



Canadian SME Exporters Les PME exportatrices canadiennes

by Barbara Orser, Martine Spence,
Allan Riding & Christine Carrington

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CANADIAN SME EXPORTERS

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CANADIAN SME EXPORTERS

EXECUTIVE SUMMARY

Corporate Canada, policy makers, and not-for-profit organizations have expressed concern about the quality and scope of data about both commercial businesses in the services sectors and about small- and medium-sized enterprises (SMEs) that are exporter firms (Conference Board of Canada, 2006). This report represents the first comprehensive cross-sectoral analysis of Canadian SME exporters and international new ventures (INVs), i.e., firms with significant export revenues within three years of start-up. This work draws on data from large-scale survey data to challenge several widely held beliefs about the internationalization process of Canadian SMEs, particularly within the services sectors.

To explain why some firms export while the vast majority do not, the research also draws on five economic and management theories. This information is useful for two reasons. From the research perspective, theory helps to establish the context in which to examine empirically the export propensity of Canadian SMEs. From the policy development perspective, this information may inform discussion about the assumptions embedded in Canadian export stimulation programs and policies.

The following are selected highlights from among the empirical findings from this work:

- In 2004, 8 percent of Canadian SMEs exported goods or services.
- There are substantially more firms in the professional and “other” services sectors that export than there are exporter firms in the manufacturing sector.
 - It is true that, among all sectors, exporting is relatively more prevalent among manufacturing firms (31 percent of manufacturing firms export). Because of this, considerable export policy is predicated on the manufacturing context. However, manufacturing firms account for less than five percent (approximately 64,000) of the 1.3 million Canadian SMEs as defined here. SMEs in the professional and “other” services sectors account for more 530,000 enterprises. Thus, there are more than 40,000 services firms that export compared with approximately 21,000 manufacturing exporters.
 - 21.4 percent of exporter firms operate in the wholesale and retail sectors. Knowledge-based firms, firms that have garnered considerable policy and program attention comprise 15.1 percent of exporter firms.
- Both established exporters (enterprises that export and that began trading before 2001) and international new ventures (enterprises that export and that began trading in 2001 or later) derive an average of 33 percent of sales revenues from exports.
- A high proportion of exporters earn a relatively small proportion of revenues from exports: 44 percent of exporter firms report export sales of less than ten percent of total revenue; for 52.3 percent of Canadian SME exporter businesses export sales accounts for less than 25

percent of total revenue; 15 percent of exporters report export revenues of between 25 and 49 percent of total revenues.

- One-third of firms were deemed “export intensive” (defined as firms with export sales that exceed 50 percent of total revenue).

Owners of exporter and non-exporter firms differ significantly on three important attributes: growth intentions, gender and Canadian residency status.

- Owners of exporter firms are much more likely to profess the intention to seek growth of their firms than are owners on non-exporter businesses. After controlling for firm size and sector, firms whose owners had expressed growth intentions were more than twice as likely to be among exporter firms as firms whose owners did not seek growth.
- Owner gender was significantly associated with the propensity to export. Having controlled for potential systemic explanatory factors, majority female-owned firms were still less likely to export compared to majority male-owned firms. In other words, significant gender differences in export propensity are not fully explained by systemic differences in owner and business attributes.
 - Among established exporters, gender differences were particularly striking: majority female-owned firms are less than half as likely to export compared to firms where men comprise the majority of the ownership teams.
- Among established exporters, immigrants who have resided in Canada for less than 5 years were disproportionately more likely to be the primary owners of exporter firms.

With respect to firm-level attributes, firms that report investment in R&D are more than twice as likely to be exporter firms as firms that did not invest in R&D. Exporter firms were also significantly more likely to apply for external financing and business loans.

Among the (approximately) 287,100 SMEs that began trading in 2001 or later, approximately 21,300 reported exporting. Hence, more than seven percent of new Canadian firms are “international new ventures” (INVs). INVs operate across all industry sectors, an observation that suggests there may have been sampling biases in previous studies that have focused almost exclusively on manufacturing, technology and knowledge-based industries.

- While international new ventures are significantly smaller than established exporters their size, as measured by the number of employees, does not preclude export trade. This study finds that international new ventures achieve comparable levels of export intensity to established exporters with a smaller work force, younger and less experienced owners, and fewer assets.
- Owner profiles of international and domestic new ventures did not differ significantly in terms of age.
- Owners of international new ventures were disproportionately more likely to be new Canadian residents (or immigrants): approximately 10 percent of INV owners were new Canadians compared with less than five percent of owners of new firms that did not export.

Previous research has documented a link between export propensity and firm size: that the likelihood of exporting increases substantially once a firm has passed a minimum size threshold of more than 40 employees (Julien *et al.*, 1997). This work confirmed this link for manufacturing firms,

although it did not hold for firms in the services sectors. Moreover, it is not clear whether firms export because they are larger or whether they are larger because they export. Classical economic theory argues that labour is an input to the production process and that other factors of production (capital, management, technology) can substitute for labour: that output depends on the combination of labour and capital deployed by the firm, moderated by the firm's technology and management capability. Empirical results suggest that the production function differed significantly among exporter and non-exporter firms and between goods producers and services firms.

- Among both goods producers and services firms, labour and capital inputs were related to revenues to a statistically and materially significant extent. Among services firms the role of management experience was also a significant factor of production and that management experience was a particularly relevant factor of production for services exporters. The primary difference between services exporters and services non-exporters was in terms of the role of managerial experience.
- Exporter firms, both goods producers and services firms, rely slightly less on labour and more on capital compared to non-exporters.

The research team sought to consider these findings in the context of current export stimulation programs. A review of the literature found surprisingly few detailed descriptions of such initiatives. We were unable, therefore, to comment on how these findings are reflected in support programs and practices. A key recommendation of this study is the need to re-evaluate international trade initiatives in light of these findings. To encourage such research and stimulate discussion among researchers, senior policy makers and trade commissioners, a series of questions about policy and programs is presented.

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CANADIAN SME EXPORTERS

1 INTRODUCTION

“It is becoming increasingly difficult, if not practically impossible, for independent small firms to thrive by taking refuge in their traditionally protected [domestic] markets”.

Hamid Etemad (2004)

Canada is an export-oriented nation. The Department of Foreign Affairs and International Trade (DFAIT) (2006) reports that exports account for over 40 percent of Canada’s gross domestic product. International trade is also one of the fastest-growing areas of the Canadian economy. Small and medium-sized enterprises (SMEs) play a fundamental role in Canada’s export performance, given that these firms comprise the majority of organizations that sell goods and services abroad (Halabisky and Parsley, 2005). As such, SME export growth and commercial performance are linked directly to Canadian economic welfare (Henriques and Sadorsky, 1996; Lefebvre and Lefebvre, 2000; Awokuse, 2003; Baldwin and Gu, 2003).

The objective of this empirical study is to document the profiles of Canadian SME exporters. It is anticipated that this report will serve to inform federal policy discussions about the internationalization of Canadian firms and globalization strategies. It is also anticipated that this work will serve as a primer for trade commissioners, scholars, lending institutions, SME trainers and other stakeholders who seek to assist growth-oriented business owners expand into the international marketplace.

The rationale for this report stems from four roots. First, like many OECD countries, Canadian export and trade policy has been founded on the assumption that the internationalization process follows a series of stages. Young firms begin small and trade locally. Firms then expand regionally and nationally, such that they eventually become established so that they can operate internationally. Coined the “stage theory”, this perspective is reflected in program eligibility criteria (for example, firm size, tenure) and forms the basis of export stimulation programs targeted primarily at manufacturers and goods producing firms (technology-based producers).¹ However, increasing anecdotal evidence suggests that some firms export from inception, particularly among service and knowledge-intensive firms. If this is true, stage theory, and hence the assumptions that underlie trade policy, may not adequately reflect the process of internationalization. Thus, this work seeks to provide readers with a better understanding of the processes by which Canadian SMEs come to engage in exporting.

Second, stage theory supposes a minimum size threshold below which it is unlikely that a firm will engage in foreign trade. Previous Canadian research has investigated export propensity by tracking the likelihood of export as a function of firm size (for example, total revenue, number of employees). This approach has at least two significant shortcomings. It may confuse cause with

¹ For example, see Clendenning and Associates (2006) review of cross-border policies and programs.

effect (e.g., does the firm export because it is larger — or is the firm larger because it exports?). The approach is also at odds with widely received economic theory that firms increase the level of output (so as to engage in exporting) by substituting stocks of labour with capital, through innovation and technology, and by deploying management experience. This paper expands the discussion about threshold size(s) by comparing estimates of the production function for particular categories of firms. This work provides readers with insights with respect to the relative extent to which exporters and non-exporters depend on labour, capital and experiential inputs. It is anticipated that this information will further inform discussion about Canada's lagging productivity performance (see *Mobilizing Science and Technology to Canada's Advantage*, 2007).

Third, this report is the first representative, cross-sector Canadian study that presents a comparative profile of exporters and non-exporter firms and the attributes and incidence of international new ventures. The authority of this work is vested in the sample data employed, work that relies on a large-scale (more than 12,000 cases), carefully stratified, comprehensive sample of SMEs. To date, related studies have drawn on non-representative samples drawn from Canadian government registries and programs,² commercial and industry directories,³ organization memberships⁴ and/or specific sectors – most often manufacturing or technology-based industries. Numerous Canadian researchers have noted that it is difficult to generalize from such findings.⁵ Thus, the absence of cross-sector studies has particularly limited understanding about other sectors such as services and early-stage enterprises (Conference Board of Canada, 2006).

Finally, given the plethora of potential explanations and lack of theoretical rigour, it is not surprising that there is little convergence in the literature about the attributes of export-oriented SMEs. Dhanaraj and Beamish (2003) are among many who have called for parsimonious, theory-based research, research that considers the interrelationships among managerial, organizational, entrepreneurial and technological resources (see also Lefebvre and Lefebvre, 2000; Andersson and Victor, 2003; Zahra, 2005). Accordingly, this research seeks to derive, based on theory and previous work, an empirically-supported model of determinants of export propensity.

To accomplish these objectives, the report is organized as follows. To establish a context for the study findings, the next section of the report presents a brief summary about the market forces that stimulate exporting, barriers to international trade and four theories that may be associated with the internationalization process of SMEs (stage, resource-exchange, network and feminist theory). Canadian and international findings associated with each of these theories are also referenced. In seeking a bridge across the four theoretical perspectives, a conceptual model of export capability is presented. This work provides a foundation for discussion about thresholds of export capability. The

² Examples of frequently cited papers include Kirpalani and MacIntosh, 1980; Beamish and Munro, 1986, 1986b; Calof, 1993; DFAIT, 2006; Orser *et al.* 2004.

³ See Beamish *et al.*, 1986a and b; Reuber and Fischer, 1997, 1998; Baldwin and Gu, 2003; and Bagghi-Sen, 1998.

⁴ Limitations of these sample sources are evidenced in estimates about gross Canadian export activity. For example, CFIB (1998) estimate that 24 percent of SMEs sell to foreign markets, an estimate that includes tourism-related sales. Thompson Lightstone (1998) report that 15 percent of SMEs were involved in exporting activity (does not include tourism). More recently, Industry Canada has reported that approximately 2 percent of small businesses (firms with 1 to 99 employees) and 12 percent of medium-sized firms (100 to 500 employees) export (Halabisky *et al.*, 2005).

⁵ For example: Lefebvre and Lefebvre (2000) noted that studies about exporting tend to focus on manufacturing, high-tech and high-knowledge-based businesses. Reuber and Fischer (1998) point out those studies about international new ventures (INVs) have almost exclusively sampled technology-based firms. Gemunden (1991) cited by Dhanaraj and Beamish (2003: 242), reports that more than 700 variables have been associated with export propensity, an observation that makes it difficult for policy makers and scholars to understand the internationalization process.

theoretical discussion is intended to provide readers with a sense of why certain firms export while others may not, and how owner and firm attributes may be associated with propensity to export. A summary of study propositions are noted at the end of the section.

Section 3 of the report describes the research methodology employed in the report. Section 4 then presents the empirical findings of the study. The implications of these findings are discussed in Section 5 with an emphasis on the potential implications for public policy. A list of questions is also provided to stimulate future discussion about the study findings and to guide future research. The report closes with a comment about the study limitations.

Before proceeding, it is useful to define several key terms used throughout the report.

Box 1: Definitions and Terminology

Small- and medium-sized enterprises (SMEs): defined as businesses with fewer than 500 employees and less than \$50 million in annual revenues. SMEs studied here exclude not-for-profit and government organizations, schools, hospitals, subsidiaries, co-operatives, and financing and leasing companies.

