with specific customers, suppliers or stakeholders, reduces the "liability of newness" associated with new entrepreneurs and hence enhances their ability to obtain credit, develop sales and achieve other forms of co-operation.

c) General business management: Previous ownership

One would expect that previous experience in running a business should have a positive impact on future small business performance. An entrepreneur would have had the opportunity to create networks and develop contacts with creditors, suppliers and customers. Previous ownership could also serve as a proxy for greater motivation and aptitude to generate profitability and growth. To our knowledge, there is no empirical evidence on the relationship between previous ownership of a business and growth of the current business. However, there is some evidence that previous management experience in other organizations may have a positive influence on

business performance (Teach et al., 1986).

d) Use of advisors

Small business owners may gain expertise and access to information networks, and receive encouragement through the use of professional advisors such as lawyers, bankers, and accountants, as well as through suppliers, customers and business associations. Furthermore, small business owners who regularly network with customers, suppliers and business associations may be more likely to develop more formal partnerships and alliances. Economic theory suggests that partnerships and alliances could be necessary to spread risks and share costs as well as to open up new markets and develop new products, services and processes. Indeed, country studies of high growth firms have provided empirical support for the importance of partnerships and alliances (OECD, 2000). Reynolds (1987) found that fast growing firms maintained a network of contacts.

Reliance upon different sources of professional advice has been investigated in several studies with mixed result. Some studies found that the use of accountants and outside professional advisors was associated with greater success and better performance (O'Neil and Duker, 1986), but others found no significant relationship between use of professional advisors to either survival or growth of small ventures (Cooper et al., 1994).

e) Partnerships

The presence of partners who can offer the owner-manager support with the management of growth can be a positive influence. Partners may add to the resource and skills bases of the venture. They may also enhance the credibility of the venture to potential lenders and other constituents. Benefits associated with the presence of partners include capital, functional expertise and a broader range of management experience. (Eisenhardt and Schoonhoven 1990; Teach et al., 1986). Finally, the business venture may also benefit from the psychological

support that partners provide each other and from the lessened reliance upon a single entrepreneur's drive and judgment (Perren, 2000).

Cooper et al., (1992, 1994) found that the number of partners at start-up was a significant contributor to small ventures achieving high growth. Furthermore, as the business grows, the business owner is faced with new challenges. Finding partners may be a valuable source of know-how as well as of cash needed for growth. Partners may therefore become increasingly significant as the venture grows.

The following hypotheses will be tested with regard to management know-how:

Hypothesis 10: Growth is higher for businesses whose owners during childhood had close family members – parents or siblings – that were entrepreneurs.

Hypothesis 11: Businesses whose owners had paid-employment experience in a business in the same industry as their own business exhibit higher growth than businesses whose owners did not have such an experience.

Hypothesis 12: Businesses whose owners owned another business exhibit higher growth than businesses whose owners did not.

Hypothesis 13: Businesses whose owners receive advice from professionals (accountants, lawyers or financial institutions) exhibit higher growth than businesses whose owners do not.

Hypothesis 14: Businesses whose owners receive advice from customers, suppliers and business associations exhibit higher growth than businesses whose owners do not receive advice from these sources.

Hypothesis 15: Growth is higher for businesses that at start-up have shared ownership with other partners, such as other family members, other employees of the business and business partners.

Hypothesis 16: Growth is higher for business owners who seek partners sometime after start-up.

B. Business Practice Characteristics

Strategic choices of the owner-manager with regard to the operation of his/her business are expected to have an important impact on the growth performance of the enterprise. Whether the business-owner maintains control of key operations or delegates to employees and professionals, whether he/she undertakes innovative activities and embraces technological change, and whether new markets and growth capital are sought, may all reflect on the willingness to grow and should have an impact on the actual performance of the business.

1. Delegation of day-to-day operations

There are a number of managerial challenges that face small firms attempting to grow. The ability of initial founders to manage a larger firm than the one they have initially created is of primary importance (Bird, 1969, Sexton and Bowman-Upton, 1991). On the one hand, owner-managers may be unwilling to dilute their personal power and control over the organization by adding professional and non-family personnel (Pondy, 1969). On the other hand, financial constraints in hiring and/or training qualified personnel may limit the ability of the entrepreneur to delegate responsibilities (Industry Canada, March 1997).

2. Innovation

In the Schumpeterian tradition, growth is linked to a company's ability to innovate (Nelson and Winter, 1978, 1982). Moreover, to sustain growth, firms need to constantly respond to their customers' needs in novel and precise ways. Though recent empirical studies have demonstrated that high growth SMEs in Canada, the US, and Europe are more innovative (Baldwin 1994, 1995, OECD, 2000), to our knowledge there is no empirical evidence that demonstrates a link between innovative activity and growth among very small firms.

3. Technology adoption: adoption of e-commerce enabling technologies

The impact of the adoption of new technologies on SME growth in the Canadian manufacturing sector has been documented in recent studies (Baldwin, 1994, 1995). However, there is no empirical evidence on the impact of adoption of e-commerce enabling technologies on small venture growth. In theory, the potential opportunities and benefits of electronic commerce for small businesses include improving and strengthening customer relationships, enhancing the company image, enhancing information exchange, enabling them to compete with larger companies and facilitating their access to new and global markets (Price Waterhouse Cooper, 1999, Fariselli et al., 1999). However, different levels of sophistication of e-business technologies are associated with different levels of expected benefits. Basic connectivity as measured by access to the internet enables businesses to correspond, share information and develops business relationships efficiently and at low cost. The greatest benefits of e-businesses are associated with being able to market goods and services over the internet, share information with suppliers and customers and perform transactions. This study will measure the impact of adopting technologies beyond basic connectivity on the growth of the micro-business.

