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Firm Dynamics in Retail Trade: The Response of Canadian Retailers to Exchange Rate Shocks

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Firm Dynamics in Retail Trade: The Response of Canadian Retailers to Exchange Rate Shocks ^{*†}

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Abstract

We use comprehensive firm-level data to estimate the responses of heterogeneous Canadian retail firms to real exchange rate movements. Our analysis focuses on a period characterized by large fluctuations in the Canadian dollar, providing an opportunity to quantify both intensive and extensive margin responses in retail industries to real exchange rate shocks and to examine how those responses differ across firms, locations, and sub-industries. Our results indicate that a real Canadian currency appreciation significantly reduces a retailer's sales, employment, and profits. The strength of this negative effect is decreasing in the distance of a retailer from the US-Canada border. We do not find evidence of a strong relationship between real exchange rate movements and the number of operating firms nor the probability of firm survival. These findings are consistent with the view that a real Canadian dollar appreciation increases cross-border shopping by Canadians, resulting in a negative demand shock for Canadian retailers, and the dominant response by firms to such a shock is through the intensive margin.

JEL Nos.: F10; F14; L81

Keywords: Firm Dynamics; Retail Trade; Exchange Rates; Cross-border Shopping

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1 Introduction

This paper uses detailed firm-level data to estimate the heterogeneous responses of Canadian retail firms to real exchange rate fluctuations. A movement in the real exchange rate between Canada and the United States reflects a shift in relative prices between Canadian and US retail stores and this may cause a change in cross-border travel by consumers and hence, a shift in demand facing Canadian retailers. A real exchange rate fluctuation also potentially acts as a supply shock for Canadian retailers as it changes the cost of imported inputs. Our estimates indicate that a real appreciation of the Canadian dollar has a significant negative effect on firm-level sales, employment, and profits of Canadian retailers, the magnitude of which diminishes for firms located farther away from the border. In contrast, we find only weak or insignificant effects on a firm's probability of survival and on the number of operating firms.

The retail trade sector in Canada is large and growing and although usually considered a non-traded sector, retailers can certainly be affected by international factors, such as real exchange rate movements.¹ It is well known that retail prices for similar goods differ between the United States and Canada and the magnitude of those differences vary significantly over time (Gopinath, Gourinchas, Hsieh, and Li, 2011 and Engel and Rogers 2000). The Senate report on Canadian-US price differences (2013) raises concerns over the causes *and effects* of transitory and persistent price gaps. Our analysis exploits a comprehensive set of firm level data, containing the universe of incorporated (both privately held and publicly traded) Canadian retail firms with at least one employee, during a time period characterized by considerable fluctuations in the real exchange rate. This provides an opportunity to quantify the impact of changes in the Canada-US price differential on the economically important Canadian retail sector, and to document how responses might differ across firms and sub-industries.

Our analysis contributes to a growing empirical literature focused on firm heterogeneity and firm- and plant-level data to provide micro-level analysis of firm and industry dynamics (particularly in response to changes in variables which affect the trading environment). Most of this research has focused on the manufacturing sector while service and retail industries have received less attention. However, studies that do examine service and retail sectors suggest that firm and industry dynamics in those sectors differ

¹During our sample period, retail trade comprised approximately 13% of Canada's employment while employment share in manufacturing was about 17%.

considerably from the manufacturing sector.² Our empirical findings provide important quantitative evidence on firm and industry dynamics in the retail trade sector in response to an exogenous shock, and contribute to our understanding of the exposure of retail firms to international price fluctuations.