Export propensity: defined as the proportion of businesses whose owners reported that the business sold or exported its products or services outside of Canada.

Export intensity reflects the degree to which firms internationalize their operations and is measured as the ratio of export revenue to total sales.

International new ventures (INVs) are defined as firms that were created in 2001 or later and which were generating 25 percent or more of their sales from foreign markets.⁶

Domestic new ventures (DNVs) are defined as firms created in 2001 or later but which do not export but rely on exports for less than 25 percent of their sales.

Established exporters (EEs) are defined as firms created before 2001 and that derive some sales from exporting. In proceeding, firms that reported that exports accounted for less than 25 percent of revenues were excluded from further analysis because the extent to which such firms were frequent or consistent exporters could not be ascertained.

⁶ Several definitions of international new ventures (INVs) have been presented (Knight and Cavusgil, 1996; Oviatt and McGougall, 1994). For the purpose of this research, an INV is defined as: “A Born Global”, a company that has achieved a foreign sales volume of at least 25 percent within 3 years of its inception and that seeks to derive significant competitive advantage from the use of resources and the sales of outputs in multiple countries”. (Andersson and Victor, 2003: 254).

2 PREVIOUS RESEARCH: INTERNATIONALIZATION OF SMES

2.1 MOTIVES AND BARRIERS

Canadian and international studies have documented organizational and market factors that motivate and limit exporting. Stimuli internal to the organization may include excess capacity, desire to extend seasonal sales, unique organizational resources and products, increasing costs of research and development, opportunities to lever technological advantage, the need to diversify risk and resource limitations including shortages of domestic financing. Market stimuli include a shortening product and technological life cycle, increased market pressure due to the presence of multinationals, small home markets and/or saturated or declining domestic markets, and capitalizing on export stimulation measures (Litvak, 1990; Lindqvist, 1990, 1997; McDougall and Oviatt, 1991; Coviello and Munro, 1995; Lindqvist, 1997; Madsen and Servais, 1997; Miesenbock 1988; Baggchi-Sen, 1999; Etemad, 2004; McNaughton and Bell, 2000; Rasmussen, Madsen and Evangelista, 2001; Pope, 2002; Small Business Administration, 2004). Scholars also argue the owner's growth intention is central to these internal and external dynamics and that growth ambitions held by the management team shape a firm's strategies (Morris *et al.*, 2006; Davidsson, 1989; and Wiklund *et al.*, 2003). For example, Heinonen *et al.* (2004) and De Clercq (2005) note that growth-oriented owner/managers are relatively more likely to develop a substantial presence in the international arena.

Exporting is not, of course, without multiple barriers or challenges. Internal obstacles often reflect a lack of human and financial resources and inadequate management knowledge and skill. Trade impediments are reflected in the challenges of finding local partners, obtaining foreign market intelligence, limited demand, bureaucratic procedures and regulations, costs of operating abroad, need to adopt products and services, and the risks associated with foreign exchange, legislation and politics. In response, the federal government provides various support services to SMEs. The extent to which such services address market and firm level barriers is not clear as a review of the literature found little documentation pertaining to a review of Canadian SME support programs.

To explain the export process, several theories have been advanced to explain ways in which these, and other factors, lead to export activity. Each is reviewed presently.

2.2 STAGE THEORY

Johanson and Vahlne (1990) are among the original proponents of stage theory: that internationalization reflects a gradual acquisition, integration and use of knowledge about foreign markets. As firms grow, the enterprise accumulates resources, builds economies of scale and excess capacity or "slack". These resources enable management to direct greater efforts to export when compared to smaller, younger firms (Bonaccorsi, 1992). The complementary argument of stage theory implies that smaller firms lack the efficiencies, economies of scale and management acumen required to survive in the international marketplace (Bates, 1989; Cromie, 1990; Kallenberg and Leicht, 1991). Firms, it is argued, follow a trajectory in which penetration of new geographic territories does not occur until well after conception, commercialization and growth (Reynolds, Storey, and Westhead (1994); Kazanjian and Drazin, 1990: 145). Lefebvre and Lefebvre (2000)

described this export trajectory as a continuum flowing from non-exporters with no interest in exports to non-exporting firms with an interest in exports to exporters active in other Canadian regions to exporters active in North American markets only (USA) and ultimately to exporters active in markets beyond North America. As such, it follows that exporter firms are typified as older, larger and more resource intense compared to purely domestic counterparts.

Related to the stage theory is 'entrepreneurial learning'. Organizational learning takes place over time as owners and managers develop intellectual capital used in the development of internationalization strategies and resource allocation (Johanson and Vahlne, 2003; Slater and Narver, 1995). Moorman and Miner (1998) describe such learning as 'organizational memory'. Consequently, stage theory suggests that older managers are more likely to bring to the firm the additional experience and vision requisite to exporting. Hence, we would expect owners of exporter firms to be older and more experienced than owners of non-exporters.

The theory also implies a threshold, a point at which the firm has acquired the resources required to engage in export. Empirical findings are inconclusive with respect to the influence of firm size, age and threshold capacity on export propensity (Hirsch and Bijaoui, 1985). Drawing on a sample of Israeli firms, Hirsch *et al.*, (2003:77) write that regardless of industry, productivity, labour and capital intensity or product characteristics "the minimum firm size needed to engage in exports is 20 employees". Canadians Lefebvre and Lefebvre (2000) and Julien, Joyal and Deshaies (1993) also examined export propensity within the manufacturing sector. Both conclude for a positive relationship between export propensity and firm size. For example, Julien and colleagues (1993) report a size threshold of approximately 40 employees among manufacturers beyond which size appears to have diminishing impact. Conversely, Calof (1993: 67) also employed Canadian data but reports an inverse correlation between firm size and degree of internationalization: "...large firms appeared to have lower levels of international sales intensity than did small- and medium-sized firms". Kirpalani and MacIntosh (1980:83) found that age is associated with export performance, but again the association was negative.

One explanation for the lack of empirical support is the observation that stage theory of internationalization was formulated in the 1980s, at a time when trade and operational barriers may well have limited the engagement of small firms in international markets. As Etemad (2004) notes, the increasing homogenization of markets, the international nature of human capital, and the speed, efficiency and decreasing cost of communication and transportation now act as catalysts that increasingly enable even the smallest of firms to export. Arguably, then the forces of change have enabled entrepreneurial firms to exploit opportunities in international markets, markets that had, heretofore, been almost exclusively the province of large firms.

The above argument is best evidenced by the existence of international new ventures (INVs), firms that export from inception and thereby challenge directly the stage model of internationalization (Oviatt and McDougall, 1994; Harveston *et al.*, 2001; Zahra, 2005). Further discussion about INVs is presented within the discussion about network theory.

Therefore, to the extent that the stage theory is a reliable theoretical explanation of the internationalization process, we expect that older, more experienced business owners who operate larger firms are more likely to export compared to their domestic counterparts.

2.3 RESOURCE-EXCHANGE THEORY

An alternative explanation the exporting process to stage theory is known as resource-exchange theory. Zacharakis (1997) argues that exporting is predicated on “transaction efficiency”, in which “...organizations enter into [international] transactional relationships because they cannot generate all necessary resources internally”. According to resource-exchange theory, international expansion is based on accumulation of firm level tangible and financial assets as well as intellectual resources that include such human attributes as growth orientation, management experience and knowledge, networks and command of foreign languages (Oviatt and McDougall, 1995; Eriksson *et al.*, 1997; Reuber and Fischer, 1997; Dhanaraj and Beamish, 2003). To export, SMEs seek to enhance their resource base and mitigate transaction costs; for example, by partnering in foreign markets to offset market risk (Pfeffer and Salancik, 1978 as cited by Westhead *et al.*, 1994).

This theory differs from stage theory in that it does not assume that acquisition of organizational resources proceeds in a linear manner. The theory also helps to explain differences in export propensity associated with owners’ managerial or entrepreneurial experience and acumen (Dhanaraj and Beamish, 2003). For example, growth-oriented exporters are characterized as having more innovative capabilities among the management team (for example, ability to undertake R&D, knowledge intensity and unique know-how) as well as organizational resources (for example, technology, employees, revenue) compared to domestic counterparts (Lefebvre & Lefebvre, 2000; Erlich *et al.*, 2001; Delmar *et al.*, 2003). Technology and innovation may also be among the organizational resources that lead to foreign trade.

Resource-exchange theory is supported by empirical studies that have found that internationalization of SMEs is particularly common among technology- and intellectual-intensive (knowledge-based) enterprises as well as manufacturing firms (Beamish and Munro, 1986b; Cavusgil, 1984; Baldwin, 1994; Beamish and Munro, 1986b; Seringhaus, 1993; Therrien and Doloreux, 2007). These observations may be a product of knowledge-intensive firms being less constrained by distance or national boundaries and thus, better able to take advantage of international opportunities. By comparison, non-knowledge-based or ‘traditional’ firms may be more dependent on fixed, static and consequently less mobile assets (Yli-Renko *et al.*, 2002). De Clercq (2005), Yli-Renko *et al.* (2002) and Nummela *et al.* (2005) are among those who recognize knowledge as a central resource for international growth. For example, manufacturers with particular technical and intellectual capital are export dependent and appear to rely heavily on foreign markets (Cavusgil, 1984; Beamish and Munro, 1986b; Seringhaus, 1993; Baldwin, 1994). Beamish and Munro (1986a and b) also report that “high-technology” Canadian products were positively associated with export intensity. Similarly, drawing on a sample of Canadian service firms, Therrien and Doloreux (2007: 18) conclude that exporting is positively correlated with higher sales from service innovation and that “...exporters appear to be in a better position to commercialise their innovative [service] products”.

Again, however, the relationship between resources and export propensity is complex in that other studies report that the nature of technology or innovation, industry maturation and product standards also influence export propensity (Kirpalani and MacIntosh, 1980; Beamish, Craig and McLellan, 1993; Therrien and Doloreux, 2007).

To explain further the nature and importance of organizational resources, network theory provides yet another lens on the attributes of export-oriented firms.

2.4 NETWORK THEORY

Network theory is a third theoretical paradigm of internationalization, one that is often cited in explanations of international new ventures. This perspective stresses the role and impact of external resources to the firm and interdependencies among network players. Dana *et al.*, (2004) speculate that, in an international setting, networks may be linked to actors' access to strategic resources. Direct relationships provide control over resources through ownership or knowledge while indirect relationships provide access to resources through collaboration. Networks serve to speed internationalization by providing synergistic relationships among partners at various stages in the value chain (Dana *et al.*, 2004; Jones, 1999). To the extent that network theory holds, owner or management team knowledge may be retained outside the organization and incremental acquisition of corporate knowledge and resources would no longer be a prerequisite to exports. As such, reliance on more hybrid strategies to export circumvents lack of internal corporate export expertise. Business acumen that is reflected in network or social capital may act as substitutes for traditional financial and labour assets.

This is a rationale presented to explain the existence of international new ventures (INVs), firms that by definition defy the principles of stage theory (Knight and Cavusgil, 1996). Scholars have also argued that networks are a precondition for international growth, as they facilitate the acquisition of experiential knowledge about foreign markets (Coviello and Munro, 1995, 1997; Crick and Jones, 2000; Lindqvist, 1997). Moreover, Hallén (1992) argues that personal and business networks act as communication infrastructures through which common interests are shared.

A review of literature hints that INVs operate disproportionately in technology- and knowledge-intensive sectors, sectors in which innovation and networking are crucial. McDougall (1989: 390—391) was among the first to suggest that INVs may be concentrated in particular industries: she identified structural characteristics of industries in which INVs compete. Such industries are characterized by market interdependency, with the consequence that: “a strategic action in one country will concurrently impact other locations” (Roth and Morrison, 1990). Furthermore, some industries may be “global”, where SMEs must “fit” the external export-oriented market context (Cvar, 1984; Hamel and Prahalad 1985; Bartlett 1985; Roth and Morrison, 1990). Given the above discussion, we expect that the owners of INVs will be growth oriented and operate firms primarily within manufacturing and knowledge-intensive sectors with above average investments in R&D compared to domestic new ventures. Network theory also holds implications for immigrant entrepreneurs. Amatucci and Young (1998) observed that even though immigrant entrepreneurs may face domestic challenges (for example, limited or lack of name recognition, cultural unfamiliarity and language barrier), they may bring to the firm resources such as foreign language competencies, networks and international work experience — assets associated with export propensity (Reuber and Fischer, 1997). Oviatt and McDougall (1994), Madsen and Servais (1997) and Crick *et al.*, (2001) also argue that immigrant business owners draw on international networks to facilitate exporting during the launch phase of their ventures.

