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Offshoring and Business Organization: Evidence from Canadian Manufacturing Firms

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Abstract: In the globalized economy, it has become essential for firms to re-organize their production to grow and to be competitive in both domestic and international markets. Over the past decade, offshoring has emerged as an important and valuable business re-organization avenue, especially in the manufacturing sector. Using newly linked Canadian manufacturing micro data for 2002-2006, which for the first time provides a direct measure of offshoring over a period in Canada at the firm level, this paper examines and estimates the linkage between offshoring and business organization. It shows that offshoring is part of firms' overall business strategy, closely linked to other outward-oriented business activities such as exporting and being foreign-controlled. In addition, it is found that offshoring is associated with business organization in terms of firm variation in intermediate input variety and in output concentration.

Keywords: Offshoring, business organization, intermediate input variety, output concentration
JEL Classifications: F14, L20

1. Introduction

In the world economy, with the development of global value chains and the new world division of labour, offshoring has become an important business strategy for firms to re-organize their production to grow and to compete in both domestic and global markets, particularly in manufacturing. It has received increasing attention from researchers and policy makers seeking to understand its social and economic impacts.

In Canada, the research on offshoring has concentrated mostly on the impact of offshoring on productivity and labour market.[1] For labour market, Morissette and Johnson (2007) and Bladwin and Gu (2008) find little evidence of a correlation between offshoring and employment/layoff, but Yan (2006) shows that foreign outsourcing is important for increased demand for skilled labor, which contributes to an increasing wage gap between the more skilled and the less skilled workers. The positive relationship between offshoring and demand for skilled labour is also confirmed by Helliwell (2007).

[1] Cheung, et al (2008) provides a good review of the literature.

There have also been several studies on the relationship between offshoring and productivity. Using panel industry data, Baldwin and Gu (2008) and do Livramento and Tang (2009) show that material offshoring contributes positively to productivity growth in manufacturing industries while service offshoring has no productivity impact. The findings from these industry-level studies are followed up by Tang and do Livramento (2010). Using micro survey data with information on offshoring geographical locations, this study shows that material offshoring from non-U.S. countries tends to be associated with larger productivity gains than material offshoring from the U.S. after controlling for the impact of other explanatory variables such as multi-nationality, the workers' education levels, and plant size.

Due to data limitations, this literature has so far focused solely on the final impact of offshoring and to a large extent "ignored" its linkage to firm characteristics and to organizational choice of individual firms. In addition, it has been silent on the potential immediate transforming effect of offshoring on business organization and strategies. Using a newly linked micro database on manufacturers, we bridge the knowledge gaps and shed light on these important issues. We address the following specific questions:

(1) What are the recent developments in offshoring in the Canadian manufacturing sector? Is offshoring more firm- or industry-specific?

(2) Is offshoring linked to exporting and foreign ownership? What is its relationship with firm size and age, productivity, labour skills, being multi-plant structure, entry and exit?

(3) Is offshoring linked to intermediate input variety or product concentration in manufacturing production? Does offshoring destination matter?

Answers to these questions are essential for researchers and policy makers to better understand the economic impact of offshoring in Canada and its possible linkages with business strategies and organization. To this end, we rely on a newly linked Canadian manufacturing micro database for the period 2002-2006. This is another important departure from the literature since this database, for the first time in Canada, provides a direct and better measure of offshoring activities in Canadian manufacturing firms over the time period. Traditionally, researchers have used the proportionality assumption to measure offshoring. As discussed in the next section, the validity and accuracy of the assumption-based measure have been challenged recently.

At the outset, it should be noted that the newly linked micro data only cover the manufacturing sector. The sector, however, is particularly interesting for it is mostly affected by offshoring as it is highly intensive in intermediate inputs and in outsourcing. In addition, this paper focuses on business organization in inputs, and uses offshoring to refer to foreign outsourcing in intermediate material/goods inputs from either foreign affiliates or arm's-length third-parties in foreign countries. Thus, offshoring here excludes business activities that are moved overseas to produce goods to serve foreign markets directly.

The rest of the paper is organized as follows. In section 2, we discuss the proportionality assumption used in the literature to measure offshoring, and describe the newly linked micro data and the direct measure of offshoring used for our analysis. In section 3, we provide a description and discussion of the trend

development in offshoring in the Canadian manufacturing industries and the association between offshoring and certain firm characteristics. This is followed by an econometric analysis in section 4, estimating the relationship between offshoring and other firm outward-oriented business strategies. In section 5, we assess the linkage between offshoring and business organization in intermediate input variety and output concentration. We conclude in section 6.

2. Data and measurement issues

Offshoring of intermediate inputs is often measured as the share of imported intermediate inputs in total intermediate inputs. Such a measure, however, can be a challenge due to data limitation.

Before this study, there were no actual statistics over a time period on imported goods or services by firm or industry that could be used for research.[2] To get around the data limitation, the literature has been using data on total imports and input-output tables at the commodity level in estimating imported intermediate inputs at the industry level. The import data by commodity are for the whole economy. When a commodity is imported into Canada, we don't know if it is used for final consumption, intermediate inputs for production, or both.

To resolve the data problem, the literature assumes that an imported commodity is proportionally used for final consumption and for intermediate inputs. For example, we import 100 million sheets of a certain type of high-gloss paper in a year and consume a total of 500 million sheets of the same paper, with 100 million of them for final consumption and 400 millions for intermediate inputs for the printing industry. According to the proportionality assumption, the imported paper for the intermediate input use in the printing industry is 80 millions sheets.

The imputation based on the proportionality assumption has recently been challenged for its accuracy. Winkler and Milberg (2009) have shown that, in Germany, the cross-sectoral variation in the use of imported inputs differs significantly from the cross-sectoral variation in the use of domestic inputs. For Canada, Cheung et al. (2008) compare the imputed value of the share of imported material inputs in total material inputs to a survey-based value. It shows that the imputed value exceeds significantly the survey-based value for almost all manufacturing industries. For manufacturing as a whole, the discrepancy amounts to 16 percentage points.

As a departure from the literature, we use actual material offshoring measures in our analysis. The direct measure is based on two micro databases at Statistics Canada: Annual Survey of Manufacturers (ASM) and the Importer Registry.[3] It covers the period 2002-2006. The ASM contains information such as employment, gross and value-added output, total material cost, export status, ownership, and associated

[2] Statistics Canada's Survey of Innovation 2005 surveyed manufacturing firms' offshoring intensity in 2004, but it is one-year cross-sectional. The survey data was used by Tang and do Livramento (2010) to estimate the linkage between offshoring and productivity.