4. Market Orientation

Economic theory suggests that businesses that serve their local markets may be able to gain competitive advantages by being able to respond quickly to customers and having access to networks and community support systems. Dynamic economic theories also suggest that growth requires strategic flexibility and the ability to change market focus, which may require introducing new products or entering new markets (Gorman, 1997). Though a recent OECD study demonstrated that high growth SMEs have markets worldwide, the study also indicated that it could not be claimed that exporting promotes growth (OECD, 2000).

5. Sources of financing

Empirical evidence suggests that retained earnings are the predominant source of financing among growing SMEs (GSMEs) (Baldwin et al., 1994). However, more successful GSMEs use more external sources of financing, such as financial institutions, venture capitalists and individual investors, than do less successful firms[5].

Debt is by far the predominant source of external financing among small firms, even though there are barriers associated with debt financing for small firms. Personal and corporate guarantees required in order to obtain financing from banks and the higher interest rates charged to smaller firms (CFIB, 2001) are the most common barriers to small business debt financing[6].

With regard to equity financing, empirical evidence suggests that there are two principal reasons for the low incidence of external equity in small firm financing. Small business owners are reluctant to use external equity financing, because they do not want to lose control of their firms, even if that comes at the expense of the growth of the firm (Equinox, 2000). Investors, on the other hand, lament the lack of entrepreneurs'[7] (Dalkin et al., 1993). In this paper, therefore, we use the source of financial capital as an indicator of the owner's willingness to grow, his "fund raising ingenuity" (Yvon Gasse, 1988) and his capacity to manage growth.

Another reason why the type of financing sought can contribute to firm growth involves the substantial differences in not only financial but also human capital invested by banks, informal investors and venture capitalists respectively. In 2000, the median amount of financing approved

[5] The measure of success in this study is a combination of market share, profitability and labor productivity.

[6] The economic theory of adverse selection provides a justification for the higher costs of borrowing that may confront small businesses.

[7] In contrast, approval rates for debt financing are high. Recent Canadian data indicate that approval rates for rates for short-term, medium and long-term loans by firms with fewer than five employees exceed 80% (Université du Québec à Trois Rivières, 2002).

by banks and other institutions for firms with fewer than five employees was $40,000 (CFIB, 2001). Investments by private investors average only between $100,000 and $200,000, but private investors contribute more than the initial financing: almost 80% of private investors contribute skills, expertise, knowledge and contacts that can enhance the performance of investee businesses (Riding, 2001). Finally, in 1999, investments by venture capitalists averaged, $3.8 million for venture start-ups and $4.9 million for other early stages of the venture (McDonald, 2001). Therefore, the source of financing is also an indicator of financial capital as well as of human capital (other than that embodied in the owner-manager) available to the firm and is expected to have an impact on the growth performance of the business.

To summarize, the following hypotheses will be tested:

Hypothesis 17: Businesses owners who delegate day-to-day operations exhibit higher growth than business owners who do not.

Hypothesis 18: Businesses that innovate exhibit higher growth than those that do not.

Hypothesis 19: Businesses that have their own business website and/or make use of their suppliers' websites exhibit higher growth than those that do not.

Hypothesis 20: There is a positive relationship between growth of a micro-business and the share of the local market in the business' total sales.

Hypothesis 21: Growth is higher for businesses that have used debt financing in the form of bank and/or government loans.

Hypothesis 22: Growth is higher for businesses that have used "angel" capital.

Hypothesis 23: Growth is higher for businesses that have used venture capital.

C. Firm Characteristics

Under firm characteristics, we have included variables that are traditionally encountered in empirical studies of firm growth – firm size and age, industry and location – in our case,

province. We have added to this list the legal status of the firm.

1. Firm's age and size

Empirical studies in the US have found that there is a negative relationship between firm growth, age and size, as predicted by Jovanovic's model (Variyam et al., 1992), (Evans, 1987).

However, Birch (1987) argues that, among small firms, older firms grow faster than younger ones, while among larger firms there is a tendency for growth to decline with age. Brock and Evans (1986) found that firm growth decreases with firm age for firms with fewer than 25 employees, but increases with firm age for firms with more than 25 employees. Given that our sample consists of micro-firms, we would expect to find a negative relationship between growth and age of the firm.

2. Legal form

Dietmar et al., (1998) demonstrate that incorporated firms – firms under limited liability – have higher growth than unincorporated firms. Several factors could explain the association between corporations and firm growth. Corporations have the ability to issue stock and their stockholders have the freedom to resell their stock. This ability facilitates the process of raising capital for expansion. Entrepreneurs' expectations also play a role. Their choice of legal form could reflect their assessment of the riskiness of the project undertaken and their incentives for investment and growth (Stiglitz and Weiss, 1981).