To clarify why exchange rate fluctuations may act as demand shocks for Canadian retailers, we first note that a significant number of same-day trips occur across the Canadian-US border in both directions each year and the number of such trips is frequently used as a measure of cross-border shoppers. In particular, over the time period we study, 1986-1997, there were approximately forty million same-day automobile trips from Canada to the United States annually, while there were approximately twenty million same-day automobile trips in the other direction. Furthermore, the number of same-day travelers by automobile is correlated with nominal and real exchange rates as shown in Figure 1. That figure depicts monthly nominal and real exchange rates and seasonally adjusted same-day automobile trips by Canadians and Americans from 1986-1997 relative to their initial values in January 1986. The figure illustrates that a nominal or real appreciation of the Canadian dollar (a rise in the relative nominal or real exchange rate) is generally associated with an increase in Canadian same-day travelers and to a lesser extent a decrease in same-day US travelers. Examining the correlations between growth rates of the series, we find that the correlation coefficients between the real exchange rate and travelers are 0.10 for Canadians and -0.11 for Americans.³ Other studies have documented significant relationships between the number of such trips and the Canadian-US nominal and real exchange rate (see, for example, Chandra, Head, and Tappata, 2014; Di Matteo and Di Matteo, 1996; Ferris, 2000; and Timothy and Butler, 1995).

There have also been several studies summarizing cross-border shopping patterns between the US and Canada. These studies indicate that certain types of goods are purchased more frequently than others and that consumers differ in their shopping patterns according to the distance of their residence from the border. For example, Ford (1992) reports that a 1991 survey from Ontario, Canada revealed that many Canadian consumers living in regions within thirty minutes driving time from the border crossed the border weekly to purchase groceries, gasoline, and clothing. In contrast, consumers living in regions between thirty and sixty minutes driving time from the border crossed only monthly and they tended to buy more durable items, such as electronics. This is consistent with the idea that because cross-

²See, for example, Audretsch, Klomp, and Thurik (1999), Pakes and Ericson (1998), and Petrunia (2007).

³The respective correlations with one-month lagged real exchange rate growth rates are 0.29 and -0.03 and with one-quarter lagged real exchange rate growth rates are 0.15 and -0.02.

border shopping involves a trade-off between travel costs (which increase with distance) and lower prices; consumers' willingness to substitute between Canadian and US retailers should increase with proximity to the border. Based on Salop (1979) and Syverson (2007, 2004) this implies that the magnitude of the elasticity of residual demand facing Canadian retailers is expected to decrease with distance to the border.

This discussion suggests that a real appreciation of the Canadian dollar will induce more Canadian consumers to shop in the US and fewer US consumers to shop in Canada, resulting in a fall in demand facing Canadian retailers, with the largest decreases in demand occurring near the border. One would expect that such a fall in demand resulting from a Canadian currency appreciation would reduce Canadian firms' sales and employment (Fung, 2008). Furthermore, if the elasticity of demand is decreasing in demand, then the fall in demand will cause Canadian stores to reduce their markups.⁴ As a result, on the demand side, a Canadian currency appreciation may lead to a reduction in the profitability of retail firms and reduce their probability of survival.⁵ Hence, the impact of a change in demand induced by real exchange rate movements on Canadian retail industries is potentially along both the intensive and extensive margins and is expected to vary across firms according to their location and industry. One contribution of this paper is our use of detailed location data to examine how proximity to the border affects the impact of exchange rate movements on retail firms.

Real exchange rate fluctuations may also act as supply-side shocks for Canadian retailers who purchase imported inputs from the US as the Canadian dollar cost of those inputs will fall when the Canadian dollar appreciates. Such effects are quite likely given that Donnefeld and Haug (2003) find that, depending on the industry, only 2% to 26% of goods imported into Canada are priced in Canadian dollars. Furthermore, Dees, Burgert and Parent (2008) argue that import prices in Canada are highly correlated with nominal exchange rate movements as evidenced in the bottom panel of Figure 1. Comparing the bottom panel of that figure depicting movements in the Canadian import price index with the top panel depicting fluctuations in real and nominal exchange rates, we see some evidence of a negative relationship between exchange rate movements and import prices. In particular, the correlation coefficient between the growth rates of the real exchange rate and of import prices is -0.51.⁶

⁴Feenstra (2004) shows that this is the case for any demand function that is less convex than the constant elasticity one, such as linear demand.

