

Export Dynamics in Canada: Market Diversification in a Changing International Economic Environment

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Abstract: Motivated by the remarkable shifts in Canada's global pattern of exports from the 1990s to the 2000s, this paper analyses the dynamics of Canadian exporters in a changing international economic environment. It takes its cue from recent contributions to the international trade literature that have emphasized the role of new entrants into export markets in contributing to trade growth and the role of international macroeconomic conditions, especially the evolution of real exchange rates, in shaping firms' decisions on export market participation. We document the decline in export sales by Canadian exporters to the U.S. market and the diversification, largely accomplished at the extensive margin (by new entrants) into third markets, especially Europe and Asia, in response to exchange rate realignments (the European story) and shifting growth dynamics (the Asian story). We highlight the role of new entrants in sustaining Canadian export performance in the key U.S. market; this development underscores the vital importance of continuing export promotion even in established markets. We conclude that, given firm-level export dynamics, a country that takes its existing export base for granted is liable to suffer erosion of its international trade performance.

Key Words: exports, entry, exit, intensive and extensive margin.

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1. Introduction

This paper analyses the dynamics of Canadian exporters in a changing international economic environment. Motivated by the remarkable shifts in Canada's global pattern of exports from the 1990s to the 2000s, it takes its conceptual cue from recent contributions to the international trade literature that emphasize the role of new entrants into export markets and the general importance of the extensive margin in contributing to trade growth; and the role of international macroeconomic conditions, especially the evolution of real exchange rates, in shaping firms' decisions on export market participation.

Because of economic geography, the United States has always been Canada's major export destination, both in terms of its share of Canada's total exports and its position as destination of choice for Canadian exporters. These economic ties reached their peaks around 2000; at that time, the U.S. market accounted for 87 percent of total Canadian merchandise exports, nearly 90 percent of Canadian exporters shipped their products to the United States, and about 85 percent of new Canadian entrants to export markets chose the United States as the export destination in which to gain their first export experience. However, the environment that fostered these developments changed abruptly in the 2000s. With the completion of the tariff cuts mandated under the North American Free Trade Agreement (NAFTA), the impetus to cross-border trade from trade liberalization waned. Meanwhile surging commodity prices driven by an Asian-led global economic boom supported a steep appreciation of the Canadian dollar relative to the U.S. dollar. Canada's trade pattern changed sharply in this period. Exports became more diversified in terms of destination markets and the share of Canadian exports accounted for by the United States declined steeply, retracing most of the increase witnessed in the 1990s.

To investigate how this diversification was achieved and the role that the changing trade environment may have played in shaping it, we draw on firm-level data from Statistics Canada's Exporter and Business Register databases for the years 1999 to 2006, a period that covers the peak years of Canada's U.S.

market engagement and the beginning of the diversification to third markets. These two databases combined enable us to track entry and exit of firms into the various export markets and the evolution of their sales in these markets, and to link these features of export performance to firm-level characteristics such as the firm's size, age, and sector of operations.

The theoretical context in which we frame our study is provided by Ghironi and Melitz (2005). They integrate international macroeconomic shocks into the now conventional model of international trade with micro foundations in which firms operate with differing levels of productivity and face sunk costs of entry into export markets as well as both fixed and per-unit export costs. In this framework, only the relatively more productive firms export and exogenous shocks induce firms to enter and exit both their domestic and export markets. Consistent with Baldwin and Lyons (1994) who identified the potential for hysteresis in trade patterns from prolonged periods of large exchange rate misalignment, this framework allows for persistent deviations of the real exchange rate from purchasing power parity equilibrium (which Ghironi and Melitz derive from firm-level responses to transient aggregate shocks) to influence the endogenously determined size of the traded sector and firm-level decisions to enter or exit export markets.

For an empirical methodology, we follow Eaton, Eslava, Kugler and Tybout (2007) who decompose export growth into changes in exports by incumbent exporters (i.e., the intensive margin) and changes in the set of exporting firms (the extensive margin), and track the performance of cohorts of exporters defined by the year of their entry into export markets.

Our empirical analysis mainly focuses on the dynamics of Canadian exporters, interpreted in light of the international macroeconomic changes. Our data set does not include non-exporters; accordingly, we establish an empirical link between international macroeconomic shocks and export entry decisions of non-exporters. This is a topic for future research

Nevertheless, by examining the exporter data alone, we are able to uncover many interesting patterns of Canadian exporters. Our principle finding regarding the dynamics of

Canadian exporters is that the global market diversification by Canadian exporters in the first half of the 2000s was largely accomplished by expansion of trade at the extensive margin. Consistent with the theoretical prediction of Ghironi and Melitz (2005 and 2007), the diversification was accompanied by an increase in the average number of export destinations served per firm and the proportion of multi-market exporters in the total Canadian exporter population. Particularly in the Asian market, the diversification was led by small- and medium-sized exporters. In the more mature European market, in which real exchange rate developments played more of a role, established exporters and thus the intensive margin of trade remained a more significant factor in explaining trade growth. Importantly, we find that new entrants played a significant role in limiting the extent of decline in Canadian export performance in the key U.S. market; this development underscores the vital importance of continuing export promotion in terms of helping new exporters overcome entry barriers, even in established markets. We conclude that, given firm-level export dynamics, a country that takes its existing export base for granted is liable to suffer erosion of its international trade performance.

The rest of the paper is organized as follows. Section 2 lays out the theoretical and empirical background to the study. Section 3 provides a detailed overview of the data, profiling Canadian exporters from 1999 to 2006 in terms of firm size and sector of activity, and describing their dynamics in terms of export-market entry and exit and market diversification. Section 4 sets out our decomposition of change in trade into extensive and intensive margins by region. Section 5 concludes.