Tax treatment of profits and equity and the liability of the owner under the various legal forms could also affect the entrepreneurs' incentives for investment and growth. Owners of unincorporated businesses are fully liable with their entire personal assets, while owners of incorporated businesses are only liable up to the amount of their share in the business. The

advantage of a limited liability is counterbalanced by increased tax liability and legal complexity. Current profits and equity of unincorporated businesses are taxed in proportion to the owner's share, while both corporate earnings and wealth are taxed at the corporate level. The interplay between these two factors could affect investment decisions and thus, growth.

3. Industry Sector

Previous studies of firm performance have found substantial differences by industry, with small firms in retail and personal service sectors having lower growth rates (Reynolds 1987, Cooper et al., 1994). This empirical observation could reflect differences in production technologies inherent in specific industries that have an impact on the determination of the "optimal size" of the firm. Thus, surviving businesses in industries characterized by a high degree of economies of scale are expected to exhibit higher rates of growth than surviving firms in industries where scale economies are relatively unimportant (Audretsch, 1995).

In retail and personal services, start-up barriers may be lower and more intense competitive pressures may characterize these sectors. In addition, products or services in these sectors may be easily imitated. In contrast, participation in industrial businesses or professional services may be highly dependent on very specific sets of capabilities or requirements developed through prior experience or education that render imitation difficult.

As indicated in the introduction, we also sought to control for employment growth in the industry over the period covered in the study (1995-99). To that end the variable for the firm's industry was multiplied by the rate of growth of employment in that industry; data were obtained from Statistics Canada's Labour Force Survey.

4. Province

Differences between provinces in the size composition of firms or their industry mix may

account for differences in growth performance of micro-businesses across provinces. Institutional factors or differences in policy regimes in different provinces may also have an impact on the growth potential of a micro-business.

To summarize, the following hypotheses will be tested:

Hypothesis 24: Firm growth decreases with firm age and size.

Hypothesis 25: Incorporated firms have higher growth rate than unincorporated firms.

Hypothesis 26: Holding industry growth constant, growth rates are lower for firms that are not in the business or professional services sectors.

Hypothesis 27: Location -province B has an impact on the growth of the micro-business.

IV. Data

A. Survey Design

The data for this study were obtained from the Micro-Enterprises Survey, 2000 (conducted by Industry Canada's Small Business Policy Branch in cooperation with the Small Business and Special Survey Division of Statistics Canada). To be included in the survey, micro-enterprises had to have one to four employees in 1995 and still be in operation four years later. The survey sample consisted of firms in the following industries: construction, finance and real estate, accommodation and other services, agriculture, business services, health and social services, and retail trade. Non-profit organizations and government offices in these sectors were excluded from the sample. The original sample of 1,505 micro-businesses was stratified such that probability inferences could be made by industrial sector and region. Excluding businesses that were found to be inoperative, an overall response rate of 53% was obtained. The response rate was particularly low in the Health and Social Services sector, at 24%, without that sector, the overall response rate would have been 59%. Overall survey results were accurate to 3.6 percentage points (95% confidence interval). The margin of error for the industry results ranged

between 8.0% and 15.3%; by region, the 95% confidence interval ranged between 6.9% and 9.6%[8].

Though 1,505 businesses were surveyed, only 1,448 respondents agreed to share the data with Industry Canada. Of these, 1,337 responses were complete and this is the sample used in this study. Using SAS, every observation was given a weight that indicates the number of firms in the population represented by a given sampled business. In the SAS regression procedures a "weight statement" was used to take into account the weight of each observation.

Table 1 shows the distribution of responses used in this study, by industry and province. The table also exhibits the distribution of responses by firms with negative, zero and positive growth. The median growth rates and weighted average growth rates for firms with non-zero growth are also calculated [9]. We observe that almost half of all businesses exhibited no growth over the four-year period considered in this survey. Almost 17% of all firms declined in size while 35% experienced positive growth. Among the growing firms, the highest median growth rates are found in construction (71%) and business services (67%) and the lowest in the financial sector (40%)[10]. The construction sector, however, also had the largest negative median growth rate among declining firms[11].

[8] More detailed information about the sample and its characteristics, and the questionnaire are provided in a separate document, "Micro-Enterprises Survey, 2000 – A Progress Report," Small Business Policy Branch, Industry Canada, June 2001, 29 pp. & Appx.

[9] Confidence intervals at the 95% level for these growth rates were also calculated, and can be obtained from the authors upon request.

[10] These differences in growth rates are also statistically significant.

[11] The difference in (negative) growth rates between the construction sector and those of finance and retail sector are statistically significant, but other differences in (negative) growth rates are not statistically significant.

Among provinces, BC/Yukon have the largest median growth rate among growing firms, but also the largest negative growth rate among declining firms, along with Alberta[12]. The median growth rates of growing businesses among the other provinces are similar at 50%. Overall, the sample micro-businesses that registered a positive growth in employment grew, on average, by over 50%, while those with negative growth declined by about one-third over the four-year period.

[12] However, only the difference in (positive) growth rates between the province of BC/Yukon and the province of Quebec is statistically significant.