While the above three theories (stage, resource-exchange and network) provide partial explanations about the influences of owner and organizational resources on exporting, they do not address the recent empirical finding that majority female-owned businesses are significantly less likely to export compared to majority male-owned businesses (Industry Canada, 2006b). Accordingly, it is useful to consider how feminist theories might relate to export propensity.

2.5 FEMINIST THEORY

As noted previously, the gender composition of the ownership team appears to be related to export propensity.^{7,8} This outcome has too quickly been dismissed by researchers and policy makers as an artefact of gender differences in systemic factors such as firm size and sector (for example, compared to firms owned by men, female-owned firms tend to be smaller, younger and concentrated in sectors in which exporting is less common). However, it is not clear to what extent the gender difference in export propensity arises from systemic factors (for example, the tendency for female-owned firms to be in the services and retail sectors) or whether female-owned firms face barriers beyond such systemic factors. There appears to be no work that has compared export propensity across gender of ownership while allowing for systemic factors. Given that women hold a share of ownership in 47 percent of Canadian SMEs, the failure to consider the influence of gender on export propensity constitutes a bias in the theoretical and empirical discourse about the internationalization process of SMEs. Moreover, in the event that female-owned firms are still less likely to export after allowing for systemic factors, opportunities for economic prosperity may be being foregone.

To understand better the association between gender and firm performance, we draw on the work of Ahl (2006: 596-7) who describes two broad schools of feminist theory that are potentially relevant to understanding export propensity: liberal feminism (where men and women are viewed as “essentially similar”) and social feminism (in which men and women are viewed as “essentially different”). These perspectives are echoed in conflicting remarks made by Canadian women business owners, some of whom argue that gender does influence their export capability and others who say gender does not so affect them. Likewise, different perceptions about the need for gender-focused SME policy and programs have been noted (Orser, *et al.*, 2004). It follows from liberal feminism that owners and firms that demonstrate equivalent motives (intentions), managerial acumen and resources perform at comparable levels and should be equally likely to export. Unexplained gender differences may be attributable to explanations presented in social feminist theory, a theory that suggests the

⁷ The Canadian Bankers Association estimates that in 1997 and 1998, approximately 10 percent of exporters were firms owned exclusively by women. Drawing on 2001 data, Carrington (2006) reports that 7 percent of majority, female-owned Canadian firms export goods and services compared to 13 percent of majority male-owned firms. The Washington-based National Foundation of Women Business Owners (1995: 2) reports that in 1992, 13 percent of US female-owned firms “were active in the global marketplace, either importing or exporting goods or services” and (1998, NAWBO) that in 1998, 8 percent of women business owners were involved in international trade.

⁸ The bulk of evidence indicates that inputs do not fully explain gender differences in firm performance. Fischer (1992: 8) reports on differences between men and women with respect to age, experience, education: Having controlled for elements of managerial capital, “...none of the variables studied accounted for [performance defined as] the greater number of employees, higher sales, and greater sales per employee characteristic of men’s firms”. Subsequent work by Fischer, Reuber and Dyke, (1993: 152) found: “Regressions undertaken to examine predictors of a range of business performance indicators suggests that women’s lesser experience in working in similar forms and in helping to start-up may help to explain the small size, slower income growth and less sales per employee of their firms.” Similarly, Orser (1997) employed logistic regression and a composite estimate of managerial capital to ‘high’ and ‘low’ growth performance firms. Results again indicated that low growth firms were characterized as comparatively young firms, owners with less diversity of management experience, owners who did not seek to expand, and being female. Conversely, being male, diversity of management experience, intention to grow was associated with high growth performance firms. Conversely, Papadaki and Chami (2002) report no unexplained gender effects on firm growth performance, having controlled for firm-related factors (for example, age, rate of growth, sector, level of innovation, regional growth strategies, location) and owner-related factors (for example, growth motive and networks). Furthermore, Papadaki and Chami (2002: 43) report that “...Lower performance of women-owned firms was related to access to networks or economic activity the geographic markets served”.

experience of male and female business owners is essentially different. These differences may also be evidenced in the process of internationalization of the firm.

Only two peer-reviewed studies appear to have examined gender-related barriers to export. Both sought to disaggregate export related from general or operational barriers to growth. Among a study of 165 women exporters and 89 export planners, Orser, Riding and Townsend (2004) report that 60 percent indicated gender to have played a role in the management practices of their firms.⁹ Principal gender issues were cultural and experiential differences, including the view that women business owners are not taken seriously; perceived lack of respect by (foreign) male business owners; businessmen who explicitly refused to do business with women; bravado, physical gestures and chauvinism; clients who verify the female business owner's decision through a male member of staff; the assumption that the business is owned by men; differences in management experience and style of doing business; and different or more limited professional networks. Other gender issues reflected perceived gender discrimination by lending institutions; differences in management experience and style of doing business; and limited professional networks. The analysis indicated that "gender aspects of export management" were generalized across sector, export readiness, and all other descriptive variables including size and age of firm, export status (start up versus emergent exporters) owner's marital status and presence of dependents.

However, not all women exporters cited gender-related barriers to international trade. For example, among one sample of 7 'award winning' women exporters, none reported that being a woman created additional challenges for them either in international trade or in maintaining work/life balance (Reavley, Litchy and McClelland, 2005). Orser *et al.*, (2004) also noted that 24 percent of women exporters and export planners cited no gender challenges and an additional 14 percent of women owners indicated gender to be an advantage. Gender differences were also perceived to be secondary to operational and financial challenges. Finally, it is important to remember that perceptions influence decision making. For example, if a women business owner perceived that she will encounter gender-related barriers in export, she may be less inclined to seek international expansion. If a women business owner perceives that her firm is deemed 'less credible' than one owned by a male, she may forgo an international bid (Atlantic Canadian Opportunities Agency, 2003).

This discussion serves to illustrate that gender influences are closely intertwined within firm and owner attributes, as well as factors associated with firm growth. These observations present two related questions: are gender differences in export propensity associated with owner and firm level attributes; and, do women business owners experience unique gender-related barriers to international trade? Understanding the relative influence of each is critical to the development of export stimulation programs and policies. For example, if gender differences are primarily associated with firm and owner attributes, remedial strategies might best be focused on development of the firm (helping to make female-owned firms "export ready"). If however, gender differences are unexplained by firm and owner level attributes, market interventions should be targeted at identifying (external) market impediments such as gender discrimination and other barriers to international trade. Finally, theory and empirical studies document the association among owner's growth orientation, managerial experience, gender, visible minority and residency status and the likelihood to export.

To bridge these theoretical explanations of export propensity, we now turn attention to the concepts of export thresholds.

⁹ The original report (by Orser, Fischer, Hooper, Reuber and Riding, 1999) can be downloaded at DFAIT: <http://www.dfait-maeci.gc.ca/businesswomen/beyondborders-en.asp>.

2.6 PRODUCTION FUNCTIONS, THRESHOLDS AND EXPORT CAPACITY

Empirical studies that have examined the stage theory of internationalization have assumed the presence of size thresholds, where exporting is relatively unlikely below the threshold and relative more likely above the threshold (Julien, *et al.*, 1993; Hirsch and Bijaoui, 1985; Mittelstaedt *et al.*, 2003). Implicit in this literature is the direction of causality: that exporting is a consequence of being larger. However, it is not clear whether firms export because they are larger or whether firms are larger because they export. The threshold implication of stage theory seems to posit the former whereas the traditional economic theories of production imply the former. The previous sections have shown that export propensity appears to be associated with a variety of factors and that size of firm is among these but it remains unclear whether exporting is a consequence of size or if size is an outcome of exporting. In addition, the concept of a size-related threshold — especially if size is measured by the stock of the firm's labour — ignores the possibility that firms can substitute other organizational resources such as capital and technology for labour (and vice versa) and that technology and management experience can also play a role. Hence, it is arguable that a variety of combinations of inputs enable the firm to achieve the levels of output and acquire resources needed for foreign trade. These ideas have historically been embraced by the theory of production.

Production theory posits that output (in this context, the capacity necessary for export performance) depends on the combination of labour and capital deployed by the firm, moderated by the firm's technology and management capability. Production (export propensity) depends on both capital and labour (and, perhaps other resources) and that these inputs are deployed under the terms of a particular technological process. As such, it is reasonable to review the concept of a size threshold in a way that takes into account the potentially complementary roles of capital, technology/innovation and management acumen.

Various functional forms of production functions have been advanced in economics and the functional form and the values of the parameters vary across firms and industry sectors.¹⁰ One widely-used form of production function used is the Cobb-Douglas model:

$$Y = AL^{\alpha} K^{\beta} \quad (1)$$

Where:¹¹

Y = output; L = labour input; K = capital input; A, α and β = constants determined by technology.

For a given firm, the Cobb-Douglas function can be estimated as a linear relationship by taking logarithms of both sides of the model such that:¹²

$$\ln(Y) = a_0 + \alpha \ln(L) + \beta \ln(K) \quad (2)$$

¹⁰ Thompson, A. (1981) *Economics of the Firm, Theory and Practice*, 3rd edition, Prentice Hall, Englewood Cliffs.

¹¹ If $\alpha + \beta = 1$, the production function has constant returns to scale. If $\alpha + \beta < 1$, returns to scale are decreasing, and if $\alpha + \beta > 1$ returns to scale are increasing. See <http://en.wikipedia.org/wiki/Cobb-Douglas>, accessed February 10, 2007.

¹² If $\alpha + \beta = 1$, the production function has constant returns to scale (if L and K are each increased by 20%, Y increases by 20%). If $\alpha + \beta < 1$, returns to scale are decreasing, and if $\alpha + \beta > 1$ returns to scale are increasing. Assuming perfect competition, α and β can be shown to be labour and capital share of output. See <http://en.wikipedia.org/wiki/Cobb-Douglas>, accessed February 10, 2007.

This formulation lends itself to the issues being analyzed here and can be extended to account for management experience and other potential factors of production. If the stage theory of export development is true then, *ceteris paribus*, exporters would exhibit higher levels of production (Y) than non-exporters because they are the firms that must have grown to the level where exporting is possible. Higher levels of output associated with exporting would then be realized through higher levels of inputs (K, L), from application of different technologies (A, α , β), or from greater managerial acumen. The resulting testable proposition is that, other factors being held constant, exporters exhibit higher levels of production than non-exporters. Moreover, the firm's stocks of capital and labour, as well as management acumen, would also be factors. To the extent that production functions vary across sectors, industry would also be a factor.

2.7 SUMMARY OF STUDY PROPOSITIONS

The above theories serve to inform this research about the anticipated relationships among firm and owner level attributes and export propensity. In summary, stage theory suggests that the likelihood of export is associated with older and larger firms. Resource-exchange theory moderates this argument by suggesting that the firm's aggregate resources (including technology and management acumen) trump time and that the linear (life cycle type) model of firm growth does not adequately account for the propensity to export. Network theory extends the resource-exchange model to include non-physical assets, including social and network capital and strategic alliances. Intellectual capital, technology and innovation are also key resources associated with early exporting. Feminist theory provides a gender lens on the above arguments, suggesting that even having accounted for multiple owners and firm level differences, women business owners confront systemic gender-based obstacles to export — obstacles not accounted for by traditional management theory. Finally, the production function serves to bridge these theoretical arguments by suggesting researchers must move away from simplistic and univariate models of export propensity (for example, where size threshold are defined as number of employees). Export performance is more accurately described through the calibration of multiple organizational resources, including capital, management acumen and technology/innovation. To examine empirical these theoretical perspectives, Table 1 presents a summary of study propositions.