2. Background

The 1990s and 2000s witnessed a remarkable rise and then fall in the U.S. share of Canada's exports. Economists attribute the intensification of Canada's trade with the United States in the 1990s to several factors. Trefler (2004) traces a portion of the export gains reported in Canada to the tariffs cuts made pursuant to the Free Trade Agreement between Canada and the

United States (CUSFTA) starting in 1989 and later under the North American Free Trade Agreement (NAFTA) between Canada, Mexico and the United States, starting in 1995. Baldwin and Yan (2010) using microdata find that currency depreciation increased the probability that more efficient non-exporters would enter export markets, suggesting part of the increase in Canada's exports to the United States in the 1990s was due to the decline in Canada's exchange rate. Moreover, it is widely recognized that Canada's increased exports to the United States in the late 1990s were part of a global picture of surging U.S. imports and the burgeoning U.S. trade deficit which developed at that time and continued well into the 2000s.

By 2008, the relative importance of the U.S. market in total Canadian merchandise exports had declined by 10 percentage points, from about 87 percent in the late 1990s and early 2000s to 77.6 percent. On a balance of payments basis, the importance of the U.S. market in total Canadian goods exports declined to 76 percent from 84 percent over the same period. The percentage of exporters who export to the United States in the total Canadian exporter population dropped to 82.2 percent in 2006 from 89.2 percent in 1999. On the other hand, the share of exports to Asia in total Canadian merchandise exports increased from 5.7 percent in 1999 to 9 percent in 2008; and to Europe from less than 5 percent in 1999 to 7.5 percent in 2008. At the same time, the share of exporters that export to Asia in the Canadian exporter population rose to 17.6 percent in 2006 from 10.3 percent in 1999, and the percentage that export to Europe increased to 21.6 percent from 14.6 percent. Clearly, Canadian exporters diversified into non-U.S. markets

Why—and how—was this diversification effected?

Business cycle dynamics and real exchange rate fluctuations influence national trade flows, or so casual empiricism would suggest. Accordingly, developments such as the rise of Asia and the Canadian dollar's stunning rise in the post-2002 period seem to provide ready-made answers as to what prompted the diversification of Canada's exports. However, neither traditional international trade theory nor the models of international macroeconomics formally address the determinants and evolution

of a nation's trade patterns in the context of such developments¹. This gap between formal theory and observed dynamics was recently bridged by the pioneering work of Ghironi and Melitz (2005 and 2007). Starting with the Melitz (2003) model of international trade which incorporates monopolistic competition and allows for firms with varying levels of productivity to co-exist in any given market, they develop a model of international trade in the context of international macroeconomic dynamics. Given irreversible sunk investments to gain market entry, only a subset of relatively more productive firms export, while the remaining less productive firms serve only their domestic market. In this framework, exogenous shocks induce firms to enter and exit both their domestic and export markets.

The key element of the Ghironi and Melitz model from our perspective is endogenous entry/exit into and out of export markets in response to macroeconomic shocks or changes in trade costs. This feature, in fact, explains the extensive margin of trade that has been extensively studied in the trade literature—changes in trade due to changes in trading relationships such as new firms entering the export market, or declines of the existing trading relationships through exit of exporters, narrowing the range of export products or export destination countries. Eaton, Kortum, and Kramarz (2004), Broda, Greenfield and Weinstein (2006), Broda and Weinstein (2006), and Bernard, Redding and Schott (2006) all have provided convincing evidence of the co-movement between trade flows, imported varieties and the extensive margin of trade².

¹ Theories based on comparative advantage elucidate the commodity composition of trade between unlike trading partners; theories based on market structure (imperfect competition in the presence of differentiated products) explain trade between like partners; and the gravity model describes the general spatial organization of trade based on variations in trade costs between various trading partners due to the physical and figurative distance between them. However, these theories do not incorporate the persistent disequilibria often observed in international macroeconomic cycles.

² Many studies have highlighted the role of the extensive margin in explaining international economic phenomena. See for example, Kehoe and

Eaton, Eslava, Kugler and Tybout (2007) provide a simple empirical framework in which to decompose the aggregate growth in export sales into contributions at the extensive and intensive margins. Details of the decomposition methodology are set out in Box 1. This decomposition allows us to calculate the overall contribution to export expansion of continuing exporters and new entrants together with the negative impact of those firms that are exiting export markets. Further, this decomposition provides the basis for insights concerning the endogenous response of Canadian exporters to changes in the international macroeconomic environment. The decomposition by regional market of Canada's exports over the 1999-2006 period is guided by the following intuitions.

First, after falling in the 1990s, costs of Canada-U.S. trade appear to have risen in the 2000s because of increased border transit costs (e.g., increased border wait times; direct fees for crossing the border; additional and duplicative border programs; and increased inspection times). While the empirical literature on the impact of the border "thickening" on trade to date gives mixed results, to the extent that trade costs rose, it would induce some firms to exit the U.S. market, the Ghironi-Melitz model would predict that some firms that might otherwise have entered the U.S. market to direct their attentions to other markets which had become relatively more attractive. This would, predictably result in diversification of Canadian exports.

Second, the exchange rate depreciation of the U.S. dollar from its 2002:Q1 peak resulted in very different impacts on various currencies. The floating currencies, including the Canadian dollar and the euro, rose disproportionately to their weight in U.S. trade, while the Asian currencies by and large maintained their parities to the greenback. Accordingly, large and sudden changes emerged in relative profitability of exporting to different destinations.

Ruhl (2009), Helpman, Melitz and Rubinstein (2008), Chaney (2008), Bernard, Redding and Schott (2006) and Broda and Weinstein (2006).

Box 1: Export Growth Decomposition

The calculation of growth contribution by new entrants (exporters who exported in year t but not in any of the previous years), continuers (exporters who exported both in years $t-1$ and t), and exiters (those who exported in year $t-1$ but not any year after) follows Eaton et al. (2007).

Define Y_t to represent the value of exports by all exporters in year t ; $y(j,t)$ to represent the value of exports by the subgroup j of exporters in year t ; $CN^{t-1,t}$ as the group of continuers who export both in year $t-1$ and t ; $EN^{t-1,t}$ as the group of entrants who export in year t but not $t-1$; and $EX^{t-1,t}$ as the group of exiters who export in year $t-1$ but not t .