Table 1: Number of Firms and Median Growth Rates, by Industry, Region and Growth Outcome

		Firms with Negative Growth		Firms with Zero Growth	Firms with Positive Growth	
Industry	**Total # of Firms**	**#**	**Median Growth Rate (Percent)**	**#**	**#**	**Median Growth Rate (Percent)**
Agriculture	257	34	-33.3	153	70	41.4
Construction	228	51	-42.9	89	88	70.8
Retail	220	49	-25.0	97	74	47.7
Finance	149	19	-25.0	71	59	40.0
Business Services	203	29	-33.3	111	63	66.7
Health	96	9	-16.7	46	41	50.0
Other Services	184	35	-40.0	79	70	50.0
Total	**1,337**	**226**		**646**	**465**	
Weighted Avg. Growth Rate			**-33.3**			**53.3**

(Table 1 continued on page 27)

Table 1, continued

		Firms with Negative Growth		Firms with Zero Growth	Firms with Positive Growth	
Region	**Total # of Firms**	**#**	**Median Growth Rate (Percent)**	**#**	**#**	**Median Growth Rate (Percent)**
Alberta	184	23	-50.0	95	66	46.4
Atlantic	230	39	-28.6	113	78	50.0
BC, Yukon	158	25	-50.0	80	53	66.7
MB, SK, NT	184	43	-37.5	84	57	50.0
Ontario	281	44	-31.0	134	103	50.0
Quebec	300	52	-27.3	140	108	50.0
Totals	**1,337**	**226**		**646**	**465**	
Weighted Avg. Growth Rate			**-35.0**			**51.4**

B. Profile of micro-businesses in the sample space – selected characteristics

This section highlights descriptive statistics from the micro-business survey as they relate to the explanatory variables that have been selected for our study[13].

[13] Again, the document referenced in note 8 provides a more detailed profile of the micro-businesses surveyed. Data in this section refer to the full sample of 1,505 firms.

1. Owner-Manager Characteristics

- Men own two-thirds of the micro-businesses sampled. There is only slight variation between industries, with the exception of the accommodation and other services sector, where women own 41% of all businesses.
- Most micro-business owners are between forty and sixty years old. Only 17% of micro-business owners are less than 40 years old.
- A High School diploma is the highest level of formal education attained for 33% of micro-business owners. Thirty five percent of micro-business owners have a College diploma or Bachelors degree, while 16% have not completed high school.
- Almost one in five micro-business owners are immigrants. However, nearly half of them immigrated to Canada more than thirty years ago. The majority of these 'early' immigrants are concentrated in the professional services – business services, and finance and insurance services.
- The desire to be one's own boss is the primary reason for starting a business for almost half of all micro-business owners. Another 14% stated they started their own businesses to realize a better financial position. Five percent started their own business because they could not find a suitable paid job.
- On average, 30% of micro-businesses said they are prepared to risk major personal assets to make their business grow.
- Though for the majority of small business owners the micro-firm is the sole source of income, 46% of micro-business owners have supplementary sources of revenue. Nearly 20% of owner-managers hold either a paid-employment job or are majority owners of another business.
- During their childhood years, about half of owner-managers had a close relative, such as a parent or sibling, who owned a business. Not surprisingly, this proportion rises to 84% in Agriculture. About 23% of business owners in this sector indicated that their business was a family inheritance; at the national aggregate level only 6% of businesses were

inherited. The majority of businesses had been started from scratch by the current owner (67%), while about one quarter were bought from someone else.

- Family, friends, mentors, customers and suppliers are an important source of business advice for micro-business owners. Accountants are the single most often sought source of business advice with other formal sources such as bankers, lawyers and business consultants less commonly sought.

2. Business Practice Characteristics

- Micro-businesses are focused on the local market. Two thirds of the businesses surveyed have over 60% of their market concentrated in the local community. Only 16% of the businesses depend on the local market for less than 20% of their business; these are mostly businesses in the Agriculture and Business Services sector.
- With regard to expectations, 40-45% of business owners believe that their market percentage in the local market will either increase or remain the same, while the majority of owners do not foresee a growth in the market share outside their local communities. In looking at the international markets, Business Services is the only sector that foresees net market growth, while Finance and Insurance anticipates a market decline.
- In the majority of cases, micro-business owners perform most of the functions and activities of their business themselves. Eighty percent of all business owners perform the day-to-day operations on their own, while about 15% of business owners delegate this responsibility to their employees.
- About 30% of business owners indicated that their businesses do not engage in any type of innovative activity.
- More than 30% of micro-businesses do not have a fax machine nor a personal computer, and about 40% do not use a telephone messaging service. Though 39% do have e-mail, only 20% have a website for their suppliers and only 14% have their own business website.

3. Firm Characteristics

- Almost half of the businesses (46%) had been in operation at least 15 years or more at the time the survey was conducted. This proportion was 71% in the Agricultural sector, compared to 37% in the Business sector. Only 13% of the businesses had been in operation for less than seven years.
- Consistent with the above results, 40% of the business owners indicated that their business was at the mature stage, another 37% were in the growth stage and twenty-two percent said they were in the survival stage. The proportion of businesses in the survival stage rises to 33% for business in the Accommodation industry and drops to 9% in the Finance & Insurance Services sector[14].
- A majority of businesses are incorporated (58%), while only 5% are franchises. Almost half of micro-businesses are home based (46%). This proportion is at its highest in Construction and Agriculture at 75% and 81% respectively, and at its lowest in Finance & Insurance and Business Services at 36% and 47% respectively.