[3] The Importer Registry is an administrative dataset. The data will not consider a user of imports to be an importer if the importation is through an intermediary. Thus, the linked data will exclude firms using imports through indirect channels. The exclusion of those firms may understate the impact of offshoring if offshoring rents are shared between the intermediary and the user. At the industry level, the problem may be more serious since the importer may be assigned to a different industry than the user. For a discussion of the impact on offshoring measure at the industry level, please see Baldwin et al. (2013).

six-digit NAICS industry code. We link the ASM and the Importer Registry by matching records of firms for each of those years.[4]

Table 1 shows the linkage ratio for both the ASM and the Importer Registry. About 36 percent of firms in the ASM in 2002 were linked to Importer Registry while the share increased to 54 percent in 2006. The linked firms were typically large and they accounted for an average of 75 percent in terms of shipments over this period. In the Importer Registry, about 60 percent of manufacturing firms were linked to firms in the ASM, representing more than 82 percent of imported value in the sector. The linked ASM is used for analysis. For the purpose of this paper, we assume that those unlinked firms in the ASM were not importers, and thus did not engage in offshoring.

Imported products contain intermediate, investment and consumption goods. To identify intermediate goods, we use classifications from several sources. The main classification is the UN's Broad Economic Categories (BEC), which distinguishes goods as intermediate, consumption or capital. About 80 percent of HS10 products are classified as intermediate.[5] For the remaining 20 percent of unclassified products, we continue to identify intermediate goods by using Feenstra (2009)'s classification and information from Canadian input-output tables, together with some professional judgement. Canadian Input-Output tables have the information on the proportion of commodity outputs that are used for intermediate inputs. For the identified intermediate inputs, we further classify them into energy and non-energy raw material, and other non-raw material intermediates.

To measure the degree in engagement in offshoring by different groups, this paper defines offshoring intensity as the percentage of imported intermediate goods inputs in total material costs. The former comes from the Import Registry and the latter comes from the ASM. Intermediate good inputs are goods used as inputs in the production of other goods, including non-energy raw materials and partly finished products.[6]

For descriptive tables, this paper combines some three-digit industries (based on the North American Industry Classification System or NAICS) to meet the confidentiality requirements and, as a result, it has 10 manufacturing groups in total. For regression analyses, however, the industry level is at the three-digit NAICS level, with 21 industries.

3. Offshoring by Canadian manufacturing firms

Offshoring incurs both fixed and variable costs. It requires establishing networks, communicating product specifications, monitoring and coordinating workers abroad, and transporting back offshored intermediate inputs. The existence of fixed sunk costs means that firms will offshore only if the present value of their

[4] Firms here are at the enterprise level that is chosen largely due to the fact that the Business Number (BN) identifier in the Import Registry lies somewhere between establishment and enterprise. Since one BN could consist of one or more establishments, the establishment code assigned to each BN in the import data could be arbitrarily chosen. One shall also keep in mind that the enterprise identifier in the Import Registry is a longitudinal identifier. In other words, the Import Registry uses the current enterprise code to push back to previous years.

[5] The Harmonized Commodity Description and Coding System (HS) is an international commodity classification system. HS 10 is a harmonized system of codes at 10 digit level.

[6] We also experiment with another measure of imported intermediate inputs with energy raw materials. The results are similar.

expected profits from purchasing intermediate inputs abroad exceeds the fixed cost of entry for offshoring. This suggests that offshoring is firm-specific and may not be for every firm.

To have a better picture on how offshoring has been shaping up in the Canadian manufacturing sector and on how it is linked to firm-characteristics, one needs to compare and contrast offshoring activities between different firm groups.

This paper first describes the development in offshoring across manufacturing industries, and its association with a number of potential factors, including ownership, exporting, productivity, labour skills, firm size and age, firm structures, and entry and exit.

It should be noted, however, that these factors do not act independently, and instead, they interact with each other to be associated with offshoring. For example, it has been well established that exporters tend to be larger, more productive, and more skill-intensive. In addition, it should be recognized that some of these factors may proxy for unobservables. For instance, productivity may proxy for innovation since innovation is a key driver for productivity improvements and innovative firms are more productive.

3.1. Offshoring: industry-and firm-specific

For the Canadian manufacturing sector, offshoring intensity was 26.5 percent in 2006, a slight decrease from 28.7 percent in 2002 (table 2). As expected, durable manufacturing industries are more offshoring intensive than non-durable manufacturing industries. In 2006, the difference in offshoring intensity between the two groups was more than 10 percentage points, compared to 22 percentage points in 2002.

Within each industry, firms are highly heterogeneous in offshoring. The standard deviation in offshoring ranged from 0.10 in food, beverage and tobacco to 0.23 in computers, electronics and electrical equipment in 2006 (table 2). The heterogeneity in offshoring across firms seems to be more pronounced in 2006 than in 2002. For the manufacturing sector as a whole, the standard deviation increased from 0.15 in 2002 to 0.18 in 2006. It is interesting to note that the standard deviation was even higher for importers only, being more than 0.23 for total manufacturing in 2002 and 2006.

As expected, in 2002 highly integrated transportation equipment is the most offshoring intensive manufacturing industry, followed by computers, electronics and electrical equipment. Although both the industry groups experienced a decline in offshoring intensity, they still remained to be the most offshoring intensive manufacturing industries in 2006. On the other hand, the least intensive industries in offshoring were food, beverage and tobacco, and wood products manufacturing industries.

During this period, offshoring intensity increased in non-durable manufacturing industries, but this was more than offset by the decline in offshoring in durable manufacturing industries (table 2). As a result, the overall offshoring intensity for the manufacturing sector as a whole declined over this period.[7]

[7] For the measure, we implicitly assume that the price is the same for the same type of intermediate inputs regardless of its origin. This may underestimate offshoring intensity or even affect its trend development since imported intermediate inputs, especially from emerging economies, are cheaper than domestic intermediate inputs (Hausman, 2007). However, we don't have prices on imported intermediate inputs to confirm this hypothesis.