The growth rate of total exports, G_T , is calculated as,

$$G_T = \frac{Y_t - Y_{t-1}}{(Y_t + Y_{t-1})/2}$$

where

$$Y_t = \sum_{j \in N} y(j,t)$$

The share of continuers in period $(t-1)$ exports, S_T , is calculated as,

$$S_T = \frac{\sum_{j \in CN^{t-1,t}} \frac{[y(j,t-1) + y(j,t)]}{2}}{\frac{Y_t + Y_{t-1}}{2}}$$

Growth of exports contributed by continuers, G_{CN} , is calculated as,

$$G_{CN} = \frac{\sum_{j \in CN^{t-1,t}} [y(j,t) - y(j,t-1)]}{\sum_{j \in CN^{t-1,t}} \frac{y(j,t-1) + y(j,t)}{2}}$$

Growth of exports contributed by increased number of firms, G_{EN} , is calculated as,

$$G_{EN} = \frac{\bar{y}(t-1) \cdot \sum_{j \in EN^{t-1,t}} j}{\left(\frac{Y_t + Y_{t-1}}{2} \right)}$$

The value of exports by entrants relative to the average, M_{EN} , is,

$$M_{EN} = \frac{\sum_{j \in EN^{t-1,t}} [y(i,t) - \bar{y}(t-1)]}{\left(\frac{Y_t + Y_{t-1}}{2} \right)}$$

Growth of exports contributed by the decreased number of firms, G_{EX} , is calculated as,

$$G_{EX} = - \frac{\sum_{j \in EX^{t-1,t}} [y(j,t-1) - \bar{y}(t-1)]}{\frac{Y_t + Y_{t-1}}{2}}$$

The value of exports by exiters relative to the average, M_{EX} , is,

$$M_{EX} = - \frac{\bar{y}(t-1) \sum_{j \in EX^{t-1,t}} j}{\frac{Y_t + Y_{t-1}}{2}}$$

The growth rate of total exports can be decomposed as follows,

$$G_T = S_{CN} \cdot G_{CN} + G_{EN} + M_{EN} + G_{EX} + M_{EX}$$

For example, the rise of the Canadian dollar from a value of about US0.62 at the beginning of 2002 to near parity with the U.S. dollar by the end of 2007 represented an appreciation of approximately 60 percent over a six-year period. Since inflation rates in the United States and Canada were similar in this period, there was an equivalent appreciation in the real exchange rate. In other words, average prices of goods and services in Canada increased by 60 percent, relative to those in the United States. As noted by Devereaux (2008), this was an unprecedented movement in relative prices for countries that trade so much with one another. For the most part, this development also must be considered to be unanticipated.

Similarly, the euro depreciated from its launch valuation of 1.17 to the USD at the beginning of 1999 to as low as US\$0.827 in October 2000, before starting a meteoric rise that would take it as high as US\$1.601 in April 2008. Since eurozone and U.S. inflation rates also were similar throughout this period, almost all of the nominal variation translated into real variation. Accordingly, the cross-rate between the Canadian dollar and the euro remained relatively stable as both the Canadian dollar and the euro appreciated against the U.S. dollar after 2002. The euro appreciated marginally against the Canadian dollar from €0.71 in 2002:Q1 to an annual average of €0.70 in 2006. This translates into much greater relative profitability of sales to Europe as compared to the U.S. which should generate the export market entry/exit and expansion behavioural responses contemplated in the Ghironi-Melitz model.

Third, the rise of the “BRICs” (Brazil, Russia, India and China) as global economic powers, led by China’s spectacular post-WTO accession boom, significantly re-weighted the global economy. The improved macroeconomic environments in the rapidly expanding emerging markets reduced the entry threshold to these markets, which encouraged the entry of Canadian exporters to these markets.

Taken together, these developments constitute a natural experiment that should throw light on exporter dynamics. We examine the response of Canadian exporters to these developments below.

3. Canadian exporter dynamics

The analysis reported in this paper is based on data derived from Statistics Canada's Exporter and Business Register databases in the years from 1999 to 2006. Statistics Canada's Exporter Register produces annual estimates of the number of firms exporting, and the value of their domestic exports by industry, product, export destination and province of residence³. The database is then linked to Statistics Canada's Business Register—a central repository of information on business operating in Canada to obtain the firm-level information of exporting firms. These two databases combined enable us to see not only the export performance of exporting firms but also the characteristics of these firms such as the size of the firm by employment, the year the firm established, and many others.

3.1 *General profile of Canadian exporters*

Table 1 reports the overall profile of Canadian exporters from 1999 to 2006. During that period, there was an average of 47,173 Canadian firms per year active in the export market⁴. The total number of Canadian exporters increased strongly in the early part of this period, from 43,568 in 1999 to 49,146 in 2002, or a total of 12.8 percent. However, the number fell back sharply to 44,127 by 2006 following the rise in the Canadian dollar. Although the number of exporters increased only marginally over this period, the value of exports per exporter increased steadily, rising to \$8.6 million per firm in 2006 from

³ The Exporter Register includes only the value of domestically produced exports that covers more than 95 percent of these domestic exports. Transactions unrelated to business activity such as exports by individuals for personal, non-business uses are excluded in the database. For detailed information, see Statistics Canada's publication "A Profile of Canadian Exporters" <http://www.statcan.gc.ca/pub/65-506-x/65-506-x2008001-eng.pdf>.

⁴ Statistics Canada's annual publication on the profile of Canadian exporters excludes the firms with annual exports less than \$30,000. In this study, all exporters are included; therefore, the number of exporters reported in this paper is greater than that reported by Statistics Canada.

\$7.4 million per firm in 1999. Canadian exporting firms employed on average 3.4 million people, which accounted for a fourth of total Canadian employment. The number of people employed by these exporting firms barely changed over the period. This period witnessed an increasing trend of globalization of Canadian exporters, both in terms of the number of products exported per firm and the number of export destinations served by each firm. The average number of products exported per firm increased to 5.0 in 2006 from 4.4 in 1999. Over the same period, the average number of markets served per exporter increased to 2.5 markets from 1.7 markets.