Table 1: Study Propositions and Theoretical Rationale

Attributes associated with export propensity		Rationale*				
Owner Attributes		(1)	(2)	(3)	(4)	(5)
SP1	Owners of SME exporters are older than owners of domestic firms.	•				
SP2	Owners of INVs are older than owners of domestic new ventures.	•				
SP3	Growth-oriented owners are more likely to export compared to domestic counterparts.		•			
SP4	Owners with more years of managerial experience are more likely to export compared to domestic counterparts.		•			
SP5	Owners with more investment experience are more likely to export compared to domestic counterparts.		•			
SP6	Business owners of export firms have more management experience compared to non-exporters.		•			
SP7	INVs' owners have more management experience compared to owners of domestic new ventures or established exporters.		•	•		
SP8	Exporter firms are more likely to be owned by recent immigrants than firms that do not export.		•	•		
SP9	INVs are more likely to be owned by recent immigrants than domestic new firms.			•		
SP10	Majority female-owned export firms are less growth oriented compared to majority male-owned exporters.				•	
SP11	Majority female-owned export firms bring to the firm fewer years of managerial experience compared to majority-male owned exporters.				•	
SP12	Majority female-owned export firms have less investment experience compared to majority male exporters.				•	
SP13	Majority female-owned export firms exhibit lower rates of innovation compared to majority male exporters firms.				•	
SP14	Majority female-owned firms are less likely to export compared to majority male-owned firms.				•	
SP15	Management acumen is a significant factor of production and differs between exporters from non-exporters.					•
Firm Attributes		(1)	(2)	(3)	(4)	(5)
SP16	The association between export propensity and size of firm is non-linear and involves a step function.	•				
SP17	Export propensity and age of firm are positively correlated	•				
SP18	Firms with high rates of innovation are more likely to export compared to domestic counterparts.		•			
SP19	Firms with comparatively more financial assets are more likely to export compared to domestic counterparts.		•			
SP20	Innovative firms are more likely to export compared to domestic counterparts.		•			
SP21	INVs exhibit higher levels of innovation than established exporter firms.		•			
SP22	Knowledge-based firms are more likely to export versus non-knowledge-based firms.		•			
SP23	INVs employ less financial capital than domestic new ventures and established exporters due to enhanced social capital.			•		
SP24	Majority female-owned exporters employ fewer employees compared to majority male-owned exporters.					
SP25	Majority female-owned exporters retain fewer financial assets compared to majority male-owned exporters.				•	
SP26	Majority female-owned are less likely to operate knowledge-based firms compared to majority male-owned exporters.				•	
SP27	Majority female-owned firms are less likely to operate goods producing firms compared to majority male-owned firms.				•	
SP28	Even after controlling for gender differences in firm export profile, majority female-owned firms are less likely to export compared to majority male-owned firms.				•	
SP29	Parameters of the production function vary across sectors and technology orientation.					•
SP30	Exporters exhibit higher levels of production than non-exporters.					•

*Theoretical rationale(s): (1) Stage Theory; (2) Resource-exchange Theory; (3) Network Theory; (4) Feminist Theory; and (5) Production Function.

3 RESEARCH METHODOLOGY

The empirical work draws on data from a stratified large-scale comprehensive survey conducted in 2005 regarding the financing and export experiences of Canadian small and medium enterprises, using 2004 as the reference year.¹³ The population of Canadian SMEs comprises approximately 1.3 million enterprises from which a sampling frame of 34,509 SMEs was randomly selected from the Business Register. The Business Register is a Government of Canada administrative database that contains the universe of enterprises in Canada, constructed from business number records assigned and collected by the Canada Revenue Agency. In selecting the sampling frame the following types of firms were excluded: enterprises with 500 or more employees; enterprises with over \$50 million in annual gross revenues; enterprises coded as being non-profit (for example schools, hospitals, charities), co-operatives, joint ventures, municipal/federal government bodies and subsidiaries. Such companies were also screened out at the data collection phase.

Data collection was undertaken in two phases. In phase 1 computer-assisted telephone interviews were administered that gathered firm demographic data, and information concerning the businesses' latest financing request. In phase 2, a fax-based questionnaire was employed to collect detailed financial information from income statement and balance sheet data. The sample was stratified to ensure minimum numbers of responses from particular regions, sectors, and firm size categories. The response rate for the survey as a whole was 47 percent of eligible respondents, resulting in 12,047 cases of which data on Phase 1 were complete for 8,112 respondents and for which financial data (Phase 2) were completed by 3,141 respondents.

Several key related questions posed to respondents were:

- “During what year did the business first start selling goods and services?”;
- “Did the business sell or export any of its goods and services outside Canada during the past 12 months?”;
- “What percentage of your revenues came from sales outside of Canada?”; and
- “What percentage of your total investment expenditure was devoted to research and development?”

Of particular interest to this study was the extent to which firms were engaged in exporting and whether or not the firm was a new venture. Accordingly, the following categories of firms were defined:

- Established firms that did not report exporting. These are firms that were established prior to 2001 and which did not report exports during 2004.
- Established exporter firms (EEs). These are firms that were established prior to 2001 and which did report exports during 2004.
- New firms. These are firms that were founded during 2001 or later. These are further categorized as:

¹³ Readers are encouraged to review the description of the research methodology employed in this study at SME Financing Data Initiative, Survey on Financing of Small and Medium Enterprises, 2004: http://www.ic.gc.ca/epic/site/sme_fdi-prf_pme.nsf/en/h_00000e.html

- International new ventures (INVs), new firms that reported exports during 2004. and
- Domestic new ventures (DNVs), new firms that reported no exports during 2004.

The *Survey of Financing of Small and Medium Enterprises* included data from 2004 on the dependent variable, whether a firm was an exporter or not, as well as a variety of variables that could be used as potential determinants of the export propensity such as measures of labour inputs (number of employees), capital (balance sheet and income statement data), sector, technology orientation, and other potential determinants of export propensity.

Table 2 shows the breakdown of the firms in the sample across these categories and the corresponding estimates of firms in these categories in the population, based on the sample weighting scheme.

Table 2: Breakdown by Firm Age and Exporter Status

	Sample		Population	
	<i>N</i>	%	<i>N (000)</i>	%
International new ventures (INVs)*	368	3.1	21.3	1.6
Domestic new ventures (DNVs)	2,632	21.8	265.8	20.4
Established exporters (EEs)	865	7.2	82.9	6.3
Established non-exporters	4,247	67.9	935.4	71.7
Total (excluding missing data)	8,112	100.0		
Missing data ¹⁴	3,935			
Total (including missing data)**	12,047	100.0	1,305.3	100.0

*Employing the definition of “intensive” SME exporters (defined as those firms that derived more than 25 percent of sales revenues from export sales), of the 368 INVs in the sample, 194 were intensive exporters; 371 of the 865 established exporters were “intensive exporters”.

**Missing data resulted from a randomized skip pattern in the survey designed to reduce respondent burden.

¹⁴ For the most part, missing data resulted from a randomized skip pattern in the CATI survey designed to reduce respondent burden.

4 EMPIRICAL FINDINGS

4.1 DESCRIPTIVE FINDINGS

In 2004, 8 percent of Canadian SMEs exported goods or services. Exporters (both INVs and established exporters) derived an average of 33 percent of sales revenues from exports. Approximately half (52.3 percent) of exporters report export revenue accounts for less than 25 percent of total sales; 15 percent report export revenue accounts for 25 to 49 percent of revenue, while a third (32.8 percent) report export revenue in excess of 50 percent of sales.

It was also noted that a high proportion of exporters derived a relatively small proportion of revenues from exports: 44 percent of exporters reported export intensities (percent of sales from exports) of less than ten percent. Arguably, some of the firms that exhibited low export intensity may not truly be active exporters: cross border sales may have been one-off occasions, etc. Accordingly, an alternative (and more strict) definition of SME exporter was used by defining as “intensive exporters” those firms that derived *more than 25 percent of sales revenues from export sales*. Of the 368 INVs in the sample, 194 were intensive exporters and 371 of the 865 established exporters were “intensive” exporters according to this definition.

4.2 OWNER AND FIRM ATTRIBUTES

Table 3 presents a comparison of owner (Table 3A) and firm (Table 3B) attributes of each of the categories of firms of interest: international new ventures, domestic new ventures, established exporters and established non-exporters. Table 3 (A and B) reveals that the SMEs investigated here are indeed small, with an average of four employees and average annual revenues of less than \$600,000. Less than 40 percent of owners expressed an intention to grow their firms in the next two years. Firms operate across sectors, with vast majority being in the services sectors; approximately five percent of firms are in the manufacturing firms with a similar proportion of firms in knowledge-based industries. Approximately one-third (28.7 percent) of Canadian SMEs report some expenditure for R&D and less than 5 percent (4.2 percent) of SMEs are deemed to be “innovators” (defined as R&D expenditures in excess of 25 percent of total investment).

4.2.1 Comparison of Exporters and Domestic New Ventures

Univariate Student t-tests and Wilcoxon rank sum tests were conducted to identify statistically significant differences between exporters and non-exporters, INVs and domestic-based new ventures (DNVs), and between established exporters (EEs) and established domestic firms. Table 3A reveals that, overall, the owners of exporters and of non-exporter firms differ in very few respects. Contrary to stage theory, owners of exporter firms do not differ to a statistically significant in terms of age or years of management experience. However, they do differ significantly on three important dimensions.

1. Exporters and non-exporters (both new enterprises as well as established businesses) differ significantly ($p\text{-value} < 0.000$) in terms of their respective growth intentions. Owners of exporter firms are much more likely to profess an intention to seek the growth of their businesses than are owners of non-exporters.

2. Exporters and non-exporters differ significantly in terms of the gender composition of the ownership teams (p-value < 0.000). As noted in previous research, firms owned by a majority of females are less likely to be exporter firms than those owned by a majority of males. Among established firms, this difference is especially striking. Among established *domestic* firms, 16.1 percent (15.1 percent + 1.0 percent) are majority owned by females. Among established *exporter* firms only 7.5 percent are majority owned by females. Hence, majority female-owned firms are less than half as likely to export as firms where men comprise the majority of the ownership teams, an observation that bears further analysis.
3. Finally, among enterprises that began trading since 2001, recent immigrants were significantly more likely to be the primary owners of exporter firms than of non-exporter businesses (p-value < 0.001).

Where Table 3A compared the attributes of owners across exporters and non-exporters, Table 3B compares the attributes of the businesses themselves. Table 3B shows that exporter firms are significantly larger than non-exporters in terms of number of employees (p-value < 0.000) and appear to be larger in terms of financial measures such as total revenues and total assets.¹⁵ Exporter firms are significantly more likely to invest in R&D and to be situated in urban locations (p-values < 0.000). As expected, the sectoral distribution of exporters and non-exporter firms differs significantly with exporters being more likely to be in the manufacturing, wholesale and retail, professional services and knowledge-based sectors. Exporter firms were more likely to use debt financing; and more likely to have sought external capital and bank loans (p-value < 0.000).

While the univariate comparisons reported in Table 3 (A and B) are supportive of several of study propositions advanced here, they are not necessarily conclusive. This is because several firm and owner attributes are correlated among themselves. By way of one example, it was noted from Table 3A that female-owned firms appeared less likely to export than firms owned by men; however, female-owned firms are also concentrated in sectors (such as personal services) where exporting is less likely; likewise, female-owned firms also tend to be smaller than those owned by men and smaller firms are also less likely to export. Consequently, it is not yet clear whether the gender differences in export propensity are attributable to differences in firm size and sector or whether gender differences are additional to these systemic factors. Likewise, it is arguable that size and sector are themselves interdependent. To disentangle these potentially confounding effects, further analysis is necessary. To do so, a multivariate model of export propensity, one that simultaneously allows for the various potential factors must be estimated.

4.3 MULTIVARIATE MODELING OF EXPORT PROPENSITY

To investigate factors associated with export propensity, logistic regression was employed as a means of examining the relative influence of firm and owner attributes on the outcome measure corresponding to whether or not a firm exports. Logistic regression is a particularly useful means of representing decision outcomes: it is a technique that makes relatively few statistical assumptions (Hosmer and Lemeshow 1998; Press and Wilson, 1978); one that is robust to the statistical

¹⁵ Financial measures were found to contain a high level of skewness in that a relatively small number of firms reported very high values for revenues and assets. Because of this skewness, statistical testing was not conducted.

assumptions that are made (Stevens, 1996); and one that closely follows the decision processes made by humans.

Following from the study propositions, owner profile data entered into the models included owner age, gender composition of the management team (majority male ownership; 50—50 ownership; majority female ownership), informal investment (0, 1), growth intention (0, 1), first language of majority owner (English, French and other), Canadian residency status (person resided in Canada for less than 5 years), and management experience (< 5 years; 5—10 years; > 10 years). Firm profile data included firm size (full-time equivalent employees, FTE), a proxy for innovation (R&D expenditures >25%), and capital profile.¹⁶

Table 4 shows the results of the logistic regression estimates of export propensity. The left-hand panel of Table 4 shows the results of the logistic regression estimation with all of the above variables retained except for the gender composition of the management team. This base model (left hand panel) was statistically significant (p-value of 0.000), with reasonable goodness-of-fit measures (Cox and Snell R² and Nagelekerke R² of 0.093 and 0.222 respectively) with an in-sample prediction accuracy of 92.7 percent. The Hosmer-Lemeshow p-value was 0.807 indicating no significant difference between in-sample predicted and actual outcomes. Overall, these test statistics indicate a more than adequate goodness of fit.

