



EXPORTS and ESTABLISHMENT-LEVEL PERFORMANCE in CANADIAN FOOD and BEVERAGE MANUFACTURING



Agriculture and
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Introduction

Exports are often perceived as being associated with the success of manufacturing firms, including those in the Canadian food and beverage manufacturing sector, and upstream industries, such as primary agriculture that supply inputs and the well-being of employees and Canadians as a whole. A recent report by the Business Council of British Columbia sums up some of the potential benefits to firms and to the greater economy of engaging in overseas markets:

“Exports are vital to sustaining and increasing BC’s standard of living because they allow us to pay for imports of goods and services not produced locally, they support hundreds of thousands of jobs, and they provide local firms with opportunities to grow and benefit from economies of scale. The discipline of having to compete in the international marketplace encourages firms to invest in productivity enhancing equipment and processes. In turn, this means that export-oriented industries tend to have above-average levels of productivity and therefore are able to pay above-average wages/benefits.” (Growth and Greater Diversity in BC’s Export Base: A Primer on BC Exports, Business Council of British Columbia, 2015)

In addition, exporting to a diverse set of markets is often perceived as being important for industry growth in the long run due to slow growth in demand in the North American market and the trend of rapidly rising demand from an increasingly wealthy middle class in emerging

countries. In fact, there are often concerns that Canadian exports are not diversified enough, with too much focus on the United States.

“... familiarity, proximity and business relationships that have developed over the years in traditional markets can sometimes deter exporters from looking to new opportunities elsewhere. This carries risk and limits growth potential, a concern shared by governments at all levels in Canada.” (*Growing Global Markets: 10 Actions to Create a Wealthier New Brunswick through Exports 2013-2018*, Province of New Brunswick, 2013.)

Similar concerns have been voiced about the Canadian food and beverage industry, in part because the industry is mainly focused on the domestic market, and to some extent the U.S. market, as opposed to non-U.S. export markets. For instance, in 2013, 75.1% of Canadian food and beverage shipments were sold within the domestic market. The remaining 24.9% of shipments were exported, with the US alone accounting for 17.3% of the value. China (2.0%), Japan (1.5%), the E.U. (0.8%), Mexico (0.5%) and the rest of the world (2.8%) accounted for the non-US export sales (AAFC, 2015).

The Role of Exporters in Industry Sales and Employment

Exporters play a larger role than their establishment numbers alone would suggest. If we restrict the term “exporter” to only those establishments¹ that export for at least two

¹ “Establishment is the level at which the accounting data required to measure production is available (principal inputs, revenues, salaries and wages). The establishment, as a statistical unit, is defined as the

Figure 1: Share of Food & Beverage Industry Sales Generated by Establishments that Export, by Export Destination

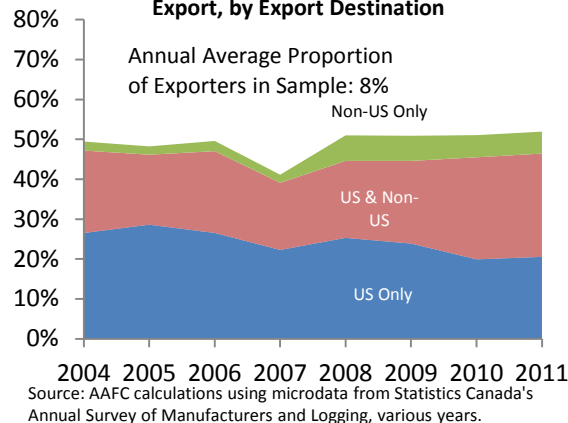
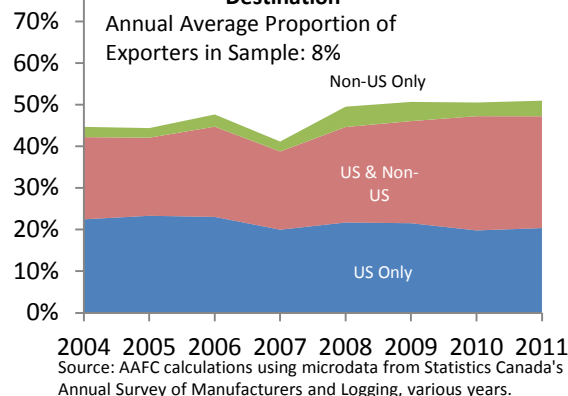