Table 1: Profile of Canadian Exporters, 1999-2006

Year	No. of Exporters	Ave. Value of Exports (\$Mil)	No of Employees	Ave. No. of Markets	Ave. No. of Products
1999	43,568	7.4	3,332,952	1.7	4.4
2000	46,465	8.0	3,405,885	1.7	4.4
2001	48,140	7.5	3,490,150	1.8	4.6
2002	49,146	7.2	3,430,391	1.8	4.6
2003	48,504	6.9	3,395,280	2.1	4.7
2004	49,314	7.4	3,511,157	2.2	4.8
2005	48,126	8.0	3,580,574	2.4	4.8
2006	44,127	8.6	3,397,779	2.5	5.0

Source: Statistics Canada.

The average number of destination markets served per Canadian exporter is lower than what has been observed for U.S. exporters⁵. This is probably the result of the Canadian exporter population being skewed by a large number of exporters who are single-market exporters to the U.S. market. However, as Canadian firms increasingly enter non-U.S. markets, the number of single-market exporters fell steadily. In 1999, the number of single-market exporters accounted for 82 percent of the total Canadian exporter population, while in 2006 this share came down to 73 percent. By the same token, there was a steady increase of multi-country exporters. In 1999, only

⁵ Bernard, Jensen and Schott (2005) found U.S. exporters exported to an average of 3.3 markets in 2000.

10 percent of Canadian exporters shipped their products to at least 3 destinations, while in 2006 the importance of this group in total Canadian exporters increased to 17 percent.

2.2 *Exporter characteristics by size of establishment*

About 95 percent of all Canadian exporters in our data set fall into the category of small- and medium-sized (SMEs, up to 200 employees), however, they accounted for 35 percent of total export sales in 2006 (see Table 2).

Table 2: Canadian Exporters by Size, 1999-2006

Year	Number of Exporters	% of total exporters	Value of Exports (CAD Mil)	% of total exports
SMEs				
1999	41,224	94.6	85,747	26.7
2000	44,024	94.7	107,322	28.8
2001	45,700	94.9	111,599	31.0
2002	46,714	95.1	109,353	31.1
2003	46,065	95.0	110,793	32.9
2004	46,835	95.0	121,811	33.3
2005	45,573	94.7	139,722	36.2
2006	41,720	94.5	134,198	35.2
Large-sized Exporters				
1999	2,344	5.4	234,819	73.3
2000	2,441	5.3	265,503	71.2
2001	2,440	5.1	248,896	69.0
2002	2,432	4.9	242,116	68.9
2003	2,439	5.0	225,830	67.1
2004	2,479	5.0	244,143	66.7
2005	2,553	5.3	246,000	63.8
2006	2,407	5.5	246,863	64.8

Source: Statistics Canada.

Similar to the findings in other countries,⁶ the majority of Canadian exports are accounted for by a relatively small number of larger-sized firms. Exporters with more than 200 employees made up only 5 percent of the entire exporter population but they contributed nearly 65 percent of the value of total exports recorded in the Register in 2006. In comparison, Bernard et al. (2007) report an even more skewed distribution of export flows across U.S. firms than we observe for Canada: the top 1 percent of U.S. exporters accounts for 81 percent of the value of U.S. exports, and the top 10 percent for over 95 percent. They suggest two alternative explanations for the high concentration of trade in a small number of firms: an extremely unequal distribution of productivity levels across firms, or economies of scale in overseas distribution.

On average, larger Canadian exporters reported a value of exports nearly 50 times greater per firm than the SME exporters (see Table 3). Large-sized exporters employed 67 percent of the export industry workforce, twice as much as the SME exporters. This distribution of employment shares between large-sized and SME exporters barely changed during the examined period.

Large-sized Canadian firms also exported more products to more countries. The average number of products exported by large-sized firm and the average number of export destinations served by large-sized exporters were 18 and 6.7 respectively, compared to only 3.9 and 2 for SME exporters. About 84 percent of SME exporters exported only to one country, compared to less than 50 percent of large-sized exporters (see Table 4). Bernard et al. (2007) note that this pattern, also seen in the U.S. data, is consistent with sunk costs specific to individual destinations resulting in only the relatively more productive exporters exporting to more destinations.

⁶ See Bernard, Jensen and Schott (2005), Buono, Fadinger and Berger (2008) and Lawless (2009).

Table 3: Average Exports, Number of Markets and Number of Products by Size, 1999-2006

Year	Average Value of Exports (CAD Mil)	Average Number of Markets	Average Number of Products
SMEs			
1999	2.1	1.5	4
2000	2.4	1.5	3.9
2001	2.4	1.5	3.8
2002	2.3	1.6	3.5
2003	2.4	1.8	3.7
2004	2.6	1.9	3.8
2005	3.1	2.1	4
2006	3.2	2.2	4.2
Average	2.6	1.8	3.9
Large-sized Exporters			
1999	100.2	5.8	19
2000	108.8	5.6	19
2001	102	6	18.4
2002	99.6	6.3	17
2003	92.6	7.1	17.5
2004	98.5	7.6	18.3
2005	96.4	7.7	18.8
2006	102.6	7.7	19.5
Average	100.1	6.7	18.4

Source: Statistics Canada.

The performance of Canadian SME exporters improved during the period examined. The share of SME exporters in the Canadian exporter population remained stable, but their contribution to total Canadian exports increased to 35 percent in 2006 from slightly more than a quarter in 1999. Many SME single-market exporters expanded into non-U.S. markets and become multi-market exporters. The share of multi-market exporters in the total SME exporter group increased to 25 percent in 2006 from 16 percent in 1999. In comparison, the share of multi-market exporters among larger-sized firms increased only 5 percentage points (see Table 2). These trends suggest that SME exporters were leading market diversification.

Table 4: Single- and Multi-market Exporters by Size, 1999-2006

Year	SMEs		Large-sized Exporter	
	Single-market	Multi-market	Single-market	Multi-market
1999	34,635	6,589	1,087	1,257
2000	37,313	6,711	1,165	1,276
2001	38,454	7,246	1,137	1,303
2002	38,751	7,963	1,085	1,347
2003	36,577	9,508	1,018	1,421
2004	36,161	10,674	992	1,487
2005	34,597	10,976	1,002	1,551
2006	31,314	10,406	982	1,425

Source: Statistics Canada.