The decline in offshoring was largely driven by a slowdown in offshoring to the U.S. by two industry groups: transportation equipment and computers, electronics and electrical equipment (table 3). Interestingly, offshoring to non-U.S. destinations for the two industry groups actually increased over this period, although the increase was not large enough to offset the decline in offshoring to the U.S. By 2006, the U.S. was still the largest destination for offshoring of Canadian manufacturing firms, accounting for close to 60 percent of the offshoring activities.

Most offshoring was done by firms with multi-plant structure. In 2006, for the manufacturing sector, the offshoring intensity for firms with multi-plant structure was 32.4 percent while for firms with single-plant structure, it was 17.9 percent (table 3). This might be due to firms with multi-plant structure being more likely to specialize in production to take advantage of economies of scale, and to have resources and knowledge to participate in global supply value chains. Note, however, that over the 2000-2006 period, offshoring by multi-plant firms decreased for durable manufacturing firms, mainly in non-metallic mineral, primary and fabricated metal; machinery; computers, electronics, and electrical equipment; and transportation equipment. For single-plant firms, offshoring over this period was more or less stable.

3.2. Offshoring: outward-oriented business strategies

Multinationals, both Canadian- and foreign-controlled, play a very important role in the Canadian economy, accounting for more than half of the Canadian manufacturing sector in terms of employment and output (Baldwin and Gu 2005). Their participation in international trade is the key for the development of global supply value chains and for the increase in outward foreign direct investment (FDI) as they extend their business activities beyond national boundaries. Multinationals outsource part of production to foreign countries by taping foreign suppliers with reliable quality and competitive prices and/or by establishing foreign subsidiaries through FDI to take advantage of cheap labour skills. Yi (2003) shows that with multiple-stage production, vertical specialization can explain the striking growth in world trade.

Multinationals could engage in vertical specialization in home countries in two ways. They could simply outsource their intermediate inputs to foreign independent suppliers at the arm's length trade. Alternatively, they can shift the production of the intermediate inputs to foreign locations through FDI and the establishment of foreign affiliates. The choice of the models depends on the cost in securing a reliable foreign supplier. In a theoretical model, Antràs (2003) shows that when the bargaining power of foreign suppliers is low, they may not undertake adequate levels of investment to ensure the supplies. In such situations, a final-good producer will find it desirable to resolve the problem faced by foreign suppliers by contributing to their relationship-specific investment in capital. If the capital cost-sharing is large enough, it will be optimal for the final-good producer to gain the ownership, thus giving rise to vertical integration, especially when intermediate input production is capital intensive.

Intra-firm trade by multinationals is important in Canada. In 2007, 32.1 percent of Canada-U.S. trade in goods was intra-firm, equivalent to bilateral trade of US$177.9 billion, with 60.9 percent of Canada-U.S. intra-firm trade in manufacturing (DFAIT, 2010).

Besides the linkage with multinationals, offshoring may also be correlated with another outward-oriented activity: exporting. Although exporting—which involves final products or inputs shipped to foreign affiliates and non-affiliates for further processing—may not be directly linked to offshoring, it may indirectly influence offshoring and the choice of its location for two main reasons. First, exporting exposes a firm to international competition, which may force it to improve its cost-competitiveness by re-organizing its business and production structure. Offshoring may become part of the re-organization. Second, offshoring costs for exporters may be lower since they are benefitting from the investment in exporting, the distribution network, and their knowledge of foreign markets.

Using the U.S. census for manufacturing in 1997, Bernard et al. (2007) shows that 79 percent of importers are also exporters, as they share a variety of positive attributes such as being the largest, most productive, most skill- and capital-intensive. The relationship between exporting and importing/offshoring is broadly consistent with the empirical evidence (e.g., Amiti and Konings 2007, Bernard, Jensen and Schott 2005, Kugler and Verhoogen 2009, Muuls and Pisu 2009, and Tomiura 2007).

Table 4 reports offshoring intensity by firm's ownership and exporting.[8] For the manufacturing sector, offshoring intensity for foreign-controlled firms was twice as high as that for domestically controlled firms. This was widespread across manufacturing industries, with one exception: petroleum, chemical, and plastics and rubber. For this industry, offshoring intensity was higher for Canadian-controlled firms than for foreign-controlled firms in 2006.

Similar to the difference in offshoring between foreign-controlled firms and domestically controlled firms, exporters were also more offshoring intensive than non-exporters, especially in 2006. For the manufacturing sector, the offshoring intensity for exporters in 2006 was 33.4 percent, more than double of that for non-exporters. However, most of the difference in 2006 was due to a substantial decline in offshoring intensity by non-exporters from 2002 to 2006. On average, offshoring intensity of non-exporters in the manufacturing sector declined from 30.2 percent in 2002 to 16.1 percent in 2006. Some of the decline was accounted for by the textile, clothing and leather industry group. For exporters, offshoring intensity was relatively stable over this period. The exceptions were textile, clothing and leather, and petroleum, chemical, and plastics and rubber whose offshoring intensity increased significantly, and computers, electronics, and electrical equipment whose offshoring intensity decreased significantly.

3.3. Offshoring: productivity and skills

Whether or where to offshore may depend on productivity. In a theoretical study of global sourcing strategies, Antràs and Helpman (2004) show that high-productivity firms are more likely to engage in offshoring activities than low-productivity firms. Offshoring being endogenous to productivity is also echoed by Amiti and Wei (2006). However, the causality between productivity and offshoring may not be a one way street from productivity to offshoring. It may run from offshoring to productivity. As suggested in Tang and do Liveramento (2010), offshoring has the potential to generate the composition effect (i.e.,

[8] Ideally, we need offshoring intensity by multinationals and non-multinationals. Unfortunately, the ASM database only has data on foreign-controlled versus Canadian-controlled, and most Canadian-controlled firms in Canada are non-multinationals (Baldwin and Gu 2005).

the ability to re-organize business activities and focus on the core) and the innovation effect due to the exposure to intense international competition and to the world technology frontier and best management practices. In addition, offshoring can help the firm to access a large pool of expertise, to maintain production flexibility, and to obtain trade and investment opportunities. If these effects realize, they will improve productivity. Indeed, there has been a large host of empirical studies showing that offshoring improves productivity, for example, Amiti and Wei (2006) and Kurz (2006) for U.S. manufacturing industries and Morrison, Paul and Yasar (2009) for Turkish textile and apparel manufacturing plants. In this paper, we use labour productivity to indicate a firm's productivity level, which reflects both multifactor productivity and capital intensity.[9]

Besides productivity, labour quality or skills may also be an important factor for offshoring. In essence, offshoring is used to lower production costs and to generate the composition effect by moving up the value chain and specializing. However, the success of offshoring depends on a firm's ability to coordinate the complexity involved in offshoring, which requires knowledge and skills (Gereffi et al. 2005). Deloitte (2005) finds that manufacturers that master the complexity of managing global value chains are the ones enjoying a greater competitive advantage, and experiencing improved operating profits and higher shareholder value. This paper uses labour compensation per worker relative to industry average as a proxy for relative labour skills.