Figure 2: Share of Food & Beverage Industry Employment Generated by Establishments that Export, by Export Destination



years continuously, exporters on average account for only about 8% of the overall number of establishments in food and beverage manufacturing.² Even so, these establishments account for roughly 50% of total food and

most homogeneous unit of production for which the business maintains accounting records from which it is possible to assemble all the data elements required to compile the full structure of the gross value of production (total sales or shipments, and inventories), the cost of materials and services, and labour and capital used in production.”

(www.statcan.gc.ca/eng/concepts/definitions/estab)
² Exporters in all figures are those establishments that have been (or will be) active in overseas markets for at least two consecutive years, a definition which is taken as a sign of sustained export success.

beverage industry sales (Figure 1) and 50% of total industry employment (Figure 2).

Notably, over the sample period of 2004 to 2011, there appears to have been declines in the shares of sales and employment of establishments that export solely to the U.S. In contrast, the contributions made by establishments that export to a more-diverse set of markets, including the U.S., have increased.

Performance Indicators to Measure the Potential Benefits of Exporting

Exporting is potentially associated with stronger performance for exporters relative to non-exporters, which in turn benefits the establishment itself, its employees and the broader economy. This study adopts a broad set of performance premiums which cover the performance of the establishment itself (sales, domestic sales, value-added per employees), the well-being of its employees in terms of remuneration (annual salary bill and annual wage bill) and scope of employment (salaried employment, production workers), and the performance of upstream establishments that supply material inputs (material costs).

In Melitz's (2003) seminal contribution to firm-level trade theory, exporters are hypothesized to necessarily be more productive than non-exporters because they must overcome entry costs associated with exporting in order to benefit from potentially higher returns associated with exports to these markets.³ In

³ Melitz (2003) also posits that it may be the case that firms entering export markets face new, foreign competitors who are on average more productive than domestically-focused firms. However, this pathway to explaining greater productivity among exporters is not formally part of the Melitz (2003) model.

essence, trade is profitable only for those firms which can afford to do so. Similarly, exporters that are not productive enough to profitably overcome the costs of entry are expected to exit foreign markets.

In this report, productivity is measured as value-added per employee (i.e., labour productivity) where value-added is measured as the value of output less the value of purchased inputs. Value-added can then be thought of as the aggregate income received by business owners and employees while value-added per employee normalizes this measure by establishment size giving us a comparable measure of labour productivity across establishments.⁴

While it is useful to examine differences between exporters and non-exporters in terms of labour productivity, a deeper examination is necessary in order to uncover implications for the establishment itself, its employees and its upstream suppliers. Sales are a key component of value added on the output side. A higher value of sales at the firm level is generally perceived as reflecting stronger performance while stronger performers are perceived as more likely to be exporters. This paper uses revenue from goods produced within the establishment to investigate the relationship between sales and implied performance on one hand and export activity on the other within the context of Canadian food and beverage manufacturing.

In addition to overall sales, we may also examine sales performance in the domestic market. In this case, there may be competing hypotheses. On one hand, we may expect exporters to have

higher domestic sales than non-exporters by virtue of being stronger performers. On the other hand, the Canadian food and beverage market is often characterized as being a slow-growth market. As a result, we may expect exporters to restructure their sales portfolio to favour export markets over the domestic market, leading to relatively lower domestic sales than non-exporters. Domestic sales are measured as the difference between total value of shipments and exports.