The right-hand side panel of Table 4 presents the estimates of the final logistic regression model of export propensity with non-significant variables in the base model suppressed and with the model expanded to include a categorical variable corresponding to the gender composition of the management team. Addition of the gender-of-ownership measure improved the overall goodness-of-fit estimate to a statistically significant (p-value = 0.037) extent. The results confirm the univariate results in that age of owner, owners' experience, whether the owner was a member of a visible minority, whether the owner was an informal investor, and age of the firm were not significant (p-value > 0.10) determinants of export propensity. The finding that age of firm was not a factor is especially significant because it directly contradicts the stage theory that forms the basis of much public policy.

¹⁶ The general form of a logistic model is:

$$\log \text{it } \theta(x) = \log \left[\frac{\theta(x)}{1 - \theta(x)} \right] = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots \quad (3)$$

Where

$$\theta = \frac{e^{(\alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots)}}{1 + e^{(\alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots)}} \quad (4)$$

Here, the dependent variable was a binary (0, 1) variable corresponding to whether the firm is an exporter (=1) or not (=0). According to the logistic regression framework when the exponent of e in the above equation is large, θ approaches a value of 1 (corresponds to the firm being an exporter). When the exponent of e is small, θ approaches a value of 0, corresponding to non-exporters. The estimates of β_i allow inference about the relative impact of each of the independent variables.

Significant differences between exporter and non exporter firms include: (as expected) size and sector with larger firms being more likely to export; whether or not the owner of the firm is a recent immigrant (recent immigrants are more likely to be the primary owners of exporter firms) and English-speaking owners are relatively more likely to be primary owners of exporter firms than are owners whose mother tongues are not English (p-value < 0.10). Two variables that were particularly closely correlated with export propensity were owners' growth intentions and investments in R&D. After allowing for the impacts of firm size and sector, firms whose owners had expressed growth intentions were more than twice as likely to be among exporter firms as firms whose owners did not seek growth. Firms that reported investment in R&D were also more than twice as likely to be exporter firms as firms that did not invest in R&D.

Finally, after allowing for all of the above factors, the gender composition of the ownership team is significantly associated with export propensity. The gender composition is statistically associated with export propensity and makes a significant (p-value of 0.037) incremental contribution to the goodness-of-fit of the logistic model after allowing for all of the other factors noted above. The nature of the correlation is such that, given size, sector, etc., firms where the ownership team is primarily women are relatively less likely to be exporters. Having controlled for sector, firm and owner level differences, these results suggest strongly that female-owned firms were still significantly less likely to export. Differences in export propensity were not fully explained by systemic differences in owner and business attributes. The findings lend support to social feminist arguments that the experiences of men and women (exporters) differ and help to illustrate the relevance of feminist thought within well-received theories of SME growth and internationalization.

These results prompted further analysis of two of the findings. The first was the issue of gender of ownership and its link to export propensity. The second issue was the finding that export propensity, in apparent contradiction of the widely promulgated stage theory, did not depend on the age of the firm: that is, additional examination of international new ventures (INVs) seems warranted. These topics are presently examined further.

4.3.1 Gender of Ownership and Export Propensity

Table 5A and 5B present attributes of firms broken down by gender. Three gender categories are employed: firms in which men constitute more than 50 percent of the ownership team; firms in which women constitute more than 50 percent of the ownership team; firms in which ownership is shared equally. Overall, 62.7 percent of firms are majority owned by men, ownership is equally shared in 20.1 percent of businesses, and females are majority owners of 17.2 percent of firms. Table 5A provides breakdowns of attributes of business owners across gender and exporter categories. Table 5B provides breakdowns of attributes of the businesses themselves across gender and exporter groupings. As before, Student t-tests and Wilcoxon tests were conducted to compare attributes across genders by exporter category to identify statistically significant gender differences.

Table 5A shows that, compared with firms that are majority male-owned, majority female-owned firms report less experience, are younger, and more likely to be owned by a member of a visible minority. While the p-values differ, these gender patterns hold for both exporter and non-exporter firms. Table 5B shows that female-owned firms tend to be smaller, and concentrated in service sectors. It is worth noting that female-owned firms did not differ to a statistically significant extent from firms owned by men in terms of investment in R&D. Among non-exporters, women owners were significantly less likely than men to apply for a bank loan or otherwise seek external capital. Among exporter firms, those that were majority female-owned were, if anything, relatively

more likely to seek external financing than exporter firms owned by men. Majority female-owned export firms (firms that derive more than 25% of sales from exports) differed from male counterparts across a number of firm and owner attributes, differences that generally mirrored domestic firms.

4.3.2 International New Ventures

In terms of personal attributes, INVs compare to and contrast from other types of firms in several respects.

Attributes of owners

- *Owners' age and experience.* No significant age differences between owners of INVs and DNVs were observed. Not surprisingly, INV owners are younger than their EE counterparts: 23 per cent of INV owners are less than 40 years old compared with 15 per cent for EEs. INVs and DNVs report significantly less management experience compared to EEs. As would be expected, INVs' business owners have less experience than owners of EEs. This observation also suggests that the nature of experience (rather than tenure) may differ between INV and DNV owners, a possible area for future research.
- *New Canadians.* New Canadian residents (immigrants) were significantly more likely to own INVs than DNVs (9.8 percent compared with 3.8 percent; p-value = 0.002). This finding is one that is consistent with network theory expectations.
- *Mother tongue and visible minorities.* In accordance with the disproportionate involvement of immigrants among INV owners, statistical differences in 'mother tongue' was also noted between INV and EE owners, with owners of INVs being more likely to report a first language "other" than English or French (20.1 percent compared to 6.4 percent of EEs, p-value of 0.000); no statistically significant difference was noted between INV and DNVs. Among INVs, 15 percent are owned by individuals from visible minorities, compared to four percent of EEs and ten percent of DNVs (p-value of 0.054).
- *Gender of ownership team.* Firms that were majority female-owned firms comprised an unusually high proportion of INVs. Table 3A shows that 27.8 percent of INVs were majority female-owned. This is higher than the 21.6 percent of DNVs that are female-owned and the difference is significant at a p-value of 0.049. Among established firms, however, the reverse is true: firms that were majority female-owned comprise only 7.5 percent of established exporters and 16.1 percent of established non-exporters. This difference is also statistically significant at a p-value of 0.019. While longitudinal data would be required for verification, these data suggest that where a relatively high proportion of female-owned young firms export, the proportion of female-owned exporters may decrease over time. If true, this result might be indicative of gender-specific barriers to exporting.
- *Growth orientation.* Table 6 shows that INV owners are indeed significantly more growth oriented than DNVs and EEs. Three-quarters of INV owners intend to grow the firm compared to half of DNVs and 62.3 percent of EEs (p-value = 0.000 and 0.005, respectively).

Attributes of firms

- *Size of firm.* On average INVs are larger than DNVs (2.22 FTEs compared to 1.39 FTEs, p-value of 0.001). A comparison of total revenue between INVs and DNVs indicates a similar pattern. It is also intriguing that the average INV has amassed labour and revenue typical of the average of all Canadian SMEs, but has accomplished this within a three-year period. These observations refute arguments about a gradual accumulation of labour and financial resources, as postulated by stage theory. It is also interesting that no significant differences in total assets and profitability were identified among INVs, DNVs and EEs. In other words, INVs reach similar level of productivity to EEs in a significantly shorter timeframe, employing less labour input.
- *Sectoral distribution.* INVs operate across all industry sectors. Firms in the manufacturing and knowledge-based sectors tend to be more prevalent among exporters than among non-exporters (whether new ventures or established). Among INVs, a relatively high proportion of exporters are professional services firms and, among established exporters, firms in the wholesale and retail sector are relatively more prevalent. These results are important in that they support concerns about the over emphasis of research on manufacturing, technology- and KBI sectors and under emphasis of other sectors (Lefebvre and Lefebvre, 2000).
- *Requirements for financing.* Contrary to expectations, INVs do not demonstrate symbiotic relationships that lessen the need for financial resources. On the contrary, INVs were significantly more likely to have sought debt financing compared to DNVs (40.1 percent compared to 21 percent; p-value = 0.088). It is therefore not surprising that INVs are more leveraged (higher debt to asset ratio) than DNVs (p-value = 0.000). There were no significant differences in loan application rates between INVs and EEs (p-value of 0.183), confirming that exporters appear to require additional financing than do domestic firms. Perhaps this is a result of the costs of export market development.

These results empirically demonstrate that particular owner and firm characteristics are associated with INVs. Experience required to operate INVs reflects personal characteristics and international relationships. Capital and tangible assets are both required. The study's findings refute stage theory and are consistent with network theory. Results indicate that although INVs are significantly smaller than EEs (labour and revenue), yet INV size does not preclude performing in the international arena. Thus INVs achieve similar levels of export intensity within three years of inception with a smaller work force, younger and less experienced owners and fewer assets compared to EEs. These observations are consistent with Madsen and Servais (1997) who suggest that INVs accumulate resources in ways which are more efficient than what was anticipated by the stage model. While this observation had been suggested in qualitative research, this study provides large-sample verification.

Table 3A: Owner Attributes of Exporter and Domestic Firms

	New Firms			Established Firms			All Firms			Total
	Exporters (INVs)	Domestic (DNVs)	p-value	Exporters (EEs)	Domestic	p-value	Exporters	Domestic	p-value	
Number of cases	194	2632		371	4247		565	6879		7444
Owned by a visible minority	12.0%	9.2%	0.308	6.4%	6.4%	0.997	7.6%	7.0%	0.741	7.0%
Owned by an immigrant	9.8%	3.8%	0.002	0.6%	0.5%	0.995	2.7%	1.2%	0.350	1.3%
First language of primary owner			0.395			0.127			0.077	
English	64.7%	66.1%		74.5%	66.9%		72.2%	66.7%		66.9%
French	15.1%	17.7%		18.9%	20.7%		18.0%	20.1%		20.0%
Other	20.2%	16.2%		6.7%	12.3%		9.7%	13.2%		13.1%
Experience of primary owner			0.115			0.970			0.137	
Less than 5 years	26.2%	39.4%		7.0%	5.5%		11.4%	13.0%		12.9%
5 to 10 years	25.6%	18.7%		10.2%	19.1%		13.7%	19.0%		18.8%
More than 10 years	48.2%	41.9%		82.8%	75.4%		74.9%	68.0%		68.3%
Age of primary owner			0.297			0.817			0.181	
< 30	0.7%	9.1%		1.6%	1.4%		1.4%	3.1%		3.0%
30–39	22.8%	25.1%		11.8%	13.2%		14.3%	15.8%		15.8%
40–49	34.7%	36.7%		38.7%	34.5%		37.8%	35.0%		35.1%
50–64	31.9%	25.8%		39.8%	39.7%		38.0%	36.6%		36.7%
>64	9.9%	3.4%		8.1%	11.2%		8.5%	9.5%		9.4%
Gender of ownership team			0.059			0.019			0.002	
No Female Ownership	43.0%	51.8%		56.1%	52.4%		53.1%	52.3%		52.3%
1 to 49% Female Ownership	16.6%	9.9%		13.1%	10.4%		13.9%	10.3%		10.4%
Female Ownership Exactly 50%	12.6%	16.7%		23.2%	21.0%		20.8%	20.0%		20.1%
51 to 100% Female Ownership	2.8%	3.0%		1.1%	1.0%		1.5%	1.5%		1.5%
100% Female Ownership	25.0%	18.6%		6.4%	15.1%		10.7%	15.9%		15.7%
Informal investor	5.9%	9.3%	0.085	10.8%	9.8%		9.7%	9.7%	n/a	9.7%
Growth intention	72.7%	54.9%	0.000	65.2%	32.8%	0.000	66.9%	37.7%	0.000	38.8%

Source: Canadian SME Exporters (Orser, Spence, Riding and Carrington, 2007)