Table 5 reports the offshoring intensity according to productivity performance and labour skills. For the manufacturing sector, firms with above-industry average productivity had an offshoring intensity that was twice as high as that for firms with below-industry average productivity. The positive relationship between productivity and offshoring is pervasive across both durable and non-durable manufacturing industries.

At the aggregate, firms with above-industry average labour skills were also more offshoring intensive than firms with below-industry average labour skills. However, there are many exceptions at the industry level, which include wood products, and furniture and miscellaneous manufacturing.

3.4. Offshoring: firm size and age

To some extent, offshoring is an adventure. It has to deal with a substantial amount of uncertainty and is subject to economies of scale and learning by doing. As mentioned earlier, offshoring incurs both variable and fixed costs. It may be justified only when the amount of offshored intermediate inputs exceed a certain threshold. Because of this, firms that engage in offshoring tend to be large and established.

Table 6 reports offshoring intensity by firm size and age. Firm size and age are closely linked, but the former is related more to economies of scale while the latter is associated more with learning by doing. To see if offshoring is associated with firm size, firms in each industry are grouped according to employment size. Small firms are those with an employment size less than the industry average while large firms are those with an employment size more than the industry average.

Clearly, on average, the large were more offshoring intensive than the small. In 2006, offshoring intensity was 35.4 percent for the large and 24.4 percent for the small. However, these results were mainly driven

[9] Kurz (2006) shows that U.S. plants that offshore tend to be more capital intensive and have higher multifactor productivity.

by durable manufacturing industries. For those industries except wood products, large firms registered much higher offshoring intensity than small firms.

Besides the size effect, the age of the firm may also matter. To compare according to age, firms in each industry are divided into old and young. The former group includes all firms older than the industry average while the latter consists of all the other firms. Similar to the size effect, the offshoring intensity was much higher for the older than the younger firms, and the difference between the groups in 2006 was almost 15 percentage points. Unlike the size effect, however, this was true not only for the majority of durable manufacturing industries but also for most non-durable manufacturing industries.

3.5. Offshoring: entrants and exits

To have a systematic profile of offshoring by different groups of firms, we also examine offshoring by entrants and exits, and compare it to incumbents. In any given year in the period 2002-2005, entrants are defined as firms that entered in that year while exits are firms that were in their last year of business.[10] Continuing firms are other firms that were in business during that year, operated in the prior year, and were still operating in the following year.

Compared to incumbents, entrants may be less intensive in offshoring for several reasons. Entrants tend to be small, and may not justify or afford in engaging in offshoring if the indivisible fixed cost is too high. In addition, they need to learn and to build the infrastructure/networks, including hiring skilled labour, for managing potential foreign suppliers and distributions. Furthermore, they may face difficulties raising funds to finance offshoring activities due to the lack of colateral.

Although exits are typically larger than entrants, they tend to be smaller than incumbents. In addition, they are generally non-performers (Liu and Tang, 2012). Size and productivity are important for offshoring, and thus they negatively affect exits' offshoring activities. Other related factors that may also contribute to lower offshoring activity include poor management, financial constraints and lack of skills.

As expected, incumbents were on average more offshoring intensive than entrants and exits, which was true for all manufacturing industries (table 7). Entrants were more intensive in offshoring than exits in 2005, but in 2002 the opposite was true. For most manufacturing industries entrants, and to a lesser degree incumbents, increased their offshoring intensity while exits reduced it over 2002-2005. The decline in offshoring intensity for exits was substantial, from 24.3 percent in 2002 to 13.8 percent in 2005. The decline was widespread across industries.

4. Offshoring and business strategy

Business strategy concerns how firms compete within a domestic or international market to improve profitability. According to Johnson, Scholes, Whittington (2008), it is the direction and scope of a firm over the long term that achieves advantage for the firm through its configuration of resources within a challenging environment, to meet the needs of markets and to fulfill stakeholder expectations. In other

[10] We drop 2006 from the analysis since we don't have data to group firms in that year into entrants, exits and incumbents.

words, it is a bundle of decisions and activities that firms choose to achieve their long-term goals. This suggests that any specific business activity undertaken by a firm is likely part of the overall business strategy, being complementary with other business activities.

In this section, we hypothesize that offshoring is linked to other outward-oriented business activities such as exporting and foreign direct investment (FDI) (i.e., being associated with foreign subsidiaries). To estimate the linkage between offshoring and these outward-oriented factors, we specify the following regression model:

$$O_{i,t} = \alpha_0 + \alpha_1 F_{i,t} + \alpha_2 E_{i,t} + \mathbf{X}_{i,t}\beta + \sum_{j=1}^{20} \gamma_j I_{i,j} + \sum_{k=1}^{4} \delta_k T_k + \varepsilon_{i,t}, \qquad (1)$$

where $O_{i,t}$ is offshoring intensity for firm *i*;

$F_{i,t}$ is foreign ownership dummy, being equal to 1 if firm *i* is foreign-controlled and zero otherwise;

$E_{i,t}$ is exporting intensity for firm *i*, defined as the share of export in total shipment;

$\mathbf{X}_{i,t}$ is a horizontal vector of firm characteristics related to offshoring such as firm size, age, productivity, labour skills, multi-plant structure, entrants and exits;

$I_{i,j}$ is an industry dummy, 1 for plant *i* belonging to industry *j* and 0 otherwise (miscellaneous manufacturing is the reference**)**;

T_k is a year dummy, 1 for year k and 0 otherwise (2002 is the reference); and

$\varepsilon_{i,t}$ is the error term.

We don't have the information on whether or not a firm in Canada is a multinational. However, as noted before, most foreign-controlled firms in Canada are foreign subsidiaries with parents mainly in the United States, and most Canadian-controlled firms are not multinationals. Therefore, we use foreign ownership as a proxy for being foreign subsidiaries.