Greater establishment-level labour productivity for exporters than for non-exporters may not be meaningful to the broader economy if either employment levels or annual employee remunerations fall. Therefore, this study examines differences between exporters and non-exporters in terms of employment numbers (ie. salaried workers, production workers) and annual remuneration (ie. annual salary bill, annual wage bill). It is expected that exporters will exhibit greater employment and greater annual remuneration than non-exporters as they expand their workforce to meet the demands of foreign markets.

Similarly, if food and beverage exporters are indeed more productive, this enhanced labour productivity may not lead to net gains for the agriculture and agri-food sector as a whole if suppliers of inputs receive lower returns, either by way of reduced volumes or lower prices. According to AAFC (2015), 46% of the value of material costs in food and beverage manufacturing can be attributed to agricultural commodities used as inputs. Another 36% of the costs are accounted for by other inputs sourced from food and beverage manufacturing itself (AAFC, 2015). Thus, roughly 82% of material costs are associated with agriculture and agri-food inputs sourced either domestically or from

⁴ Total Factor Productivity (TFP) would be a preferred measure of productivity; however the ASML does not contain data on capital inputs required to build this measure.

overseas. Of these material costs associated with agriculture and agri-food inputs, it is estimated that approximately 84% are sourced domestically (Statistics Canada, 2015). This means that roughly 69% of material costs for Canadian food and beverage manufacturing represent purchases from the domestic agriculture and agri-food sector. If exporters incur higher material costs than non-exporters, these differences may partially reflect revenues generated by farms and firms upstream in the domestic supply chain. Therefore, this study includes the value of material costs (excluding heating and power) as an indicator of domestic supply chain impacts associated with food and beverage manufacturing exports.

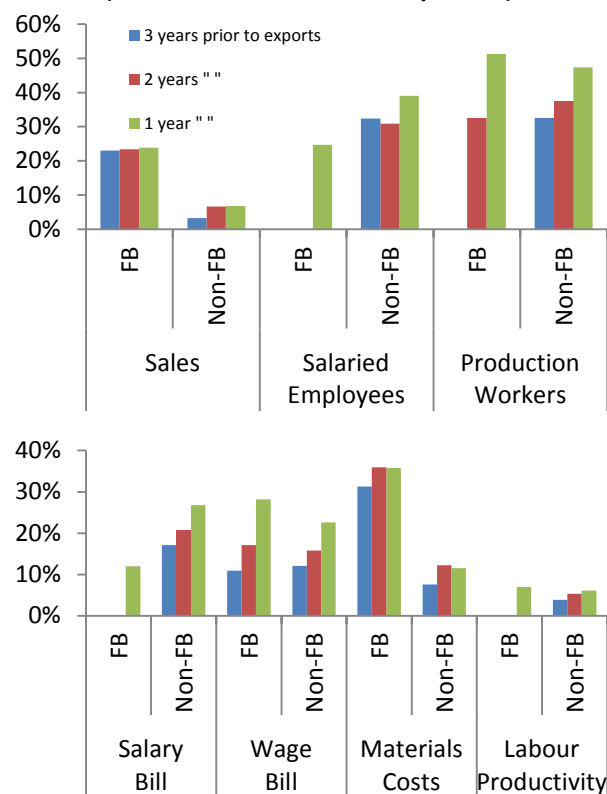
Characteristics of Future Exporters

The exporter life-cycle likely begins before the first shipment is ever sent overseas as companies make adjustments to better succeed in foreign markets prior to entry. Among food and beverage establishments,⁵ sales of future exporters are on average 23% to 24% higher than sales of continuous non-exporters in the first, second, and third year prior to beginning exports (Figure 3). Similarly, material costs are 31% to 36% higher for future exporters than non-exporters in the three years prior to exporting. Employment and remuneration indicators appear to ramp up over the three years prior to export entry. Labour productivity increases to 7% in the final year before export entry. These trends suggest that establishments anticipate exports by increasing their capacity to

⁵ In this report, manufacturing establishments identified by Statistics Canada as belonging to NAICS (North American Industry Classification System) 3111 to 3122 are classified as belonging to “food and beverage manufacturing”. All other manufacturing establishments are classified as belonging to “non-food and beverage manufacturing.”

meet new demands and boosting labour productivity and profitably to overcome the expected additional costs associated with new markets.