It is noteworthy that the total number of multi-market exporters within the SME group rose continuously until 2005 whereas the number of single-market SMEs (principally exporting to the U.S. market) first surged in the early 2000s and then fell back sharply as macroeconomic conditions in the United States became much less favourable post-2002. It is especially remarkable that the rate of expansion of multi-market SMEs accelerated in 2003 and 2004, the first two years of the Canadian dollar appreciation, coinciding with a decline in the single-market group. This suggests that market diversification was a response to the changing macroeconomic conditions. This result is consistent with the argument advanced by Baldwin and Lyons (1994) that large, sustained misalignments of the exchange rate can induce industrial dislocation and the scrapping of sunk assets. In this case, the expansion of Canadian firms into export markets during the low exchange rate era proved not to be sustainable for many firms. Notably, the retrenchment was sharper amongst single-market exporters.

2.3 Sectoral Composition

Table 5 shows a sectoral profile of Canadian exporters in 2006. Manufacturing plants made up about 42 percent of the entire exporter population, but accounted for a substantially greater share of total Canadian exports (62.5 percent). This was largely

due to the highly concentrated transportation equipment sector that constituted only 2.3 percent of the total Canadian exporter population but generated 20 percent of total export values. Primary industries (agriculture and mining) accounted for about 10 percent of exports and a slightly smaller share of exporters. Tertiary industries (wholesale and retail distribution and the services sector) accounted for a large share of total exporters, but contributed a much lower proportion of total export values.

Table 5: Sector Profile of Canadian Exporters by North American Industry Classification (NAICS) in 2006

Sector (NAICS)	Number of Exporters	% of all Exporters	Value of Exports (\$bn)	% of all Exports
Agriculture (100)	2,021	4.5	4.1	1.1
Mining (200)	1,729	3.9	34.8	9.2
Food & Beverages (311-312)	1,233	2.8	12.2	3.2
Textile & Clothing (313-315)	1,479	3.3	3.1	0.8
Wood & Paper (321-323)	2,283	5.1	29.3	7.7
Petroleum, Chemical & Plastics (324-327)	2,941	6.6	41.9	11.0
Primary & Fabricated Metal (331-332)	2,985	6.7	37.5	9.9
Machinery (333)	2,726	6.1	13.5	3.5
Computer, Electronics & Electrical Equip. (334-335)	1,754	3.9	14.7	3.9
Transportation Equip. (336)	1,016	2.3	78.3	20.6
Miscellaneous Manufacturing (316, 337-339)	2,493	5.6	7.4	1.9
Wholesale & Retail (400)	13,880	31.0	63.5	16.7
Other Services (500-900)	8,245	18.4	40.0	10.5

Source: Statistics Canada..

Within manufacturing, resource-based sectors (wood and paper products, petroleum, chemical and plastics, primary and fabricated metal) accounted for 18 percent of total Canadian exporters and represented over 28 percent of total Canadian export values. On the other side of the spectrum are the textile and apparel and miscellaneous manufacturing sectors. These sectors are dominated by SMEs which are relatively numerous, but which account for a relatively small share of total export

values. Over the examined period, the sectoral composition of Canadian exporters was relatively stable.

2.4 *Entry and exit dynamics*

On average, about 9,000 new Canadian firms entered the export market every year in the period 1999-2006, accounting for almost one quarter of total Canadian exporter population. At the same time, there was an equivalent number of exporting firms that exited the export market every year (See Table 6).

Table 6: Entry and Exit of Canadian Exporters 1999-2006

Year	Entrants		Continuers		Exiters	
	Number of Exporters	Value of Exports (CAD Mil)	Number of Exporters	Value of Exports (CAD Mil)	Number of Exporters	Value of Exports (CAD Mil)
2000	13,164	1,984	33,300	370,841	5,642	766
2001	11,318	1,660	36,822	358,834	7,355	1104
2002	10,955	5,233	38,191	346,236	8,721	1200
2003	9,347	3,866	39,157	332,757	9,775	2152
2004	9,429	2,036	39,885	363,918	9,911	1767
2005	7,700	3,406	40,426	382,307	11,365	1414
2006	4,736	1,338	39,391	379,722	13,311	2450
Ave.	9,521	2,789	38,167	362,088	9,440	1,550

Source: Statistics Canada.

The number of entrants initially far exceeded the number of exiters; however, by the end of the period, the reverse was true. The dramatic decrease in the number of new entrants combined with the sharp increase in the number of exiters resulted in a net decrease of the number of exporters. However, the net decrease in number of exporters was a phenomenon exclusive to the U.S. market. Non-U.S. markets continued to see a net increase in number of exporters. Notably, the increase in the number of continuing exporters in the early 2000s was not reversed in the second half of the period.

The impact on total exports of the flux of entrants and exiters was modest on an annual basis since, on average, continuing exporters accounted for 99 percent of total export value. Over 35 percent of all exporters are habitual exporters; i.e., they export every year. These habitual exporters contributed 90 percent of the total value of exports each year. Notably, 90 percent of these habitual exporters are small- and medium-sized firms.

New exporters often started with one export destination and with very small export sales. Over 90 percent of all new exporters in Canada started with one export destination and in most cases, the United States was their first export destination. In 2000, exports by all new entrants summed to \$1.98 billion, which is equivalent to 0.6 percent of total exports in that year. That percentage shrank to only 0.4 percent in 2006.

New trading relationships are much more likely to fail than the existing ones. About 50 percent of new exporters who started in 2000 would have failed by the end of the second year in the export market. Only a quarter of new exporters would have survived and become established continuing exporters by the end of the sixth year (See Table 7).

Table 7: New Entrants by Cohort: Persistence and Growth

	Cohort Entering Export Market			Export Value per Firm Current dollars
	2000	2001	2002	
	Number of firms			
Entry	13,164	11,318	10,955	150,697
Year 1	6,070	4,676	4,585	566,841
Year 2	5,031	3,822	3,884	804,456
Year 3	4,361	3,395	3,441	839,738
Year 4	3,963	3,100	2,977	1,108,436
Year 5	3,626	2,662		1,257,768
Year 6	3,234			1,414,082

Source: Statistics Canada.