Table 3B: Firm Attributes of Exporter and Domestic Firms

	New Firms			Established Firms			All Firms			Total
	Exporters	Domestic	p-value	Exporters	Domestic	p-value	Exporters	Domestic	p-value	
Number of cases	194	2632		371	4247		565	6879		7444
Firm Size										
Full-time equivalent employees	5.6	3.2	0.055	9.8	3.9	0.000	8.6	3.7	0.000	3.9
0 employees	71.2%	56.1%	0.000	49.6%	46.9%	0.347	55.9%	49.4%	0.003	49.7%
0.5–4 employees	17.0%	32.8%	0.000	15.0%	35.3%	0.000	15.6%	34.6%	0.000	33.8%
5–19 employees	4.0%	8.8%	0.104	24.2%	14.7%	0.004	18.3%	13.1%	0.014	13.3%
20–99 employees	7.7%	1.9%	0.075	9.9%	2.9%	0.013	9.2%	2.6%	0.001	2.9%
Sector			0.000			0.000			0.000	
Agriculture/Primary	2.8%	4.8%	0.459	12.3%	11.9%	0.864	9.5%	9.9%	0.837	9.9%
Manufacturing	10.4%	2.8%	0.023	18.7%	3.8%	0.000	16.3%	3.5%	0.000	4.1%
Wholesale/Retail	16.0%	14.7%	0.715	23.6%	14.0%	0.003	21.4%	14.2%	0.001	14.5%
Professional services	24.9%	11.8%	0.000	11.6%	10.9%	0.809	15.4%	11.2%	0.043	11.4%
Knowledge-based Industry	17.3%	9.3%	0.026	14.3%	4.1%	0.002	15.1%	5.5%	0.000	5.9%
Tourism	4.7%	11.7%	0.024	6.2%	7.3%	0.646	5.8%	8.5%	0.144	8.4%
Other sectors	23.9%	45.0%	0.000	13.3%	48.0%	0.000	16.4%	47.2%	0.000	45.9%
Region			0.000			0.000			0.000	
Atlantic	6.2%	5.5%	0.829	7.2%	6.1%	0.647	6.9%	5.9%	0.608	6.0%
Québec	13.1%	18.6%	0.118	25.2%	20.9%	0.135	21.7%	20.3%	0.522	20.3%
Ontario	40.1%	39.1%	0.799	34.9%	36.0%	0.696	36.4%	36.9%	0.842	36.8%
Prairies	18.8%	19.1%	0.931	17.2%	22.5%	0.068	17.7%	21.6%	0.069	21.4%
British Columbia	21.8%	17.5%	0.237	15.4%	14.3%	0.672	17.3%	15.2%	0.318	15.2%
Rural location	17.9%	22.7%	0.183	20.1%	32.4%	0.000	19.4%	29.8%	0.000	29.3%
R&D expenditure			0.000			0.000			0.000	
0 ≤10%	28.1%	17.4%	0.004	33.3%	18.6%	0.000	31.8%	18.3%	0.000	18.8%
10 to 20%	6.1%	5.7%	0.903	13.4%	4.5%	0.004	11.3%	4.8%	0.001	5.1%
>20%	29.4%	7.1%	0.000	13.0%	3.1%	0.002	17.8%	4.2%	0.000	4.8%
Financial profile										
Total Revenues	\$583,541	\$343,907		\$1,762,799	\$647,451		\$1,219,239	\$558,247		\$591,978
Net Profit before tax	\$35,155	\$40,125		\$55,196	\$46,251		\$45,610	\$44,442		\$44,500
Total assets	\$222,880	\$391,508		\$1,200,484	\$560,445		\$749,873	\$510,799		\$522,999
Debt to Assets (median)	0.83	0.54		0.51	0.38		0.81	0.43		0.45
Return on Assets (median)	0.21	0.23		0.04	0.14		0.04	0.15		0.15
Applied for external financing	42.3%	31.4%	0.003	54.6%	35.8%	0.000	51.0%	34.6%	0.000	35.3%
Loan applicant	34.8%	22.4%	0.001	43.0%	28.1%	0.000	40.6%	26.5%	0.000	27.1%

Source: Canadian SME Exporters (Orser, Spence, Riding and Carrington, 2007)

Table 4: Logistic Regression Models of Export Propensity

Variable	Base Model				Expanded Model (Non-significant Estimates Suppressed)			
	Coefficient Estimate	Wald Statistic	p-value	Exp(B)	Coefficient Estimate	Wald Statistic	p-value	Exp(B)
Age of Owner		1.52	0.824					
Age of owner 30–39	-0.115	0.11	0.745	0.89				
Age of Owner 40–49	-0.218	1.06	0.303	0.80				
Age of owner 50–64	-0.071	0.14	0.706	0.93				
Age of owner >64	-0.111	0.37	0.543	0.89				
Experience of Primary Owner*		3.65	0.161			4.48	0.106	
5 to 10 years of experience	-0.253	2.31	0.129	0.78	-0.282	3.56	0.059	0.75
More than 10 years of experience	0.087	0.46	0.498	1.09	0.068	0.30	0.581	1.07
Language of Primary Owner		34.27	0.000			35.64	0.000	
French language owner	-0.329	5.17	0.023	0.72	-0.276	3.93	0.047	0.76
Other language owner	-0.988	29.70	0.000	0.37	-0.980	30.71	0.000	0.38
Visible minority owner	-0.228	1.64	0.201	0.80				
Immigrant owner	0.825	11.86	0.001	2.28	0.779	10.66	0.001	2.18
Informal Investor	0.037	0.08	0.781	1.04				
Growth Intention	0.482	23.01	0.000	1.62	0.455	19.77	0.000	2.18
Full-time equivalent employees	0.011	61.90	0.000	1.01	0.012	60.98	0.000	1.01
Sector		163.07	0.000			168.29	0.000	
Rural Location	-0.426	11.90	0.001	0.65	-0.439	11.24	0.001	0.64
Firm founded since 2001	-0.055	0.19	0.662	0.95				
Firm founded in 1999 to 2001	-0.046	0.12	0.734	0.96				
No R&D Investment	-0.977	105.62	0.000	0.38	-0.966	96.98	0.000	0.38
Gender						6.58	0.037	
Ownership shared equally					0.214	1.97	0.161	1.24
Majority female-owned					-0.091	0.25	0.620	0.91
Constant	-1.267	19.986	0.000	0.282	-1.564	32.62	0.000	0.21

Source: Canadian SME Exporters (Orser, Spence, Riding and Carrington, 2007)

Table 5A: Owner Attributes of Exporters and Non-Exporters by Gender of Ownership

Ownership Category	Non Exporter Firms				Firms that derive more than 25% of sales from exports			
	Male	50-50	Female	p-value (M/F)	Male	50-50	Female	p-value (M/F)
Language of Primary Owner				0.789				0.461
English language owner	64.6%	78.5%	61.8%		72.4%	85.2%	50.4%	
French language owner	22.3%	10.3%	21.4%		17.0%	9.9%	38.5%	
Other language owner	13.1%	11.1%	16.8%		10.5%	4.9%	11.1%	
Experience of Primary Owner				0.000				0.000
< 5 years of experience	12.8%	7.6%	17.8%		9.1%	10.4%	21.8%	
5 to 10 years of experience	16.7%	14.5%	29.8%		13.1%	2.0%	33.1%	
> 10 years of experience	70.5%	77.9%	52.4%		77.8%	87.7%	45.1%	
Age of Primary Owner				0.000				0.007
Age of owner < 30	3.0%	1.6%	4.6%		2.0%	0.0%	0.1%	
Age of owner 30-39	14.3%	12.7%	24.0%		16.1%	4.6%	29.2%	
Age of owner 40-49	35.9%	33.2%	32.3%		38.0%	29.8%	44.9%	
Age of owner 50-64	36.6%	41.3%	31.9%		36.3%	49.6%	24.2%	
Age of owner >64	10.2%	11.2%	7.2%		7.6%	16.0%	1.6%	
Other Owners' Attributes								
Owned by an immigrant	0.8%	1.9%	1.8%	0.454	1.6%	1.3%	10.1%	0.209
Owned by a visible minority	5.8%	6.6%	11.3%	0.017	7.4%	3.0%	14.1%	0.025
Informal Investor	9.7%	10.8%	8.0%	0.000	13.3%	4.0%	0.8%	0.040
Owner's Growth Intention	39.1%	33.0%	35.7%	0.001	65.8%	51.9%	80.9%	0.901

Source: Canadian SME Exporters (Orser, Spence, Riding and Carrington, 2007)

Table 5B: Firm Attributes of Exporters and Non-Exporters by Gender of Ownership

Ownership Category	Non-Exporter Firms				Firms that derive more than 25% of sales from exports			
	Male	50-50	Female	p-value (M/F)	Male	50-50	Female	p-value (M/F)
Full-time employees	4.0	3.7	2.5	0.006	11.9	2.6	2.7	0.000
0 employees	48.8%	48.7%	55.1%		46.5%	62.7%	79.0%	
0.5-4 employees	33.9%	36.8%	34.3%		13.9%	28.5%	9.4%	
5-19 employees	14.0%	12.6%	8.9%		24.7%	5.6%	9.8%	
20-99 employees	3.0%	1.6%	1.6%		13.6%	3.1%	1.4%	
Sector				0.002			2.7%	0.004
Agriculture/Primary	12.4%	24.1%	4.4%		13.4%	27.7%	0.9%	
Manufacturing	3.5%	3.3%	3.3%		17.8%	7.6%	14.2%	
Wholesale/Retail	12.6%	16.1%	13.9%		25.9%	10.8%	4.7%	
Professional services	10.6%	7.1%	16.2%		10.8%	20.4%	25.6%	
Knowledge-based Industry	5.7%	4.6%	4.4%		12.6%	23.7%	9.7%	
Tourism	6.7%	9.9%	11.5%		5.0%	0.3%	15.2%	
Other sectors	48.6%	34.9%	46.3%		14.4%	9.6%	29.7%	
Region				0.139				0.982
Atlantic provinces	6.3%	5.6%	4.4%		8.5%	4.1%	5.5%	
Québec	22.6%	9.8%	22.4%		24.9%	13.7%	24.6%	
Ontario	36.4%	36.1%	35.9%		35.5%	33.6%	34.8%	
Prairies	21.3%	31.2%	19.2%		14.5%	33.7%	14.2%	
British Columbia	13.3%	17.0%	17.9%		16.6%	14.8%	20.9%	
Rural (RST definition)	30.2%	41.8%	23.3%	0.059	15.8%	47.6%	20.1%	
R&D Expenditure				0.338				0.434
>0% ≤10%	17.7%	19.9%	20.9%		35.5%	24.5%	30.4%	
>10% and ≤20%	4.1%	5.5%	6.4%		11.5%	11.1%	9.5%	
>20%	4.4%	3.0%	4.4%		12.3%	19.4%	35.9%	
Financial Information								
Revenues	\$641,909	\$445,905	\$245,127	0.000	\$2,048,695	\$446,956	\$303,023	0.001
Total assets	\$602,587	\$424,303	\$267,443	0.003	\$1,109,732	\$521,130	\$314,243	0.243
Median Debt to Asset Ratio	48.2%	34.3%	23.2%		83.2%	77.4%	57.0%	
Applied for external financing in 2004	35.8%	43.8%	23.1%	0.000	57.0%	34.3%	58.1%	0.107
Loan applicant in 2004	27.0%	32.8%	19.4%	0.000	46.3%	24.3%	48.8%	0.082

Source: Canadian SME Exporters (Orser, Spence, Riding and Carrington, 2007)

Table 6A: Owners Attributes of International New Ventures, Domestic New Ventures and Established Enterprises

Owner Attributes	INV	DNVs	EEs	Total	p-values* INV/DNV	p-values* INV/EE
Export propensity	66.3%		66.0%	66.0%		0.4301
Informal investor	6.7%	10.1%	9.7%	10.8%	0.570	0.535
Years of experience					0.108	0.806
< 5 years	26.1%	39.2%	6.6%	12.5%		
5-10 years	25.4%	18.7%	9.7%	18.3%		
>10 years	48.5%	42.1%	83.8%	69.2%		
Growth intention (0,1)	72.8%	54.8%	62.3%	38.3%	0.000	0.005
Gender composition					0.049	0.924
No Women	43.3%	51.7%	54.7%	51.9%		
1-49% Women	16.6%	10.1%	14.2%	10.7%		
50% Women	12.5%	16.8%	23.8%	20.7%		
51-99% Women	2.8%	3.0%	1.1%	1.5%		
100% Women	24.9%	18.5%	6.3%	15.2%		
R&D expenditure					0.000	0.000
No R&D	36.2%	70.1%	40.5%	71.1%		
0% ≤ 10%	28.0%	17.2%	34.6%	19.3%		
>10% ≤ 20%	6.6%	5.6%	12.9%	5.0%		
R&D > 20%	29.2%	7.1%	12.0%	4.6%		
Sector					0.000	0.134
Agriculture/Primary	3.4%	5.8%	18.7%	13.6%		
Manufacturing	10.4%	2.7%	17.4%	3.9%		
Wholesale/Retail	15.9%	14.5%	21.9%	13.9%		
Professional Services	24.7%	11.7%	10.7%	10.9%		
KBI	17.2%	9.2%	13.2%	5.7%		
Tourism	4.7%	11.6%	5.7%	8.0%		
Other Sectors	23.8%	44.5%	12.4%	44.0%		