V. Empirical Model

A variation of Evans' empirical model (1987b) was used to estimate the impact of owner and firm characteristics on firm growth. Evans' model estimates the impact of firm age and firm size on firm growth. In order to model the growth of micro-enterprises capturing additional factors such as owner and business operations characteristics, dummy variables were added to Evans' model. Evans (1987b) defined firm growth as

$$[\ln S(t') - \ln S(t)] / \mu = \ln G(A(t), S(t)) + u(t),$$

[14] The early start-up stage was defined as where the business is relatively young and is engaged in product development with anticipated sales, some time in the future. A late stage start-up was said to be one where bringing the product to market is near, and where there are some initial confirmed sales. In the survival stage, the business is established but still not profitable. In the growth stage, the company has an established market and is expanding. Finally, in its mature stage, there is a high degree of stability in the firm's market.

where *S* is firm size, measured by number of employees, *G* is a growth function, *A* is firm age, *t* is time where t'>*t*, $\mu = t' - t$, and $u(t)$ is normally distributed with zero mean and independent of $A(t)$ and $S(t)$. In order to take into consideration non-linearities in the functional form of growth, a second-order expansion of ln $G(A(t), S(t))$ can be estimated

$$\ln G = b_0 + b_1 \ln S + b_2 \ln A + b_3 (\ln S)^2 + b_4 (\ln A)^2 + b_5 (\ln S)(\ln A) + u$$

Adding dummy variables to this equation that capture business and owner characteristics, $\sum(B, O)$, the final regression equation is of the form:

$$[\ln S(t') - \ln S(t)]/\mu = b_0 + b_1 \ln S + b_2 \ln A + b_3 (\ln S)^2 + b_4 (\ln A)^2 + b_5 (\ln S)(\ln A) + \sum(B, O) + u$$

Thus μ takes the value of 4, and the firm's growth rate is calculated as the log difference between the current number of employees and number of employees four years prior to the survey. A list and a description of all variables is provided in Table 2 at the end of the report.

The statistical analysis included checks for heteroskedasticity and multi-collinearity.
The problem of heteroscedasticity arises if the error terms in the regression equation are distributed unevenly across firms of different age and size. This possibility is tested in this study using White's test. White's test involves regressing $\hat{u}_i^2$ on the size and age variables and their squares and cross products. When R^2 for this regression is highly significant, the test rejects the hypothesis of homoskedasticity.

The issue of multi-collinearity arises if the independent variables are highly correlated. A common method to detect multi-collinearity is through the use of the tolerance number, defined as $(1 - R^2_i)$, where R^2_i is the squared multiple correlation coefficient between x_i (the independent

variable) and the other explanatory variables. While there is no strict cut-off value, a tolerance value below 0.4 is suggestive of multi-collinearity.

VI. Results

Dependent and independent variable descriptions are reported in Table 2. The dummy variables for the industry sector have been multiplied by the average employment growth rate for each particular sector and for the relevant period, using data from the Labor Force Survey of Statistics Canada. The regression results for the empirical model are reported in Table 3.

Goodness-of-fit (R^2) for the empirical model (0.181) is comparable to the one reported by Evans (0.1438). The model passed White's test: the R^2 for the regression of $\hat{u}_i^2$ on the size and age variables and their squares and cross products is equal to 0.027. This value is insignificant, thus the test accepts the hypothesis of homoskedasticity. Similarly, no multi-collinearity, i.e., no strong relationship between the chosen independent variables was detected. Indeed, the tolerance value for all the explanatory variables was well above 0.4, except for first and second-order terms, i.e. lnAGE and $(\text{lnAGE})^2$, and lnSIZE and $(\text{lnSIZE})^{2.}$ Tolerance values for all variables are displayed in Table 4. The high multi-collinearity among the first and second order terms is expected and is of no consequence to the results. The second order terms are statistically significant and are included to capture non-linearity.

Our results indicate that most variables that were statistically significant supported the direction of influence suggested by the hypotheses. In what follows we examine in detail the results obtained for each individual variable.

A. Owner-Manager Characteristics

General background: Level of education has a significant impact on growth of the venture, but age of the owner, gender and immigrant status do not.

- The coefficient for age (YOUNG), though positive, does not reach statistical significance at the 10% level. Holding other business and owner characteristics constant, being young, i.e. less than 30 years old, does not seem to affect growth performance.
- Growth is lower for businesses whose owners did not finish high school: the coefficient for EDUC1 is negative and significant at the 1% level. However, having had a college or university degree (EDUC3) does not have a significant impact on venture growth.
- No evidence was found that gender and immigrant status affect growth. The coefficients for immigrant status (IMM) and gender (SEX), though positive, were not statistically significant. Recall that the reasons cited for the lower performance outcomes of women and immigrant/minority entrepreneurs are related to access to networks or economic activity in the geographic markets served. To some extent, factors relating to access to networks and financing have been taken into account into this study. Once controlling for these factors, our analysis shows that businesses headed by women or immigrants perform as well as any other business.

Growth motivation: Entrepreneurial intensity has a significant impact on business growth, but the desire for independence is not significant. Being pushed by unemployment has no significant negative impact on growth, but being concurrently employed in another business does have a significant negative effect on growth.

- There is a positive relationship between the growth of a micro-enterprise and the owner's entrepreneurial intensity. The coefficient for (RISK) is positive and statistically significant at the 5% level. Our findings validate the hypothesis that

the willingness on the part of the owner-manager to incur the risks associated with growth exerts a decisive influence upon the venture's growth.