Figure 3:
Performance of Future Exporters:
(% Difference from Non-Exporters)



Source: AAFC calculations using microdata from Statistics Canada's Annual Survey of Manufacturers and Logging, various years.
Note: Missing bars indicate statistical insignificance (ie. p>0.10).

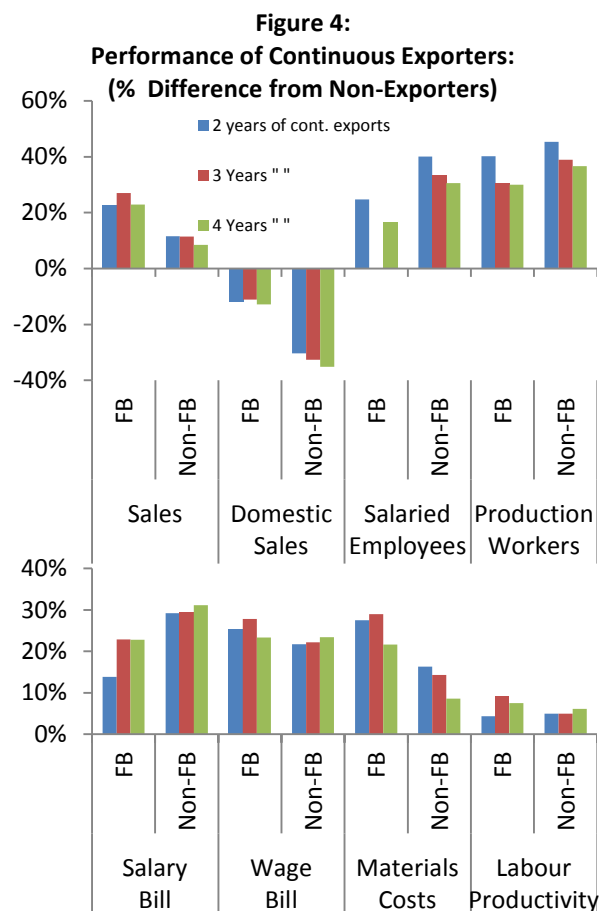
Among non-food and beverage manufacturing establishments, the value of total sales is between 3% and 7% higher for exporters than for non-exporters. This is a smaller gap than that observed for food and beverage establishments. Similarly, material costs are 8% and 12% higher for exporters in non-food and beverage manufacturing compared to their non-exporting counterparts. Again, this is lower than the gap observed in food and beverage manufacturing. On the other hand, the differences in employment and remuneration between non-food and beverage manufacturing exporters and

their non-exporting counterparts are large and growing in the three years prior to export market entry. Differences between exporters and non-exporters in terms of overall employment and the number of production workers for the two sets of industries are quite similar at one year prior to export entry. Finally, the difference in labour productivity between non-food and beverage manufacturing exporters and non-exporters grows over the three years prior to export market entry, reaching 6% in the final year prior to entry. These results lead to the same conclusions as those reached for future food and beverage exporters.

Characteristics of Continuous Exporters

Differences observed for food and beverage exporters generally carry over from the pre-export stage into the export stage, at least during the first four years of export activity observed in this study. On average, overall sales are 23% to 27% higher for food and beverage exporters during their first four years of exporting relative to non-exporters (Figure 4). Domestic sales, on the other hand, are 11% to 13% lower reflecting a shift in sales focus towards export markets, presumably in order to benefit from potentially higher returns in those markets. Material costs are 22% to 29% higher for exporters relative to non-exporters, perhaps reflecting their greater scale of production.