*Mann-Whitney U and Wilcoxon W estimates

Source: Canadian SME Exporters (Orser, Spence, Riding and Carrington, 2007)

Table 6B: Firm Attributes of International New Ventures, Domestic New Ventures and Established Enterprises

Firm Attributes	INV	DNVs	EEs	Total	p-values* INV/DNV	p-values* INV/EE
Full-time equivalent employees (FTEs)	2.22	1.39	5.94	2.05	0.001	0.002
0 employees	70.8%	56.2%	47.4%	50.0%		
0.5–4 employees	17.5%	32.8%	15.5%	33.8%		
5–19 employees	3.9%	8.8%	24.9%	13.1%		
20–99 employees	7.6%	1.9%	10.9%	2.8%		
Revenues (000s)	\$ 583.5	\$ 341.1	\$ 2007.0	\$ 587.2	0.006	0.767
Assets (000s)	\$ 222.9	\$ 399.4	\$ 1326.2	\$ 533.3	0.631	0.522
Profits (000s)	\$ 35.2	\$ 39.8	\$44.6	\$43.3	0.406	0.767
Age of owner					0.562	0.000
< 30 years	0.7%	9.1%	1.5%	2.9%		
30–39 years	22.6%	25.1%	13.1%	15.6%		
40–49 years	35.0%	36.7%	37.6%	34.8%		
50–64 years	31.7%	25.6%	39.4%	36.8%		
65 and over years	9.9%	3.4%	8.3%	9.8%		
Residency of < 5 years	9.8%	3.8%	0.5%	1.2%	0.002	0.000
Visible minority	15.0%	10.0%	4.0%	8.0%	0.300	0.054
First language						
English	64.7%	66.3%	74.7%	67.2%	0.358	0.000
French	15.0%	17.6%	18.9%	19.6%		0.000
Other	20.1%	16.0%	6.4%	13.1%		0.059
						0.000
Sought external financing	42.0%	21.0%	31.0%	26.7%	0.088	0.183
Sought debt financing	40.1%	21.2%	40.2.0%	25.0%	0.000	0.015
Debt to assets ratio	81.1%	74.1%	54.6%	57.2%		

* Mann-Whitney U and Wilcoxon W estimates

Source: Canadian SME Exporters (Orser, Spence, Riding and Carrington, 2007)

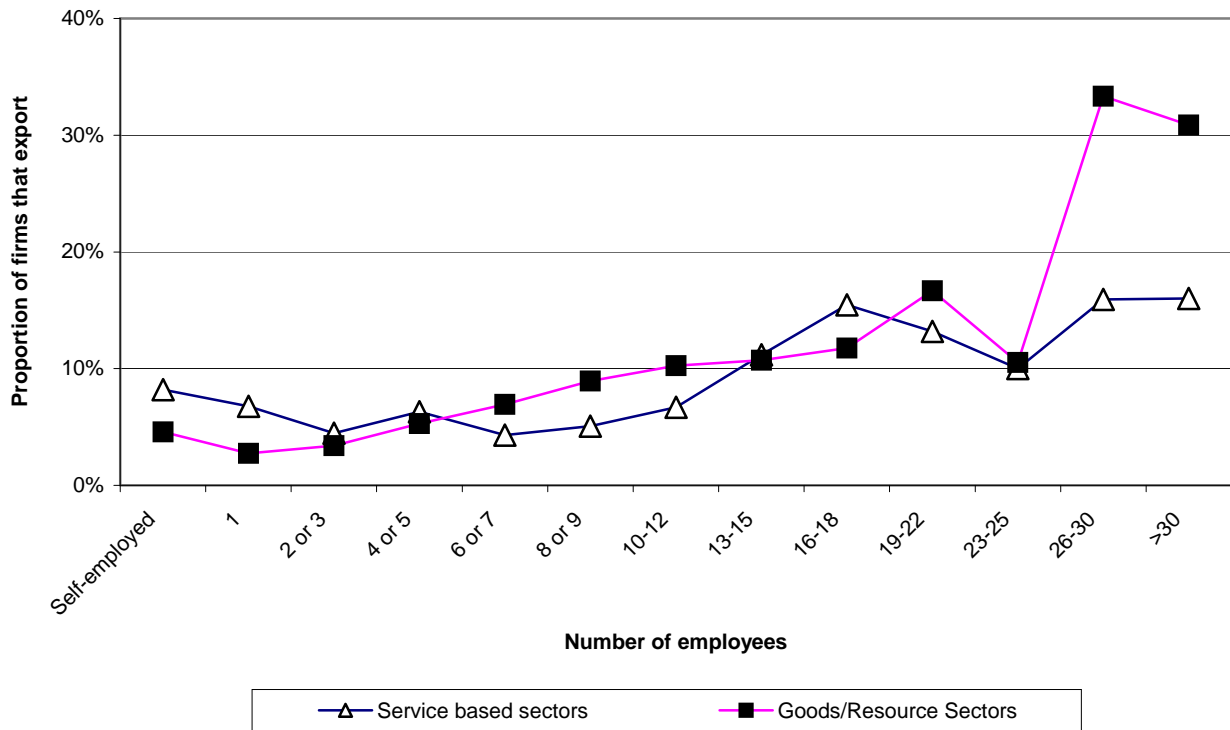
4.4 EXAMINING SIZE THRESHOLDS

To explore the relationship between threshold size and exporting, two sets of analysis were conducted. The first series of tests repeated, using the FDI data, previous research that relates export propensity to firm size, historically defined as the number of employees. This approach implicitly assumes that export capacity is strictly a function of the quantity of labour input even though classical economic theory posits that the level of output is a function, not only of labour, but of capital stock and managerial capacity as well and that these inputs may be substituted for each other subject to the production technology. Therefore, the second set of tests employ the Cobb-Douglas production function as a framework. The findings of each approach are discussed presently and differences/similarities noted.

4.4.1 Size Thresholds Defined as Number of Employees

The concept of a threshold size implies an S-shape relationship between propensity and size. Therefore, firms in the FDI database were ranked into categories based on size as measured by the number of full-time-equivalent employees. The categories were constructed so that each category comprised a minimum of 150 businesses. The proportion of firms that were exporters within each of the categories was calculated for the goods-producing and then for the services sectors resulting in the scatter plots shown in Figure 1.

Figure 1: Export Propensity and Firm Size



Source: Canadian SME Exporters (Orser, Spence, Riding and Carrington, 2007)

As Figure 1 illustrates, the scatter supports – for goods-producing firms only — previous results about an S-shaped relationship between export propensity and firm size as measured by the number of employees. For goods producers, a shift in the size-export propensity continuum is observed at about the 25-employee mark. The chart, therefore, confirms previous findings, such as those of Julien *et al.* (1997), according to which the likelihood of exporting increases substantially once a firm has more than (approximately) 30 employees. For services firms, however, this was not the case and the data do not support the idea of a minimum threshold size.

4.4.2 Estimating Thresholds and the Production Function

To estimate the production function,

$$Y = AL^\alpha K^\beta \quad (1)$$

where:

Y = output

L = labour input

K = capital input

A, α and β = constants determined by technology

output was measured as annual sales revenues. This is not an ideal measure because production theory defines the dependent variable as the volume of production rather than as the value of production; however, sales volume was the closest proxy available from the data. The measure of labour input was the number of full-time equivalent employees and the capital measure was the stock of fixed assets from Part 2 of the FDI data. Management experience was measured as the number of years of experience reported by the primary owner respondent. The estimation was undertaken for four categories of firms as shown in Table 7.

Table 7: Categories of Firms

Category of Firm	Number of cases
Goods exporters	44
Goods, domestic sellers only	505
Services exporters	106
Services, domestic sellers only	933
Total	1,588

Goods Producers

The production function defined above was estimated for the 549 goods producers for which data were available. The function was then re-estimated separately for (a) the 44 goods exporters in the sample and (b) the 505 goods producers that did not export. The results of each of the three estimations are summarized in Table 8. In all cases, both labour and capital inputs were related to revenues to a statistically and materially significant extent. In neither case was the role of management experience a significant factor of production.

The Chow test was employed to compare the coefficient estimates of the production functions corresponding to the non-exporter and exporter sub-samples of goods producers. The Chow test indicated that the coefficients of exporter firms' production function differ from those of non-

exporters at a p-value of 0.013.¹⁷ Goods exporter firms rely somewhat less on labour, and somewhat more on capital, than do non exporters. In neither case was management experience related to output to a statistically significant extent.

Table 8: Estimation of Production Functions, Goods Producer

	Coefficient Estimate	Standard Error	t-statistic	p-value
All goods producers				
(Constant)	8.81	0.34	25.95	0.000
Labour	0.73	0.05	15.53	0.000
Capital	0.24	0.02	9.77	0.000
Management Experience	0.07	0.10	0.76	0.450
Adjusted R ²	0.46			
Overall p-value	0.000			
Non-exporters				
(Constant)	8.83	0.35	25.07	0.000
Labour	0.73	0.05	14.28	0.000
Capital	0.24	0.03	9.17	0.000
Management Experience	0.08	0.10	0.79	0.428
Adjusted R ²	0.44			
Overall p-value	0.000			
Exporters				
(Constant)	8.16	1.32	6.19	0.000
Labour	0.67	0.12	5.67	0.000
Capital	0.27	0.08	3.33	0.002
Management Experience	0.32	0.36	0.87	0.388
Adjusted R ²	0.68			
Overall p-value	0.000			

Services Firms

The production function above was also estimated for the 1,039 services producers for which data were available (106 services exporters and the 933 services firms that did not export). The results are summarized in Table 9.

As was true for goods producers, labour and capital inputs were related to revenues to a statistically and materially significant extent in all three estimations. Again, use of the Chow test to compare the estimated coefficients finds that the coefficients of exporter firms' production function differ from those of non-exporters, this time at a p-value of less than 0.000. Exporter firms rely somewhat less on labour, and somewhat more of capital, than do non exporters. However, the primary difference between services exporters and non-exporters was in terms of the role of managerial experience. Services exporters rely, to a significantly greater extent, on management experience than do services exporters. It is on this dimension, management experience, that services exporters and non-exporters differ most.

¹⁷ See Chow (1960) "Tests of Equality between Sets of Coefficients in Two Linear Regressions", *Econometrica*, 28(3): 591–605.

In addition, the data reveal salient differences between goods and services producers. First, for services firms (unlike goods producers) the role of management experience was a significant factor of production. Second, the ratio of labour to capital was considerably higher for services firms than for goods firms. While this might be expected, the difference speaks to differing perceptions of what barriers to exporting. For goods producers, relatively larger capital stocks are employed relative to services firms; hence, goods producers are likely to be relatively more impacted by perceived capital constraints whereas for services firms, access to skilled labour is more likely to act as a binding constraint.

These are significant findings in terms of its implications for training and public policy because the vast majority of Canadian SMEs are in the services sector. To the extent that they are constrained from exporting due to low levels of management experience a clear training role for educational institutions and governments may be implied through which shortfalls in experience might be remedied through training and education.

Table 9: Estimation of Production Functions, Services Firms

	Coefficient Estimate	Standard Error	t-statistic	p-value
All services firms				
(Constant)	9.19	0.22	40.87	0.000
Labour	0.78	0.04	22.21	0.000
Capital	0.14	0.02	7.14	0.000
Management Experience	0.34	0.06	5.78	0.000
Adjusted R ²	0.47			
Overall p-value	0.000			
Non-exporters				
(Constant)	9.21	0.24	39.18	0.000
Labour	0.77	0.04	20.88	0.000
Capital	0.14	0.02	7.06	0.000
Management Experience	0.31	0.06	5.06	0.000
Adjusted R ²	0.46			
Overall p-value	0.000			
Exporters				
(Constant)	9.12	0.98	9.28	0.000
Labour	0.75	0.15	5.08	0.000
Capital	0.10	0.09	1.13	0.262
Management Experience	0.75	0.29	2.60	0.011
Adjusted R ²	0.47			
Overall p-value	0.000			

4.5 SUMMARY OF STUDY PROPOSITIONS

Table 10 presents a summary overview of the proposed study propositions and resultant findings.