Besides the potential linkage with exporting and foreign subsidiaries, offshoring may also be influenced or constrained by firm-specific factors/characteristics. In this paper, we control for firm size and age, productivity, labour skills, multi-plant structure, entrants and exits since those factors as discussed may also be associated with offshoring activities. They reflect economies of scale, learning by doing, economic performance, better management, and a skilled work force. For each regression, we also introduce year and industry dummies, controlling for the effects from changes in general market and macroeconomic conditions as well as changes in industry specific technology and demand.

Several results emerge from the regressions (table 8). First, offshoring was significantly and positively associated with foreign ownership and export intensity. This is true even after controlling for other firm characteristics and offshoring destinations.[11] The result also holds among offshoring firms, as the

[11] There may be an endogeneity issue associated with exporting and labour productivity. To check if this affects our results, we simply used lagged offshoring intensity, lagged export intensity and lagged labour productivity as the instrument variables, and re-estimated the regression model using the GMM method. The results associated with foreign ownership and export intensity were intact.

estimation, regression (6), shows. The evidence supports our hypothesis: offshoring is part of certain firms' overall outward-oriented business strategy, being linked and paired to other activities like foreign subsidiaries and exporting.

Second, the estimation shows that firms that are large, productive or have a multi-plant structure were more likely to engage in offshoring activities (regression (4)), which is consistent with the results found in previous studies. However, after introducing offshoring destination dummies, the estimated coefficients became insignificant. This suggests that these factors were associated with offshoring decision. For firms that engaged in offshoring, the high productive firms tended to be more offshoring intensive (regression (6)).

Third, exits were generally less offshoring intensive, but they were neutral after controlling for offshoring destinations or among offshoring firms. In contrast, entrants were neutral in offshoring intensity, but less intensive in offshoring after controlling for offshoring intensity or among offshoring firms.

Finally, firms that offshored to both U.S. and non-U.S. locations were more offshoring intensive than other firms that offshored either to U.S. only or to non-U.S. locations only.

5. Offshoring and input/output organization

Besides business strategy, offshoring also enriches the organizational choices of individual firms. In particular, it may be linked to firms' business organization in terms of intermediate input variety and product concentration. Several studies including Amiti and Wei (2006) suggest that offshoring increases the choice and provides better intermediate inputs to firms (hypothesis 1). This choice and flexibility may lead to better economic performance. Using an Indonesian manufacturing census, Amiti and Konings (2007) show that a broader choice of intermediate inputs could improve productivity. Thus, this is another economic incentive for firms to engage in offshoring activities.

In addition to intermediate input variety, offshoring may also lead to output concentration: as suggested in Tang and do Livramento (2010), offshoring enables firms to move up the value chain, by focusing on high value-added components, and achieve economies of scale through specialization (concentrating on core competencies).[12] If this is the case, then offshoring should be positively correlated with product specialization by manufacturing firms (hypothesis 2).

To measure intermediate input variety or output concentration at the firm level, we use the Herfindahl index:

$$H = \frac{\sum S_k^2 - 1/n}{1 - 1/n} \qquad (2)$$

where $S_k = R_k / R$ is for each firm, the share of intermediate input (product) k in total intermediate inputs (products), and n is the number of intermediate inputs (products).

[12] A high value-added component for one firm may not be necessarily high value-added for another firm. It depends on their ability to create value in producing the component, which may require right skills, technologies, and competence.

The Herfindahl index is often used as a measure of the size of firms in relation to their industry, being an indicator of the amount of competition among these firms. In this paper, we use the index to measure intermediate input variety or output concentration in a firm's production. It is between 0 and 1, moving from a large number of small amounts of intermediate inputs (products) to a small number of large amounts of intermediate inputs (products). Thus, a small number means variety and a large number means concentration.

To shed light on the linkage between offshoring and intermediate input variety or output concentration, we conduct an econometric analysis. If these hypotheses are correct, then offshoring will be negatively correlated with the index for intermediate input variety and positively correlated with the index for output concentration.

To test these two hypotheses, we use the following regression model:

$$H_{i,t} = \alpha_0 + \alpha_1 O_{i,t} + \mathbf{X}_{i,t}\beta + \sum_{j=1}^{20} \gamma_j I_{i,j} + \sum_{k=1}^{4} \delta_k T_k + \varepsilon_{i,t}\,, \qquad (3)$$

where $H_{i,t}$ is the index for intermediate input variety or output concentration for firm *i*;

$O_{i,t}$ is offshoring intensity for firm *i*;

$\mathbf{X}_{i,t}$ is a horizontal vector of economic factors related to input variety or output concentration such as foreign ownership, export intensity, firm size, age, productivity, labour skills, entrants and exits;

$I_{i,j}$ is an industry dummy, 1 for plant *i* belonging to industry *j* and 0 otherwise (miscellaneous manufacturing is the reference**)**;

T_k is a year dummy, 1 for year k and 0 otherwise (2002 is the reference); and

$\varepsilon_{i,t}$ is the error term.

For the regression, we control for foreign ownership, export intensity, firm size, age, productivity, labour skills, multi-plant structure, entrants and exits because these variables may influence or limit firms in the choice of inputs and products. For instance, small and new firms are less likely than large and established firms to take advantage of the variety of intermediate inputs or offer a large number of products. In addition, we also introduce industry and year dummies to control for industries and year effects since intermediate input variety or output concentration is industry-specific, and may change over time.

We first run the regression of the index for intermediate input variety against offshoring; the estimation results with different combinations of control variables are reported in table 9. The first three regressions (columns (1) - (3)) show that intermediate input variety was highly industry-specific since industry dummies explained most of the variation.

Those three regressions also show that offshoring was negatively associated with the index for intermediate inputs and thus positively associated with intermediate inputs variety. However, after controlling for other factors (columns (4) and (5)), especially being multi-plant structure, the association

ceased to exist. A further investigation, column (7), shows that offshoring destination matters—offshoring to the U.S. was negative while offshoring to non-U.S. locations was positive. In other words, intermediate input variety is positively related to U.S. offshoring and negatively related to non-U.S. offshoring.

Furthermore, exporters tended to rely on fewer intermediate inputs than non-exporters while large or multi-plant firms tended to use more intermediate inputs than others. This might be due to the fact that large or multi-plant firms offer more products, which may require more different intermediate inputs.