However, once the new exporters established themselves in the export market, their export revenues increased significantly. This implies that difficulty of entering export markets may not be the main reason for lack of export growth; the more significant issue may be sustaining trading relationships.

2.5 Market diversification

The most remarkable feature of Canadian exporter dynamics over the examined period is the market diversification into Europe, Asia and Latin America in response to changes in the trading environment facing Canadian exporters. Table 8 reports the market diversification pattern of Canadian exporters. As can be seen, between 2001 and 2006, the number of Canadian firms that exported to the dominant U.S. market fell by 6,600, while the number of exporters shipping to Asia, Europe, and Latin America increased by 2,618, 2,579, and 1,782, respectively.

Table 8: Canadian Exporters by Destinations 1999-2006—
Number and Percent of Total Canadian Exporters

Year	United States	Europe	Asia Pacific	Latin America	Other
Number					
1999	38,862	6,371	4,502	2,675	4,383
2000	41,578	6,451	4,731	2,675	4,416
2001	42,876	6,973	5,166	2,888	4,926
2002	43,111	7,638	5,880	3,118	5,647
2003	41,219	9,092	6,798	3,784	7,152
2004	40,553	10,169	7,853	4,508	8,434
2005	39,519	10,253	8,126	4,903	9,038
2006	36,276	9,552	7,784	4,670	8,548
2001-06	-6,600	2,579	2,618	1,782	3,622
2001-06 %	-15.4	37.0	50.7	61.7	73.5
Percent distribution					
1999	89.2	14.6	10.3	6.1	10.1
2000	89.5	13.9	10.2	5.8	9.5
2001	89.1	14.5	10.7	6.0	10.2
2002	87.7	15.5	12.0	6.3	11.5
2003	85.0	18.7	14.0	7.8	14.7
2004	82.2	20.6	15.9	9.1	17.1
2005	82.1	21.3	16.9	10.2	18.8
2006	82.2	21.6	17.6	10.6	19.4
2001-06 %	-7.0	7.0	7.3	4.4	9.3

Source: Statistics Canada.

Market diversification of Canadian exporters was driven by the entry and exit dynamics in the four regional markets (See

Table 9). Between 2000 and 2006, there was net exit from the U.S. market as total number of new entrants (49,336) was less than the total number of exiters (51,091). Conversely, the new entrants outnumbered exiters in each of the other major regional markets. The number of net entries was 792 for Asia, 821 for Europe, and 345 for Latin America.

Table 9: Entry, Exit and Continuers by Region

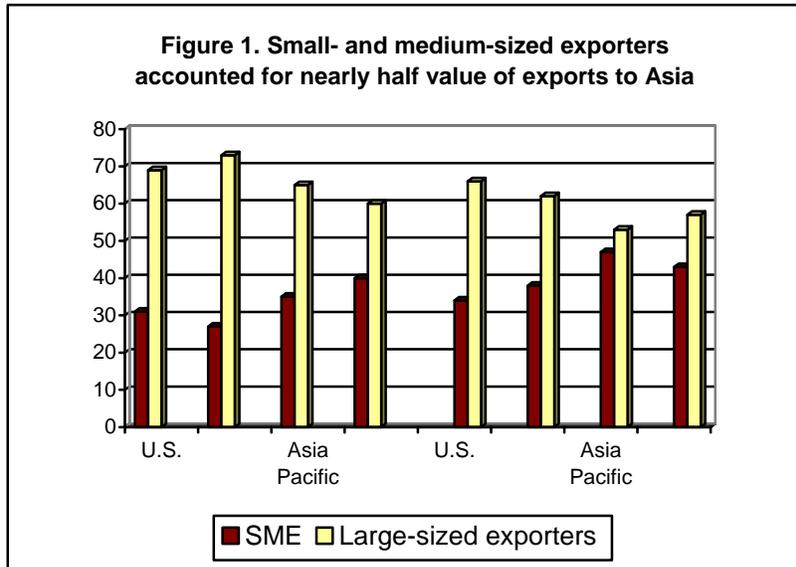
Year	United States			Asia Pacific		
	Entry	Continuers	Exit	Entry	Continuers	Exit
2000	11,129	30,449	4,668	715	4,016	327
2001	9,483	33,393	6,077	639	4,527	366
2002	7,608	35,503	7,268	866	5,014	523
2003	6,647	34,572	8,011	924	5,874	657
2004	6,174	34,379	7,788	1,091	6,762	745
2005	5,371	34,148	8,375	821	7,305	910
2006	2,924	33,352	8,904	503	7,281	1,239
Total	49,336		51,091	5,559		4,767

Year	Europe			Latin America		
	Entry	Continuers	Exit	Entry	Continuers	Exit
2000	966	5,485	427	318	2,357	162
2001	870	6,103	553	263	2,625	174
2002	1,136	6,502	650	340	2,778	233
2003	1,281	7,811	782	403	3,381	256
2004	1,417	8,752	922	513	3,995	285
2005	775	9,478	1,298	424	4,479	447
2006	598	8,954	1,590	236	4,434	595
Total	7,043		6,222	2,497		2,152

Source: Statistics Canada.

Over the same period, the number of continuing exporters to the United States remained stable. The number of continuing exporters to the U.S. market increased in the early 2000s, but declined after 2002 and levelled off at the 2001 level. This is not the case in the other three markets. Net increases in the number of continuing exporters were 3,265 in Asia, 3,469 in Europe, and 2,077 in Latin America. This indicates that new exporters to these latter markets were able to consolidate their initial footholds in the new markets. This is significant given the importance of continuing exporters to export sales.

The diversification of markets was led by small- and medium-sized exporters, both in terms of number of exporters and value of exports. The expansion in terms of values is especially remarkable in the Asian markets. In 1999, SME exporters accounted for 35 percent of total exports to Asia; in 2006, this share reached 47 percent—almost as much as the contribution of large-sized exporters (see Figure 1).