The number of production workers is 30% to 40% higher for food and beverage exporters than non-exporters and the annual wage bill is 23% to 28% higher. The number of salaried employees is 17% to 25% higher, and the total value of salaries is 14% to 23% higher for food and



Source: AAFC calculations using microdata from Statistics Canada's Annual Survey of Manufacturers and Logging, various years.
Note: Missing bars indicate statistical insignificance (ie. $p > 0.10$).

beverage exporters, with higher premiums in later years. Finally, labour productivity is about 4% to 9% higher for exporters than non-exporters. Overall, these results are similar to those found one year prior to export entry.

Among non-food and beverage establishments, total sales for exporters are 9% to 12% higher than for their non-exporting counterparts, while domestic sales for exporters are 30% to 35% lower than those for non-exporters with the gap growing over time. Material costs range from 9% to 16% higher for exporters. The number of salaried employees is 31% to 40% higher and the number of production workers is 37% to 45% higher for exporters than for non-exporters, with the magnitudes decreasing over time, perhaps

reflecting workforce adjustments after exporting begins. Wage bills are 22% to 23% higher for exporters, while salaries are 29% to 31% higher. Labour productivity is roughly 5% to 6% higher, a similar finding to that for food and beverage manufacturers and one consistent with the notion that exporters must have higher labour productivity in order to profitably overcome the additional costs associated with operating in foreign markets.

Characteristics of Exporters to Diversified Markets

As New Brunswick's (2013) Growing Global Markets report suggests, there may be benefits associated with exporting beyond traditional markets, such as the U.S. Figure 5 below presents results for establishments that originally exported solely to the U.S. but have since diversified to additional foreign markets. The comparisons are relative to establishments that export only to the U.S.

For food and beverage manufacturing, there are few discernable differences between establishments that continuously export to both U.S. and non-U.S. markets versus establishments that focus solely on the U.S. market. An exception appears to be the number of salaried employees, which by the third year is 52% higher for exporters to both sets of markets than for U.S.-only exporters. Similarly, the value of salaries is 18% to 37% higher for exporters to both sets of markets. Among non-food and beverage establishments, domestic sales for diversified exporters are 5% to 8% lower than the domestic sales of establishments which export only to the U.S. The same result is not apparent among food and beverage establishments. Notably, there is no significant difference in labour productivity between diversified exporters and exporters that focus on

the U.S. in either food and beverage manufacturing or non-food and beverage manufacturing.



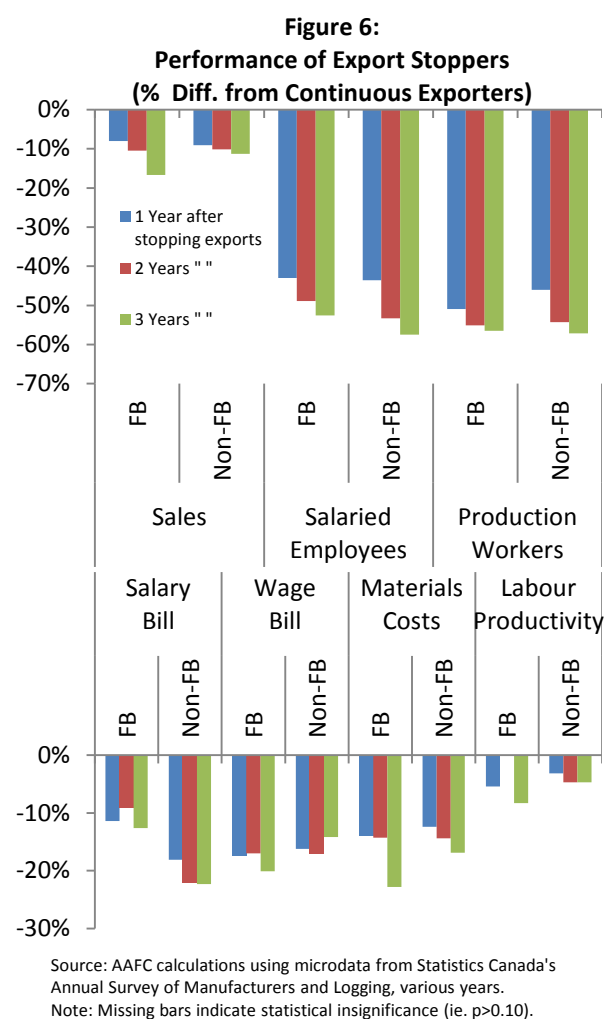
Source: AAFC calculations using microdata from Statistics Canada's Annual Survey of Manufacturers and Logging, various years.
Note: Missing bars indicate statistical insignificance (ie. $p > 0.10$).