Finally, the estimation appears to show that other factors including foreign ownership, productivity, labour skills, firm age, entrants and exits are not correlated with intermediate inputs concentration or variety.

In table 10, we report the estimation results of the index for output concentration against offshoring and other control variables.[13] The result shows that output concentration is positively associated with offshoring, but the relationship is not statistically significant. However, when non-U.S. offshoring is separated from U.S. offshoring it is found to be positively correlated with output concentration.

In addition, the regression shows that unlike intermediate inputs variety, output concentration is much less industry-specific, and is positively associated with productivity. The latter result suggests that firms engaging in specialization and focusing on its core tend to be more productive. On the other hand, exporting, large or multi-plant firms produce more products.

Finally, we find no correlation between output concentration and foreign-ownership, labour skills, age, entrants or exits.

6. Concluding remarks

This paper analyzed the recent developments in offshoring in the Canadian manufacturing sector to better understand the economic impact of this activity on the Canadian economy and its role in business strategies and organization. Unlike the literature in estimating offshoring based on the proportionality assumption, it used a newly linked Canadian manufacturing micro database for the 2002-2006 period, which provides a direct and precise measure of offshoring activities in Canadian manufacturing firms.

Our analysis shows that offshoring is heterogeneous across industries and among firms. In general, durable manufacturing firms are more offshoring intensive than non-durable manufacturing firms. Over the 2002-2006 period, offshoring intensity increased in non-durable manufacturing industries, but the increase was more than offset by the decline in offshoring in durable manufacturing industries. As a result, the overall offshoring intensity for the manufacturing sector as a whole declined over this period.

The overall decline in manufacturing offshoring activities is puzzling, given that the Canadian dollar appreciated substantially against the U.S. currency over the period, which made foreign purchase cheaper. However, the decline in offshoring was driven by three industries: transportation equipment, fabricated metals, and computer and electronic products. In the post-2000 period, these industries experienced a

[13] The number of observations for intermediate inputs variety and for output concentration is different because the number of firms with input data was different from the number of firms with output data.

significant decline in demand for their products, partly due to the appreciation of the Canadian dollar, and resulted in a substantial excess production capacity.[14] The re-organization and restructuring to improve capacity utilization might play a role in the decline in offshoring activities. This might be the case if a firm takes advantage of the excess production capacity and starts to produce intermediate inputs that are otherwise offshored.

In addition, we demonstrate that offshoring is part of firms' overall outward-oriented business strategy, being positively associated with activities such as foreign ownership and exporting. The estimations confirmed that offshoring was heterogeneous among firms, with firm characteristics playing an important role in determining offshoring intensity. As expected, large, productive or skilled-labour firms tend to be more intensive in offshoring, while entrants and exits are less likely to do so.

Furthermore, we find that offshoring to the U.S. was positively associated with intermediate input variety while offshoring to non-U.S. was negatively associated. The puzzling results are interesting; however, more research is needed for the underlying factors.

Finally, we find that offshoring to non-U.S. locations is positively associated with the output specialization of Canadian manufacturing firms from 2002 to 2006. The result suggests that offshoring to non-U.S. destinations might have helped Canadian manufacturing firms to specialize in products significantly over the sample period.

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Table 1. The linkage between ASM and importer registry

	ASM		Importer registry: manufacturing firms	
	% of the number of enterprises that are linked to importer registry	% of shipments that are linked	% of the number of enterprises that are linked to ASM	% of import value that are linked
2002	0.36	0.74	0.67	0.82
2003	0.35	0.72	0.66	0.82
2004	0.45	0.74	0.51	0.82
2005	0.46	0.76	0.51	0.84
2006	0.54	0.81	0.61	0.86

Table 2. Offshoring intensity and firm variation by industry

	Offshoring intensity (%)		Variance		Standard deviation	
	2002	2006	2002	2006	2002	2006
Total manufacturing	**28.7**	**26.5**	**0.024**	**0.032**	**0.153**	**0.178**
Non-durables	**16.4**	**20.9**	**0.022**	**0.025**	**0.148**	**0.157**
Food, beverage and tobacco	5.6	5.3	0.008	0.011	0.089	0.103
Paper and printing	11.2	11.7	0.011	0.020	0.103	0.140
Petroleum, chemical, and plastics & rubber	26.3	30.5	X	X	X	X
Textile, clothing and leather	13.6	17.2	0.031	0.039	0.176	0.196
Durables	**38.4**	**31.6**	**0.030**	**0.033**	**0.173**	**0.181**
Computers, electronics and electrical equipment	39.1	34.0	0.040	0.051	0.201	0.226
Furniture and miscellaneous manufacturing	9.7	12.0	0.015	X	0.123	X
Machinery	22.6	22.3	0.026	0.034	0.162	0.183
Non-metallic mineral, primary and fabricated metal	23.0	24.3	0.026	0.033	0.160	0.182
Transportation equipment	60.0	45.8	X	X	X	X
Wood products	5.7	7.4	0.013	X	0.112	X

The cells with "X" are suppressed due to confidentiality concern.

Table 3. Offshoring intensity by industry and by firm structure and destination

	Destination				By firm structure			
	U.S.		Non-U.S.		Multi-plant firm		Single-plant firm	
	2002	2006	2002	2006	2002	2006	2002	2006
Total manufacturing	**21.4**	**15.3**	**7.3**	**11.2**	**36.6**	**32.4**	**15.0**	**17.9**
Non-durables	**9.6**	**7.4**	**6.8**	**13.5**	**20.5**	**23.5**	**8.2**	**15.6**
Food, beverage and tobacco	4.1	3.5	1.4	1.8	4.7	4.4	0.8	0.9
Paper and printing	9.9	9.9	1.3	1.8	9.6	9.6	1.6	2.1
Petroleum, chemical, and plastics & rubber	13.6	8.7	12.8	21.8	X	X	X	X
Textile, clothing and leather	9.0	10.6	4.7	6.6	X	X	X	X

Durables	**30.8**	**22.4**	**7.7**	**9.2**	**50.2**	**42.3**	**19.7**	**19.4**
Computers, electronics and electrical equipment	21.8	14.5	17.3	19.5	25.5	12.5	13.6	21.4
Furniture and miscellaneous manufacturing	6.2	6.8	3.5	5.2	X	X	X	X
Machinery	15.5	14.0	7.1	8.3	14.0	8.9	8.5	13.4
Non-metallic mineral, primary and fabricated metal	15.4	13.9	7.6	10.4	19.3	19.5	3.7	4.7
Transportation equipment	52.4	36.8	7.6	9.0	50.3	35.3	9.6	10.5
Wood products	4.9	6.1	0.9	1.3	4.1	4.9	1.7	2.5

The cells with "X" are suppressed due to confidentiality concern.