- Holding other characteristics constant, the rate of growth is significantly lower for firms whose owners held paid jobs outside their business. The estimated coefficient (EMPLYEE) is negative and statistically significant at the 1% level. As was anticipated, individuals who own a business as a supplementary activity to paid employment are probably supporting a "lifestyle" and are therefore less likely to have either the willingness or the time to expand a business.
- We found no evidence that the desire to be one's one boss has an impact on the growth performance of the business. The estimated coefficient (BOSS) has a negative sign, but is not statistically significant. Our findings do not support the hypothesis that individuals who started a business because they were pushed by unemployment would be less inclined or have less success in growing their business. The estimated coefficient for not finding a suitable paid-employment job (FINDJ) as the reason for the business start-up, though negative, is not statistically significant.

Management know-how: Only informal networking and partnering have a significant impact on venture growth. Having had parents that owned a business, prior paid-employment experience in the same industry, or previous ownership of a business have no significant impact on venture growth.

- The coefficient for the use of informal networks (INFNETW) is positive and significant at the 5% level. Networking with associates, suppliers and customers has a positive impact on growth. However, networking with lawyers, accountants and financial institutions (FNETW) has no impact on venture growth.
- The coefficient for sharing ownership with a business partner (other than friends or family members), at start-up, is positive, relatively large and significant at the 1% level (BUSPARTN). Furthermore, sharing ownership with others, sometime after

start-up (OWSHIP), is also positive and significant at the 5% level. As suggested earlier, partners at different stages of development contribute capital and moral support. They also provide complementary expertise either in the areas of management or other functional areas of the business, such as technical expertise, sales, marketing, etc.

- Other factors relating to the owner's previous experiences and learning environment did not explain the growth of the business. The coefficient for having had a family member that owned a business at childhood (FAMILY) has a positive sign, but is statistically insignificant. It is likely that this factor may contribute to the successful start-up of a micro-business, but not necessarily to its growth, when more specific skills necessary to managing growth may be required. Having entrepreneurs as parents has been associated in the empirical literature with lower probabilities of exit (Zhengxi et al., 1999, Papadaki et al., 2000). These individuals may have learned to expect difficulties and be less disheartened in the face of unfavourable events. However, though such role models may instill tenacity, it may not provide the industry-specific skills and contacts that contribute to growth. Furthermore, these individuals may have experienced "lifestyle" businesses for which growth is not a priority.
- The coefficients for prior paid-employment experience in a business in the same industry (EXPRNC) and previous ownership of a business (OTHERBUS) were also not statistically significant. With regard to the former variable, the experience alone without regard to the position held or the degree of relatedness to the new venture, may not be an important advantage. With respect to previous ownership, again, further exploration of the conditions of that previous business termination might reveal a significant relationship to growth of the business.

B. Business Practice Characteristics

Most of the variables used to describe the business practices of the micro-business had predictive power over their growth. Innovating, adopting e-business enabling technologies and focusing on the local market, all have a significant impact on the growth of the business.

- The estimated coefficient for the innovation variable (INOV) is positive and statistically significant at the 1% level. This result supports the hypothesis that firms engaged in innovation have a higher growth rate than firms that are not.
- The coefficient for the delegation variable (ORG) is positive, large and significant at the 1% level. Holding other firm characteristics constant, the rate of growth is significantly higher for business owners delegating their day-to-day operations.
- The estimated coefficient for the adoption of e-business enabling technologies (TECH) is positive and statistically significant at the 1% level. Holding other factors constant, the rate of growth is higher for businesses that have a business website or use their suppliers' web sites. The estimated coefficient for (TECH) is positive and statistically significant at the 1% level.
- The estimated coefficient for market focus (COMMU) is positive and statistically significant at the 1% level. The larger the percentage of the business' sales in the local market, the higher the growth of the business. The finding that expanding to distant markets does not affect firm growth, but that selling in local markets has a positive impact on firm growth gives support to theories that suggest that the competitive advantage of micro-businesses may stem from being close to customers. In addition, community cohesiveness and availability of networks within local communities may create a favourable environment for different types of small firm co-operation, such as the co-operation between micro-businesses and their suppliers.

- Overall, evidence that the source of financing has an impact on firm growth is very weak. The estimated coefficient for the use of venture capital as a source of financing (CURVENTR) is positive, but statistically significant only at the 10% level. The coefficient for the use of angel money (CURINDIV) is also positive but even less significant. The coefficient estimated for use of debt financing (CURDEBT) turns negative but is again not significantly different from zero. After controlling for some factors that may affect the ability and willingness of the entrepreneur to access various sources of financing, the source of financing does not appear to have an independent effect on micro-business growth.

C. Firm Characteristics

Age and size of the business have a significant impact on venture growth. However, neither province, industry sector or legal status make a significant difference when it comes to the growth of micro-enterprises.