Export Stoppers

This section differs from the previous sections in that it compares export stoppers to continuous exporters. Export stoppers are defined as firms that previously exported for at least two years continuously but have since exited their export markets and focus solely on the domestic market. The comparisons are made one, two and three years after exiting export markets.

In Figure 6 below, almost all performance indicators of interest are lower for export

stoppers than for continuous exporters, and some, such as sales and total employment, exhibit an increasingly negative trend indicating that the gap increases over time. Moreover, the impacts are very similar between food and beverage manufacturing and non-food and beverage manufacturing industries.



Across both sets of industries, total sales are 8% to 17% lower for export stoppers relative to continuous exporters while material costs are 12% to 23% lower. Employment is 50% to 58% lower for export stoppers with similar figures seen for both salaried employees and production workers. Likewise, annual salary and wage bills are 9% to 20% lower for export stoppers relative

to continuous exporters. Labour productivity is approximately 3% to 8% lower for export stoppers relative to continuous exporters. These results are consistent with the hypothesis that exporters with lower levels of labour productivity cannot profitably overcome costs associated with operating in export markets and therefore choose to exit.

Summary

This study addresses several questions about the characteristics of Canadian food and beverage exporters relative to non-exporters. Future exporters in both food and beverage manufacturing and in other manufacturing exhibit superior performance characteristics relative to non-exporters, and several of these differences appear to grow over the three years immediately prior to the beginning of exports, implying a build-up of resources and activity. Moreover, labour productivity climbs prior to exports, suggesting that establishments may push for productivity improvements prior to entering new markets.

Differences between future exporters and continuous non-exports carry over into the export period, at least for the first four years of exports covered in this study. The magnitudes of these differences are roughly maintained in the years immediately after exports as opposed to showing signs of further growth.⁶

Both food and beverage establishments and non-food and beverage establishments shift their focus away from the domestic market after

⁶ This should not be taken as a sign that export entry does not lead to further competitive gains since these gains may occur over a longer period than the initial four years of exporting covered in this study. Further study with a longer time series would be required to clearly identify whether such gains exist and when they occur.

they decide to export, although food and beverage manufacturers appear to retain a greater emphasis on the domestic market than other types of manufacturers. While not shown in this report, there is little distinction between exporters in general and exporters who focus only on the U.S., likely because the U.S. is the export destination of choice for most first-time exporters.

There is also very little difference between exporters to the U.S. and exporters who expand beyond the U.S. to other foreign markets. The only exception appears to be in the number of salaried workers, which may indicate, for example, growth in terms of sales representatives to accommodate the additional efforts to expand exports beyond the U.S. market.

When comparing establishments that exit export markets against continuous exporters, there is an unambiguous pattern of negative and increasingly large gaps for export stoppers across both sets of industries. This implies that the impact of an establishment stopping exports is felt not just by the firm itself, but also by its employees and upstream suppliers over a number of years.

Overall, the results suggest that exporting is associated with benefits not only for the establishment itself, but also for its employees in the form of more jobs and greater remuneration, and to input suppliers in the form of greater sales. As roughly 69% of material costs in Canadian food and beverage manufacturing are associated with inputs sourced from the domestic agriculture and agri-food sector, greater material costs for exporters suggests greater positive returns along the agriculture and agri-food supply chain.

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