The channels through which market diversification takes place depend in part on distance to market, significance of trade costs and size and productivity of the exporting firm. When trade costs (e.g., establishing own distribution networks) are high and potential markets are distant, less-productive exporters (mostly SMEs) go through intermediaries such as wholesalers and retailers to export. As such, the share of exports handled by wholesalers and retailers increases with the difficulty of accessing destination markets. As illustrated in Table 10, 70 percent of SMEs export sales to Asia and Latin America were via the wholesale and retail route in 2001. In more mature markets such as the United States and Europe, the share of SME exports via wholesale and retail networks was about 50 percent.

Table 10: Share of Export Sales by Size and by Market (%)

	United States		Asia	
	SME	Large	SME	Large
2001				
Agricultural & Commodities	8.5	6.7	13.1	6.6
Food & Beverages	5.1	4.9	4.7	5.5
Wood, Paper & Chemical	15.5	20.8	5	27.3
Other Manufacturing	20.8	55.4	7	21.7
Wholesale & Retail	49.6	12.2	70	39
2006				
Agricultural & Commodities	11.4	7.4	29.1	12
Food & Beverages	3.4	4.4	3	6.2
Wood & Paper & Chemical	14.1	22.9	4.1	22.9
Other Manufacturing	19.5	52.2	10.9	27.5
Wholesale & Retail	51	13.1	52.1	31.3
	Europe		Latin America	
	SME	Large	SME	Large
2001				
Agricultural & Commodities	12.7	12.6	6.9	3.8
Food & Beverages	5.6	2.4	5.2	5.3
Wood, Paper & Chemical	9.2	17.3	5.1	30.4
Other Manufacturing	25.3	56.6	11.7	33.4
Wholesale & Retail	46.8	9.8	70.8	27.1
2006				
Agricultural & Commodities	22.3	18.6	7.6	5.2
Food & Beverages	4.2	2.3	3.6	6.5
Wood & Paper & Chemical	6.6	13.7	8.3	28.1
Other Manufacturing	37.8	52.1	17.4	32.2
Wholesale & Retail	28.5	13.2	57.7	27.9

Source: Statistics Canada.

Of particular note is the decline of the importance of intermediaries in SME export sales to Asia and Latin America over the examined period. This share came down to around 50 percent in 2006 from 70 percent in 2001. This indicates once firms have established their potential for direct sales in foreign markets, the need for intermediaries diminishes.

4. Growth Decomposition

In this section, we show that the diversification of Canadian exports into non-U.S. markets has been mainly driven by changes at the extensive margin of trade. Entrant exporters are defined as the new exporters that did not export at time $t-1$ but enter into the export market at time t . Exiters are the exporters that had export sales at time $t-1$ but none at time t . Continuers are exporters that exported in both time periods.

Continuing exporters contribute most to annual export growth—typically, about 99 percent of the growth in exports from year to year is accounted for by continuing exporters. However, over longer periods of time, the number of firms that sustain their export market participation gradually declines, while the cumulative weight of exports accounted for by new exporters increases. Thus, comparing exports in 2000 and in 2006, the cumulative effects of entry and exit over the sample period can be seen to have been substantial. Note that, in this calculation, a continuing exporter is an exporter that exported in both 2000 and 2006. An entrant is defined as an exporter did not export in 2000, but did export in 2006. Similarly, an exiter in 2006 is defined as an exporter that exported in 2000 but did not export in 2006. This approach allows us to capture the cumulative effect of entry and exit over the sample period.

Table 11 shows that total export growth was 2.2 percent over the period 2000-2006. The continuing exporters (those that were exporters in both 2000 and 2006) contributed negatively to total export growth over that period, by -1.5 percentage points. The gross contribution of new entrants over the period amounted to 9.4 percentage points, while exiters subtracted 5.8 percentage points. Thus, the contribution to total export growth of net entry over the period was almost 4 percentage points. The entry and exit dynamics over the entire examined period indicates that the extensive margin was far more important in explaining the overall export growth than the year-to-year export growth. This is because firms that enter foreign markets and survive more than a year are typically able to export more.

Table 11: Growth Decomposition by Market (in percent)

$t=2006,$ $t-1=2000$	Export Growth	Contribution of:			
		Continuing Exporters	Entrant Exporters	Exiting Exporters	Net Entry
Total	2.2	-1.4	9.4	-5.8	3.6
U.S.	-3.5	-5.6	7.6	-5.5	2.1
Asia	28.7	14.7	30.6	-16.7	13.9
Europe	33.5	21.9	24.4	-12.9	11.5
Latin America	23.2	5.4	33.1	-15.2	17.9

Source: Statistics Canada⁷.

In the previous section, it was noted Canadian exporters increasingly shifted to non-U.S. markets over the period examined. Table 11 also reports the decomposition of Canadian export growth by region: the United States, Asia Pacific, Europe and Latin America. Total Canadian exports to the U.S. market declined by 3.5 percentage points from 2000 to 2006. This reflected the fact that the positive contribution of new entrants of 7.6 percentage points was more than offset by the negative contribution due to a decline in export sales by continuing exporters of 5.6 percentage points together with the negative contribution of 5.5 percentage points from exiters. The decline in export sales by continuing exporters highlights the deterioration of the trading environment for Canadian firms in the U.S. market, inducing many exporting firms to exit the U.S. market, particularly those that were less competitive. At the same time, the role of new entrants in largely offsetting the deterioration of performance by existing exporters underscores the vital importance of continuing export promotion; in international trade, given firm-level dynamics, a country that depends on its existing export base will suffer a steady erosion of its export performance.

In Asia, total Canadian export growth was high, up by 28.7 percent from 2000 to 2006. Of this, 14.7 percentage points can be explained by the expansion of the existing trading relationships (i.e., growth at the intensive margin). New trading

⁷ The detailed calculation is available upon request.

relationships (gross entries) contributed 30.6 percentage points, which is significantly higher than the expansion at the intensive margin of trade. Exiters contributed negatively, or by -16.7 percentage points, resulting in a contribution from net entry of 13.9 percentage points.