Table 10: Study Propositions and Summary Findings

Owner and firm attributes associated with export propensity		Findings
Owner Attributes		
SP1:	Owners of SME exporters are older than owners of domestic firms.	<i>Not supported.</i> The age distribution of owners of exporter firms does not differ significantly from the age distribution of owners of non-exporters (Table 3A).
SP2:	Owners of INVs are older than owners of domestic new ventures.	<i>Not supported.</i> The age distribution of owners of INVs does not differ significantly from the age distribution of owners of non-exporters (Table 3A).
SP3:	Growth-oriented owners are more likely to export compared to domestic counterparts.	<i>Supported</i> (Table 3A).
SP4:	Owners with more years of managerial experience are more likely to export compared to domestic counterparts.	<i>Not supported</i> (Table 4).
SP5:	Owners with more investment experience are more likely to export compared to domestic counterparts.	<i>Not supported</i> (Table 4).
SP6:	Business owners of export firms have more years of management experience compared to non-exporters.	<i>Not supported</i> (Tables 3A and 4).
SP7:	INVs' owners have more management experience compared to owners of domestic new ventures or established exporters.	<i>Not supported</i> (Table 3A).
SP8:	Exporter firms are more likely to be owned by recent immigrants than firms that do not export.	<i>Supported</i> for new ventures; <i>not supported</i> for established firms (Table 3A).
SP9:	INVs are more likely to be owned by recent immigrants than domestic new firms.	<i>Supported</i> (Table 3A).
SP10:	Majority female-owned- export firms are less growth oriented compared to majority male-owned exporters.	<i>Not supported</i> (Table 5A). A relatively high proportion (80.9%) of female-owned exporter firms report an intention to grow.
SP11:	Majority female-owned export firms bring to the firm fewer years of managerial experience compared to majority male-exporters.	<i>Supported</i> (Table 5A).
SP12:	Majority female-owned export firms have less investment experience compared to majority male-owned exporters.	<i>Supported</i> (Table 5A).
SP13:	Majority female-owned export firms exhibit lower rates of innovation compared to majority male-owned exporters.	<i>Not Supported</i> (Table 5B).
SP14:	Majority female-owned firms are less likely to export compared to majority male-owned firms.	<i>Supported</i> for established firms but the <i>opposite is true</i> among new ventures (Table 3A).
SP15:	Management acumen is a significant factor of production and differs between exporters from non-exporters.	<i>Supported</i> for exporters of services (Table 9), but <i>not</i> for goods exporters (Table 8).

Table 10 continued: Study Propositions and Summary Findings

Firm Attributes		
SP16:	The association between export propensity and size of firm is non-linear and involves a step function.	<i>Supported</i> for goods producers, <i>refuted</i> for services exporters (Figure 1, Tables 8 and 9).
SP17:	Export propensity and age of firm are positively correlated	<i>Not supported</i> (Table 4).
SP18:	Firms with high rates of innovation are more likely to export compared to domestic counterparts.	<i>Supported</i> (Table 4).
SP19:	Firms with comparatively more financial assets are more likely to export compared to domestic counterparts.	<i>Supported</i> (Tables 8 and 9).
SP20:	Innovative firms are more likely to export compared to domestic counterparts.	<i>Supported</i> (Table 4).
SP21:	INVs exhibit higher levels of innovation than established exporter firms.	<i>Supported</i> (Table 6A).
SP22:	Knowledge-based firms are more likely to export versus non-knowledge-based firms.	<i>Supported</i> (Table 3B).
SP23:	INVs employ less financial capital than domestic new ventures and established exporters due to enhanced social capital.	<i>Not supported</i> but INVs were more likely to apply for commercial loans (Table 6B).
SP24:	Majority female-owned export firms employ fewer employees compared to majority male-owned exporters.	<i>Supported</i> (Table 3A).
SP25:	Majority female-owned export firms retain fewer financial assets compared to majority male-owned exporters.	<i>Supported</i> (Table 5B).
SP26:	Majority female-owned export firms are less likely to operate knowledge-based firms compared to majority male-owned exporters.	<i>Supported</i> (Table 5B) to the extent that the overall sectoral distribution of exporters differs by gender.
SP27:	Majority female-owned firms are less likely to operate goods producing firms compared to majority male-owned firms.	<i>Supported</i> (Table 5B) to the extent that the overall sectoral distribution of exporters differs by gender.
SP28:	Even after controlling for gender differences in firm export profile, female-owned firms are less likely to export compared to male-owned firms.	<i>Supported</i> (Table 4).
SP29:	Parameters of the production function vary across sectors and technology orientation.	<i>Supported</i> (Tables 8 and 9).
SP30:	Exporters exhibit higher levels of production than non-exporters.	<i>Supported</i> (Tables 8 and 9).

5 DISCUSSION OF FINDINGS

5.1 SUMMARY

These findings indicate that only a small percentage of Canadian SMEs export goods and services – approximately 8 percent of the 1.3 million firms that correspond to the definition of SME used here. For almost half of these exporters, export revenues account for less than 25 percent of total sales. It is not clear why so few firms engage in export trade. It is also not evident why export sales account for such a small percentage of trade revenue. Both observations represent a significant opportunity to enhance Canada productivity and export performance.

The findings that were particularly noteworthy to the research team were: (a) the importance of the professional service sector among export-oriented firms (for example, professional service-based firms are as likely to export as manufacturers); (b) the presence of majority female-owned firms among INVs; and (c) differences in the production function (inputs to export performance) between service and good producing firms and the importance of management capacity to services exporters. One potential explanation for the relative obscurity of service-based exporters within the literature (and likely trade policy) is that the preponderance of Canadian studies are predicated on manufacturing and technology-based industries. Given the large absolute number of service-based enterprises across Canada, the professional service sector may represent an under-estimated economic opportunity. The comparatively high percentage of women among INV owners (for example, one-quarter of all INVs report 100 women ownership) suggests that these women owners are a new breed of high expectation and globally orientated women entrepreneur. Finally, the research team was also somewhat surprised to observe significant differences in the production function between good and service producing export firms. Consistent with traditional arguments about size threshold, the likelihood of exporting among goods producers jumped at around the 25 employee mark. This was not the case of service providers. Among service-based firms, it appears that management experience substitutes for labour and capital. These observations suggest that it is critical that export and economic performance models (for example, production functions) recognize and calibrate for “soft assets” such as management acumen, social and network capital.

With respect to the theoretical rationales presented at the outset of the paper, stage theory (assumptions about export propensity and firm tenure) were not supported empirically: findings confirm other studies where the firm size was found to be a weak predictor of international activities (Cavusgil, 1982; Reuber and Fisher, 1997). Resource-exchange theory was partially supported: multiple proxies for management acumen were associated in the increased likelihood of export. For example, owners with more than 5 years of business ownership experience that are growth-oriented with Canadian residency and foreign languages were significantly more likely to engage in export trade. It is not surprising to find growth-oriented managers among exporters due to the limited potential of the Canadian domestic market. As for residency status (immigrants) and language skills, owners with these characteristics may find it easier to do business with their countries of origin which, even if geographically distant are closer psychologically than the traditional Canadian export markets.

Network theory was used to rationalize the internationalization process among INVs. It was also posited that owners of INVs are more likely to be majority male-owned, growth oriented, innovative, demonstrate international networks and retain more years of business experience compared to owners of DNVs and EEs. Furthermore, it was expected that INVs are not restrained by size (labour, organizational assets and capital) and tend to operate in selected industry sectors (for example, technology and knowledge-based sectors) compared to DNVs and EEs. INVs were indeed innovative, growth-oriented and demonstrate international networks. Results also indicate that although INVs are significantly smaller than EEs (labour and revenue), INV size does not preclude performing in the international arena. INVs achieve similar levels of export intensity within three years of inception with a smaller work force, younger and less experienced owners and fewer assets compared to EEs. Strikingly, one-quarter of INVs are owned by women. This observation suggests these INV women entrepreneurs likely differ significantly from women business owners of DNVs and EEs. Furthermore, contrary to studies that portray INVs as technology- or knowledge-based, INVs were found to operate across all sectors. And while sector was indeed statistically associated with INV status (compared to DNVs), no statistically significant difference with respect to sector was noted between INVs and EEs. Years of management experiences was not a significant factor associated with INV status. These observations are consistent with Madsen and Servais (1997) who suggest that INVs accumulate resources in ways which are more efficient than what was intended in the stage model.

Feminist theory was presented as a rationale to explain gender differences in export propensity. Many gender differences identified in the literature (Ahl, 2006) are systemic across domestic and export-intensive firms. Having controlled for systemic sector, firm and owner level differences, majority female-owned firms were still significantly less likely to export. Differences in export propensity were, therefore, not fully explained by systemic differences in owner and business attributes. The findings lend support to social feminist arguments that the experiences of men and women (exporters) differ and help to illustrate the relevance of feminist thought within well received theories of SME growth and internationalization. The results provide the first large-scale evidence to support anecdotal comments about gender-related barriers to export (Orser *et al.*, 1999, Riddle 2000).

Finally, immigrant entrepreneurs (new Canadians) were disproportionately exporters, even having controlled for sector, firm and other owner attributes. It is not clear if the propensity of export is a function of differences in growth orientation and values (Morris and Schindehutte, 2005; Morris, Miyasaki, Watters, and Coombes, 2006), “pull factors” such as cultural, geographic and market knowledge or “push factors” such as a lack of domestic opportunities (for example, double or triple jeopardy for visible minority / immigrant women managers in corporate settings). These results lend empirical support to network theory, where immigrants capitalize on contacts abroad to make a living in Canada. Moreover, dealing with individuals who are cultural or psychologically similar (although geographically distant), may facilitate or speed the establishment of ventures and thus serve as a survival strategy.

5.2 QUESTIONS FOR RESEARCHERS, TRADE POLICY MAKERS AND EXPORT TRAINING OFFICERS

The underlying purpose of this work is to encourage further discussion about the means through which research, policy and training can further stimulate international trade. Unfortunately, the review of literature found few available evaluations of Canadian trade or export-stimulation programs. It is impossible therefore to ascertain the extent to which existing export policies and programs meet the needs of Canadian SME exporters. These findings nevertheless provide insights and hence, food for thought for such discussion.

To provide a preliminary list of ideas for such a discussion, the following questions are presented for reader consideration:

1. To what extent does the participation and usage of export stimulation programs reflect the profile of growth-oriented Canadian SMEs? What are the means used to monitor the impacts of current programs to ensure maximum economic impact for such programs? To what extent do they meet the needs of both men and women and of new Canadians?
2. To what extent do the support needs of goods producers differ from service-based firms? How well do current policies and program address these differences?
3. How can federal policy and export stimulation programs encourage more new ventures from entering international markets? To what extent (if any) is current export program eligibility biased towards larger, goods producing and more established firms?
4. To what extent does the traditional division of policy and programs between Industry Canada and Foreign Affairs and International Trade inhibit exporting, particularly among new ventures (for example, “border in” versus “border out” responsibilities, assumptions about requisite firm size)?
5. To what extent do export promotion materials and case studies recognize minority groups such as new Canadian and women exporters, micro-businesses and/or professional service firms?

5.3 LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

Six study limitations are noted. First, while the study reflects data representative of the Canadian SMEs, the sampling frame accounted for export incidences as opposed to other forms of internationalization (for example, importing, joint ventures), a limitation identified in related studies (Coviello and Jones, 2003). Second, the sub-group of firms (established exporters) was an aggregation of all firms that had been exporting for three years or more. This classification does not distinguish between gradual growth exporters and those that may have been INVs from inception. This aggregation of data means that both potentially high growth and low growth exporters are considered as one group.

Third, the questionnaire was based on self-reported data from a single informant (firm owner). However, since in SMEs, especially the smaller ones, entrepreneurs are the heart and soul of the firm, no one else may have been able to fully answer the survey or may have answered in the same way. Fourth, a more refined measure of management experience is required in order to capture accurately the complexity of achieving performance in a network economy. Since one of the most important resources for these firms is their relationships with other actors in the network (Håkansson and Snehota, 1989), further studies should help determine how to capture the important variables in effective international relationships.

Fifth, the unit of measure of the research was the firm owner. It is recognized that owner self-report data may be biased towards favourable owner attributes. The study also used cross-sectional data with its obvious shortcomings. Ideally, longitudinal data best captures the accumulation of owner and firm resources associated with firm growth and export. Finally, the nature of questions used to examine export is note worthy. The primary question posed was: “Did the business sell or export any of its goods and services outside Canada during the past 12 months?” However, Foreign Affairs and International Canada identifies four modalities of international trade: goods or services that cross the Canadian border, including transportation and travel; customers who cross the border into Canada such as tourists; firms that establish a commercial presence abroad; and revenue generated when Canadian personnel cross the border to do business abroad. As such, the current work likely under-estimates the incidence rate of SME export.

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