Table 4. Offshoring intensity by industry and by ownership and exporting

	By ownership				**By exporting**			
	Domestic-controlled		Foreign-controlled		Non-exporter		Exporter	
	2002	2006	2002	2006	2002	2006	2002	2006
Total manufacturing	**17.7**	**22.2**	**45.0**	**39.7**	**30.2**	**16.1**	**31.6**	**33.4**
Non-durables	**13.0**	**19.2**	**27.2**	**29.4**	**24.2**	**18.7**	**18.5**	**24.9**
Food, beverage and tobacco	2.1	2.8	11.0	9.6	3.2	6.2	6.1	5.0
Paper and printing	8.9	7.5	16.3	21.9	5.8	6.1	11.9	12.5
Petroleum, chemical, and plastics & rubber	24.1	32.1	28.1	29.2	46.7	36.5	23.7	30.0
Textile, clothing and leather	11.4	15.3	25.1	28.5	13.9	7.6	13.5	20.6
Durables	**22.2**	**25.3**	**56.6**	**47.8**	**35.4**	**13.7**	**41.7**	**40.8**
Computers, electronics and electrical equipment	26.6	30.8	48.1	37.1	21.2	23.7	40.9	35.3
Furniture and miscellaneous manufacturing	7.7	8.2	17.7	26.7	X	7.7	X	14.6
Machinery	10.2	13.3	46.1	39.8	X	8.3	X	24.5
Non-metallic mineral, primary and fabricated metal	21.4	20.2	26.6	29.8	6.7	5.5	25.6	27.9
Transportation equipment	34.5	38.5	66.3	47.8	X	6.4	X	48.3
Wood products	5.1	6.2	7.8	11.9	X	3.8	X	8.1

The cells with "X" are suppressed due to confidentiality concern.

Table 5. Offshoring intensity by industry and by productivity performance and labour skills

	By productivity				**By labour skills***			
	Below Ind. average		Above Ind. average		Low skilled labour		Highly skilled labour	
	2002	2006	2002	2006	2002	2006	2002	2006
Total manufacturing	**9.1**	**12.2**	**30.7**	**28.4**	**12.8**	**17.5**	**30.2**	**29.1**
Non-durables	**8.7**	**11.0**	**17.2**	**22.1**	**10.6**	**12.2**	**16.9**	**23.4**
Food, beverage and tobacco	1.9	2.5	5.9	5.8	1.2	2.0	5.9	6.7
Paper and printing	3.7	8.1	11.7	12.1	9.4	9.6	11.3	12.1

Petroleum, chemical, and plastics & rubber	13.0	15.6	27.7	31.8	12.2	16.1	27.4	32.2
Textile, clothing and leather	10.1	11.0	14.4	19.0	9.2	13.1	14.9	19.5
Durables	**9.5**	**13.0**	**41.2**	**34.3**	**14.3**	**22.4**	**40.7**	**34.2**
Computers, electronics and electrical equipment	10.7	15.7	42.0	37.5	23.2	24.3	42.3	39.7
Furniture and miscellaneous manufacturing	5.3	6.2	10.6	13.6	12.4	12.9	8.8	11.1
Machinery	7.4	13.4	25.5	24.9	13.1	17.8	25.0	25.1
Non-metallic mineral, primary and fabricated metal	6.3	8.7	24.9	26.6	11.3	14.3	24.1	26.6
Transportation equipment	14.3	19.8	61.7	47.8	25.1	38.2	60.8	46.7
Wood products	2.9	6.8	6.1	7.5	7.7	12.5	5.5	5.7

*Low and highly skilled labour refer to labour compensation being below and above industry average, respectively.

Table 6. Offshoring intensity by industry and by size and age

	By size*				**By age****			
	Small		Large		Young		Old	
	2002	2006	2002	2006	2002	2006	2002	2006
Total manufacturing	**17.2**	**24.4**	**40.3**	**35.4**	**21.6**	**15.1**	**29.8**	**28.7**
Non-durables	**17.2**	**25.5**	**21.1**	**23.0**	**25.1**	**10.7**	**15.1**	**22.2**
Food, Beverage and Tobacco	6.0	4.3	5.3	6.0	3.8	2.9	5.8	5.8
Paper and Printing	7.8	8.2	13.1	14.0	9.9	8.5	11.4	12.2
Petroleum, Chemical, and Plastics & Rubber	22.1	30.5	30.2	30.5	40.9	17.6	23.9	31.6
Textile, Clothing and Leather	11.5	16.0	23.2	27.2	13.0	15.6	13.8	18.3
Durables	**17.1**	**23.4**	**52.5**	**45.6**	**18.8**	**17.5**	**41.3**	**35.0**
Computers, Electronics and Electrical Equipment	15.9	21.0	52.5	46.3	19.9	31.2	42.5	35.2
Furniture and Miscellaneous Manufacturing	8.5	9.3	13.9	22.9	10.0	10.0	9.5	13.8
Machinery	11.2	14.5	55.1	46.9	10.6	11.5	26.3	27.9
Non-metallic Mineral, Primary and Fabricated Metal	10.1	13.3	32.3	32.6	13.7	13.0	24.6	27.3
Transportation Equipment	14.9	20.9	64.6	49.1	46.5	30.7	60.7	47.4
Wood Products	5.0	7.5	6.5	7.3	3.7	8.7	6.1	7.0

* The small (the large) refers to the employment size of a firm being below (above) the industry average.
** The young (the old) means that the age of a firm is below (above) the industry average.