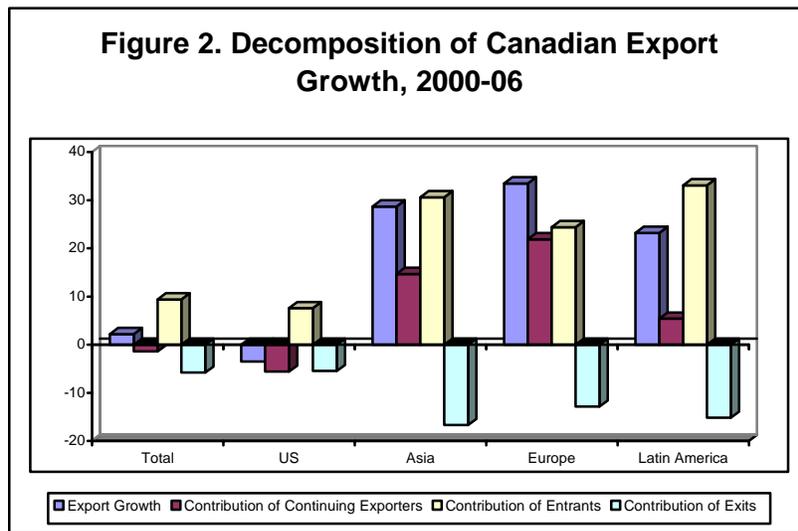
Total export growth to Latin America was 23.2 percent during the examined period. Growth at the intensive margin contributed 5.4 percentage points while gross entries contributed as much as 33.1 percentage points. The contribution of net entry was 17.9 percentage points. Clearly growth at the extensive margin overwhelmed the contribution at the intensive margin with respect to accounting for Canada's total export growth to Latin America.

Europe accounted for the highest export growth among all of Canada's destination regions, increasing by 33.5 percent. Of this, 21.9 percent could be accounted for by export sales of continuing exporters. This is consistent with the findings in the previous section that Europe had the greatest growth in the number of continuing exporters among all regions. The gross contribution of new exporters amounted to 24.4 percentage points. This was partially offset by the negative contribution of existers of -12.9 percentage points, resulting in a contribution from net entry of 11.5 percentage points.

In summary, the decomposition of export growth by region shows the endogenous response of Canadian exporters to changes in the trading environment facing them. Two factors in particular impacted on Canadian exporters in the first half of the 2000s—rising frictional costs of trade in the U.S. market and a steep appreciation in Canada's bilateral exchange rate vis-a-vis the U.S. dollar. Canadian exporters adapted by diversifying into non-U.S. markets. This diversification was mainly driven by changes in exports at the extensive margin of trade or by setting up the new trading relationships (See Figure 2).

This trend is particularly pronounced in new and emerging markets such as Asia and Latin America in which the expansion at the extensive margin of trade overwhelms the contribution of expansion at the intensive margin to total export growth. In more mature markets such as Europe, the intensive margin of

trade remains a significant factor in explaining trade growth, although developments at the extensive margin accounted for a good share of export growth as well. Firms that exported to the European market were also more likely to be multi-product, multi-country exporters. They were more relied to a greater extent on direct sales rather than on wholesale and retail intermediaries.



5. Conclusions

In this paper, we have examined the dynamics of Canadian exporters and their responses to changes in the international trading environment. In particular, we have documented the firm-level dynamics of entry and exit into and out of Canada's major export markets that underpinned the remarkable shifts in Canada's global pattern of exports from the 1990s to the 2000s.

We highlight the important role of new entrants in sustaining Canada's overall export growth. Over the period between 2000 and 2006, the contribution of continuing exporters to total export growth was -1.4 percent, while the contribution of net entry was 3.6 percent.

We show that the diversification of Canada's trade was largely accomplished at the extensive margin as Canadian exporters exited the U.S. market and entered the Asian, European and Latin American markets.

In the U.S. market, total Canadian export growth to the U.S. in 2000-2006 was negative. The continuing exporters contributed -5.6 percent to total Canadian export growth to that market. Net entrants to the U.S. market contributed positively to total export growth to that market, but not enough to offset the negative contribution of continuing exporters. This highlights the role of new entrants in sustaining Canadian export performance in the key U.S. market; this development underscores the vital importance of continuing export promotion even in established markets. We conclude that, given firm-level export dynamics, a country that takes its existing export base for granted is liable to suffer erosion of its international trade performance.

In non-U.S. market, we see much stronger contributions from new entrants than in the U.S. market, ranging from 24.4 percent in Europe to 33 percent in Latin America.

In Europe, continuing exporters and new entrant make similar contribution. The contribution of growth at the extensive margin was 24.4 percentage points, while growth at the intensive margin contributed 21.9 percentage points.

In Asia, the contribution of new entrants (extensive margin) to total export growth to that region double that of continuing exporters. New entrants contributed 30.6 percentage points to total export growth to that region, compared to a contribution of 14.7 percentage points from expansion of sales by continuing exporters (intensive margin). In Latin America, contribution of new entrants far exceeds that of continuers. Growth at the extensive margin contributed 33.1 percentage points to total export growth, compared to only 5.4 percentage points from growth at the intensive margin. This is the only region outside of the U.S. where net entry exceeds continuers.

As more Canadian exporters entered the non-U.S. markets, the average number of export destinations served per firm and the proportion of multi-market exporters in the total Canadian

exporter population increased. Small- and medium-sized exporters led the growth outside the U.S. market. In particular, in the Asian market, SMEs exported almost as much as large-sized exporters.

Given the factors shaping the diversification trends, we conclude that the diversification into Europe may have reflected the greater relative profitability of sales to Europe as compared to the United States due to the major exchange rate shifts. In Asia, the diversification was steadier and not obviously driven by exchange rate developments since the Canadian dollar appreciated against the Asian currencies in tandem with its appreciation against the U.S. dollar. Accordingly, this aspect of the diversification story appears to reflect the shifting global growth dynamics associated with Asia's rise.

Further, the evidence of diversification means that exporters that exit the U.S. market are necessarily leaving the export market; they might be shifting to other markets and becoming multi-market exporters. The gradual market diversification from mature markets to emerging markets is an important part of exporter dynamics. This issue could be a research topic for the next phase of study.

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