- As predicted by the Jovanovic model of firm growth, among this sample of surviving firms, younger firms grow faster. The partial derivative of (lnGrowth) with respect to (lnAge) is negative over our sample space. The positive sign of the coefficient for $(\ln AGE)^2$ is statistically significant, indicating that in the case of our sample, growth decreases at an increasing rate with the age of the firm. Also consistent with Jovanovic's theory, we find a negative relationship between growth and size of the firm. The partial derivative of (lnGrowth) with respect to (lnSIZE) is negative over our sample space. The positive sign of $(\ln SIZE)^2$ suggests that growth decreases at an increasing rate when the size of the firm increases.
- None of the industry sector variables are statistically significant. Among the provinces, only the coefficient for British Columbia is significant, at the 10% level, weakly suggesting that growth of micro-businesses there is lower than growth of

businesses in Ontario. The coefficient for legal status (CORP), has a positive sign, but is not statistically significant.

VII. Conclusions and Policy Implications

Beyond a collection of rudimentary descriptive statistics, there is little documented information to guide policy and programs about micro-businesses in Canada. Based on a unique survey of surviving Canadian micro-businesses conducted by Statistics Canada, this analysis has added to our understanding of how micro-businesses grow. While some of the findings support commonly held beliefs, others suggest that some popular concepts regarding small business growth may need to be re-examined.

The study supports the idea that micro-business owners learn mostly from informal networks by demonstrating that entrepreneurs who receive advice from informal sources, such as suppliers and customers, have exhibited superior growth performance. The study found no evidence to support a common perception linking formal higher education with higher incidence of business success and growth. In fact, we found that, though completion of secondary education is highly correlated with business growth, graduate or post-graduate education does not affect the growth prospect of a micro-business. (This finding refers to highest level of education completed and did not include consideration of the impact of university programs catering to entrepreneurs.)

Age of the entrepreneur does not seem important for growth performance. Likewise, our findings suggest that women and immigrants are just as successful as men and Canadian citizens.

Willingness to grow and assume risk, delegation of responsibilities and sharing ownership with business partners were all significant determinants of the growth of the micro-

business. These findings indicate that the motivation to grow has to be complemented with a willingness to share control and responsibility in order for the micro-business to grow. This is contrary to the belief held by many micro-business owners that it is their ability to maintain control of all business functions that allows the success of their venture. These results also indicate that government policies promoting growth aimed at the general micro-business population may be unsuccessful, since not all business owners want to grow.

Though the findings of this study do not contradict the importance of exports for the growth of the small business sector in general, they do suggest that, for micro-businesses, expansion within the local market is more relevant.

With regard to the relevance of innovation and adoption of new technologies to business growth, micro-businesses are no exception. Growing micro-businesses are businesses that innovate and adopt e-business enabling technologies. Indeed this finding contradicts another commonly held belief among micro-business owners, namely that in their line of businesses there is no need for innovation and adoption of e-technologies.

These conclusions lead us to draw the following policy implications:

- Blanket policy approaches to small business growth, and micro-businesses in particular, may not be effective. Policies targeted at micro-businesses that want to grow are preferable.
- Completion of secondary education is a necessary requirement for entrepreneurial success and business growth and should remain a priority in governments' youth employment agendas.
- Policy makers have a role in dispelling the myth, particularly among business lenders, that women and immigrants are high-risk borrowers of capital.
- Initiatives and policies that foster strong and cohesive local communities could be intrinsic to the growth of micro-businesses.

- Government could assist in dispelling the myth that maintaining control is the key to business success. Programs targeted at micro-businesses might continue to highlight the importance of joint venturing and to facilitate the development of networks that may enable business owners to find suitable business partners.
- Government could assist in informing micro-business owners about the benefits of sharing responsibilities with qualified personnel and could promote programs that encourage hiring and match micro-businesses with professionals and other skilled workers. Our findings support public policies such as the youth employment strategy, which encourages the employment of young graduates in small businesses.
- Policy makers should continue their efforts to demonstrate to the micro-business community the benefits of innovation, new technologies and electronic commerce for their success, and continue to target programs that facilitate the adoption of such technologies.

Table 2: Definition of Variables

Variable name	Definition
EMPGR	Employment growth [ln S (t') - ln S (t)] / μ]
FIRM CHARACTERISTICS	
ln SIZE	Beginning-of-period employment [ln S (t)]
ln AGE	Age of the firm
CORP	If firm is incorporated then 1; else 0
PROVINCE	
QUEBEC	If firm is in Quebec then 1; else 0
EAST	If firm is Atlantic Canada then 1; else 0
ALBERTA	If firm is in Alberta then 1; else 0
MANITOBA	If firm is in Manitoba, Saskatchewan, NW Territories or Nunavut then 1; else 0
BRITISHC	If firm is in British Columbia or Yukon then 1; else 0
ONTARIO	(reference)
INDUSTRY SECTOR	
INTAGRI	If firm is in Agriculture then 0.02383; else 0
INTCONST	If firm is in Construction then 0.03772; else 0
INTRETAIL	If firm is in retail trade then 0.01864; else 0
INTFINANCE	If firm in Finance & Insurance then 0.0013; else 0
INTHEAL	If firm is in Health & Social Services then 0.07625; else 0
INTOSERV	If firm is in Accommodation & Other Services then 0.03093; else 0
BUSERV	(reference)
OWNER-MANAGER CHARACTERISTICS	
GENERAL BACKGROUND	
SEX	If owner is a male then 1; else 0
YOUNG	If owner's age is less than 30 then 1; else 0
OLD	If owner's age greater than 60 then 1; else 0
IMM	If owner is an immigrant then 1; else 0
EDUC1	If owner did not finish high school then 1; else 0