Table 7. Offshoring intensity by industry and by entrants, exists and incumbents

	Entrants		**Exiters**		**Incumbents**	
	2002	2005	2002	2005	2002	2005
Total manufacturing	**16.9**	**22.6**	**24.3**	**13.8**	**31.2**	**33.5**
Non-durables	**15.6**	**20.2**	**20.6**	**13.1**	**28.2**	**30.1**

Food, beverage and tobacco	10.4	15.6	11.6	8.3	19.3	22.2
Paper and printing	13.0	17.3	18.6	9.2	18.3	20.8
Petroleum, chemical, and plastics & rubber	26.7	34.8	37.1	20.3	47.1	51.2
Textile, clothing and leather	14.0	13.2	18.5	14.1	33.8	32.4
Durables	**17.7**	**23.9**	**26.6**	**14.3**	**33.1**	**35.5**
Computers, electronics and electrical equipment	24.2	X	32.5	X	49.3	51.2
Furniture and miscellaneous manufacturing	15.0	X	21.0	X	26.8	27.4
Machinery	21.7	30.0	29.9	14.4	41.3	45.6
Non-metallic mineral, primary and fabricated metal	16.9	X	27.9	X	31.2	34.6
Transportation equipment	23.0	X	34.3	X	43.6	45.9
Wood products	11.0	X	18.1	X	22.0	25.2

The cells with "X" are suppressed due to confidentiality concern.

Table 8. Regressions: offshoring and associated factors

	Firms with or without offshoring					**Firms with offshoring**
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.199***	0.111***	0.092***	0.094***	-0.020	0.245***
	(0.019)	(0.023)	(0.023)	(0.025)	(0.022)	(0.032)
Foreign ownership	0.103***	0.094***	0.085***	0.084***	0.068***	0.094***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.013)	(0.016)
Export intensity	0.093***	0.054***	0.050*	0.050**	0.077***	0.114***
	(0.027)	(0.025)	(0.026)	(0.026)	(0.020)	(0.025)
High productivity		0.055***	0.028***	0.028***	0.011	0.066***
		(0.010)	(0.010)	(0.011)	(0.009)	(0.016)
Highly skilled labour		0.026***	0.016*	0.015	0.012	0.023*
		(0.010)	(0.010)	(0.010)	(0.009)	(0.012)
Employment (relative to industry average)		0.001***	0.001***	0.001***	0.0001	0.000
		(0.000)	(0.000)	(0.000)	(0.0001)	(0.000)
Age		-0.002*	-0.002*	-0.002	-0.001	-0.002
		(0.012)	(0.001)	(0.001)	(0.001)	(0.002)
Multi-plant			0.134***	0.133***	-0.006	-0.025
			(0.017)	(0.017)	(0.014)	(0.018)
Entrants				0.020	-0.036**	-0.065**
				(0.020)	(0.018)	(0.030)
Exits				-0.052***	0.024*	0.026
				(0.016)	(0.013)	(0.032)

US_only					0.131***	-0.133***
					(0.012)	(0.016)
Non-US_only					0.127***	-0.136***
					(0.012)	(0.017)
Both US and non-US					0.319***	
					(0.012)	
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	142052	142052	142052	142052	142052	58701
Adjusted R-square	0.25	0.25	0.38	0.38	0.50	0.42

Table 9. Regressions: offshoring and intermediate input concentration

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Constant	0.311***	0.258***	0.252***	0.291***	0.312***	0.319***	0.316***
	(0.010)	(0.018)	(0.008)	(0.014)	(0.014)	(0.016)	(0.016)
Offshoring	-0.106***	-0.108***	-0.044***	-0.027***	-0.012	-0.012	
	(0.027)	(0.026)	(0.014)	(0.014)	(0.015)	(0.015)	
Offshoring_US							-0.061***
							(0.019)
Offshoring_Non-US							0.083***
							(0.034)
Foreign ownership				-0.004	-0.003	-0.003	0.005
				(0.010)	(0.010)	(0.010)	(0.010)
Export intensity				0.230*	0.024*	0.023*	0.026**
				(0.012)	(0.013)	(0.013)	(0.013)
High productivity				0.001	0.004	0.004	0.0001
				(0.008)	(0.008)	(0.008)	(0.009)
Highly skilled labour				-0.009	-0.006	-0.006	-0.009
				(0.010)	(0.010)	(0.010)	(0.010)
Employment (relative to industry average)				-0.001***	-0.001***	-0.001***	-0.004***
				(0.000)	(0.000)	(0.000)	(0.000)
Age				-0.001	-0.001	-0.002*	-0.002
				(0.001)	(0.001)	(0.001)	(0.001)
Multi-plant					-0.053***	-0.055***	-0.053***
					(0.011)	(0.011)	(0.011)
Entrants						-0.032*	-0.026
						(0.019)	(0.019)
Exits						-0.0005	-0.001
						(0.010)	(0.010)

Year dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	No	No	Yes	Yes	Yes	Yes	Yes
Number of observations	57855	57855	57854	46466	46467	46467	46467
Adjusted R-square	0.02	0.05	0.41	0.42	0.43	0.43	0.43

Table 10. Regressions: offshoring and output concentration

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Constant	0.299*** (0.006)	0.266*** (0.010)	0.276*** (0.011)	0.333*** (0.019)	0.347*** (0.021)	0.334*** (0.025)	0.332*** (0.024)
Offshoring	0.019 (0.022)	0.016 (0.021)	-0.017 (0.017)	0.016 (0.016)	0.024 (0.017)	0.025 (0.017)	
Offshoring_US							-0.003 (0.022)
Offshoring_non-US							0.076*** (0.030)
Foreign ownership				0.008 (0.011)	0.009 (0.011)	0.008 (0.011)	0.013 (0.011)
Export intensity				-0.139*** (0.045)	-0.136*** (0.046)	-0.136*** (0.046)	-0.134*** (0.016)
High productivity				0.024** (0.009)	0.026*** (0.009)	0.026*** (0.009)	0.023*** (0.009)
Highly skilled labour				-0.012 (0.012)	-0.010 (0.012)	-0.010 (0.011)	-0.011 (0.011)
Employment (relative to industry average)				-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Age				0.002 (0.002)	0.001 (0.002)	0.002 (0.002)	0.003 (0.002)
Multi-plant					-0.033** (0.016)	-0.030* (0.016)	-0.029* (0.016)
Entrants						0.046 (0.032)	0.050 (0.032)
Exits						0.028 (0.018)	0.028 (0.018)
Year dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	No	No	Yes	Yes	Yes	Yes	Yes
Number of observations	44035	44035	44035	35138	35139	35139	35139
Adjusted R-square	0.00	0.02	0.07	0.14	0.14	0.15	0.15

Contact Information

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