EDUC3	If owner has a higher education (i.e. college, university degree) then 1; else 0
GROWTH MOTIVATION	
RISK	If willing to risk major personal assets to grow business then 1; else 0
BOSS	If primary reason to be business owner is to be the own boss then 1; else 0
FINDJ	If primary reason to be business owner is the inability to find suitable wage employment then 1; else 0
EMPLYEE	If currently employed by any business other than own then 1; else 0
MANAGEMENT KNOW-HOW	
FAMILY	If any close member of family owned a business during owner's childhood then 1; else 0
EXPRNC	Number of years employed in a business in the same industry as own
OTHERBUS	If previous owner of another business then 1; else 0
FNETW	If firm networks with lawyers, accountants, financial institutions then 1; else 0
INFNETW	If firm networks with associates, consultants, suppliers or customers then 1; else 0
FOWN	If owner had family or friends share at start-up then 1; else 0
BUSPART	If owner had other employees or business partners share ownership at start-up then 1; else 0
OWSHIP	If owner's share has decreased from four years ago then 1; else 0
BUSINESS PRACTICES	
ORG	If manager delegates day to day operation then 1; else 0
INOV	If firm innovates then 1; else 0
TECH	If firm uses business website or suppliers website then 1; else 0
COMMU	% of business sales in the same community as business
CURDEBT	If source of financing was bank or government loans then 1; else 0
CURINDIV	If source of financing were private individuals other than friends or family then 1; else 0
CURVENTURE	If source of financing was venture capital then 1; else 0

Table 3. Coefficient Estimates

Variables	Parameter Estimate	Variables	Parameter Estimate	Variables	Parameter Estimate
Intercept	0.240 (3.77)	**INTRETAIL**	-0.133 (-0.25)	**EMPLYEE****	-0.023 (-3.15)
ln(AGE)**	-0.160 (-3.56)	**INTFINANCE**	-0.580 (-0.06)	**OTHERBUS**	-0.007 (-1.07)
[ln(AGE)]^{2}**	0.026 (3.19)	**INTHEAL**	0.132 (0.84)	**EXPRNC**	-0.0003 (-0.72)
ln(SIZE)**	-0.075 (-3.82)	**INTOSERV**	0.137 (0.41)	**FNETW**	0.006 (0.92)
[ln(SIZE)]^{2}*	0.009 (3.44)	**CORP**	0.004 (0.71)	**IFNETW***	0.014 (2.17)
ln(AGE)*ln(SIZE)	0.004 (0.55)	**IMM**	0.011 (1.43)	**FAMILY**	0.007 (1.33)
Quebec	-0.009 (-1.21)	**SEX**	0.007 (1.07)	**OWSHIP***	0.028 (2.23)
East	0.001 (0.09)	**YOUNG**	0.028 (1.56)	**FOWN**	-0.003 (-0.54)
Alberta	-0.006 (-0.61)	**OLD**	-0.001 (-0.12)	**BUSPARTN****	0.039 (4.24)
Manitoba	-0.012 (-1.07)	**EDUC1****	-0.021 (-2.64)	**CURDEBT**	-0.007 (-1.03)
BRITISHC[a]	-0.016 (-1.82)	**EDUC3**	-0.004 (-0.55)	**CURINDIV**	0.020 (1.61)
INTAGRI	0.044 (0.09)	**RISK***	0.012 (2.08)	**CURVENTR**[a]	0.039 (1.84)
INTCONST	-0.076 (-0.29)	**BOSS**	-0.002 (-0.36)	**INOV****	0.023 (3.81)
		FINDJ	-0.011 (-0.88)	**ORG****	0.037 (5.11)
				COMMU*	0.0002 (2.54)
				TECH**	0.017 (2.61)

*Significant at the 5% level, **Significant at the 1% level, a-Significant at the 10% level.
The numbers in parentheses are t-values.

Table 4. Tolerance Values

Variables	Tolerance Value	Variables	Tolerance Value	Variables	Tolerance Value
Intercept		**INTRETAIL**	0.41	**EMPLYEE****	0.89
ln(AGE)**	0.01	**INTFINANCE**	0.70	**OTHERBUS**	0.88
[ln(AGE)] ^{2}**	0.01	**INTHEAL**	0.55	**EXPRNC**	0.87
ln(SIZE)**	0.04	**INTOSERV**	0.46	**FNETW**	0.74
[ln(SIZE)]^{2}**	0.25	**CORP**	0.79	**IFNETW ***	0.73
ln(AGE) *ln(SIZE)	0.04	**IMM**	0.82	**FAMILY**	0.86
Quebec	0.61	**SEX**	0.88	**OWSHIP ***	0.87
East	0.78	**YOUNG****	0.93	**FOWN**	0.79
Alberta	0.80	**OLD**	0.86	**BUSPARTN****	0.84
Manitoba	0.75	**EDUC1****	0.77	**CURDEBT**	0.85
BRITISHC	0.77	**EDUC3**	0.62	**CURINDIV**	0.92
INTAGRI	0.40	**RISK***	0.89	**CURVENTR**	0.92
CONST	0.43	**BOSS**	0.87	**INOV****	0.89
		FINDJ	0.88	**ORG****	0.84
				COMMU*	0.83
				TECH**	0.76

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