⁵If stores are heterogeneous with respect to productivity as in Melitz and Ottaviano (2008), the effect of exchange rate movements will be less pronounced for more productive stores.

⁶The correlation with one-month lagged real exchange rate growth rates is -0.62 and with one-quarter lagged real exchange

Thus, we speculate that a real appreciation of the Canadian dollar acts as a supply shock as it reduces the cost of imported goods to Canadian retailers, putting positive pressure on their profits and probability of survival. If some portion of this cost decrease is passed on to consumers in the form of lower prices, we might also expect increases in their sales and number of employees. These extensive and intensive margin responses may vary across retail industries depending on the importance of imported inputs and the frequency of invoicing imported inputs in US dollars. In addition, it is possible that since firms closer to the border face lower transportation costs for imported inputs, the share of their total costs which are subject to exchange rate fluctuations will be higher and they will be more sensitive to exchange rate movements.

To summarize, a real exchange rate movement potentially acts as both a demand shock and a supply shock with these shocks impacting retailers' sales, employment, profits, and survival in opposite directions. The net effect of the extensive and intensive margin responses by retail firms, how those responses vary by industry and by a retailer's characteristics, and the extent to which the exchange rate effects vary by distance to the border are open empirical questions. The answers to those questions provide broader insights into retail industries' dynamics and spatial competition. Furthermore, quantifying the location- and industry-specific effects on Canadian retailers of changes in shopping patterns induced by exchange rate movements is useful for policy makers concerned with the impact of US-Canada price differences.

To address this, we use firm- and industry-level data with five key measures of firm and industry performance: firm sales, employment, profitability, probability of survival, and the number of firms operating in an industry. We also consider whether retailers are differentially affected by exchange rates movements according to their distance from the closest land border post. We provide estimates for overall retailers as well as for retailers operating in retail sub-industries that are more likely to be affected by cross-border shopping induced demand shocks: grocery stores and gasoline stations; apparel and general retail; and food services and accommodation.

We find a significant *negative* effect of a real appreciation of the Canadian dollar on firm-level sales, employment, and profitability of Canadian retailers for the overall retail sector and for each of the sub-industries listed above. Our results for the number of operating firms and for a firm's probability of survival suggest weak or insignificant effects on this variable for overall retail and the sub-groups. In

rate growth rates is -0.03.

addition, the magnitude of the effects on sales and employment and on profitability significantly diminish for firms located farther away from the border for all of the industries we study except food services and accommodation. These findings are generally consistent with the explanation that a real currency appreciation primarily acts as a negative demand shock for Canadian retailers and the dominant response by firms to such a shock is through the intensive margin.

We now briefly discuss related literature. While the current paper examines the retail industry, some other studies have assessed the response of manufacturing and service firms to exchange rate movements (see, for example, Baggs, Beaulieu and Fung (2010, 2009), Baldwin and Yan (2012), Ekholm, Moxnes, and Ulltveit-Moe (2012), Fung (2008), and Fung, Baggs and Beaulieu (2011)). Generally, these papers suggest that there are significant responses in these industries to exchange rate movements and that manufacturing firms adjust more on the intensive margin while service sector firms adjust more on the extensive margin.

The impact of real exchange rate movements on US retailers was examined in Campbell and Lapham (2004) using county-level data for four retail industries. Their findings indicate significant effects on average employment and the number of stores for Food Stores, Gasoline Stations, and Eating Places.⁷ Asplund, Friberg and Wilander (2007) using municipality-level data on Swedish alcohol sales, found significant effects of foreign price changes on retailer sales with effects that diminish with distance from the border.⁸ Baggs, Fung, and Lapham (2015) use cross-border travel data for the US-Canada border and Canadian retail firm-level sales to examine the relationships among exchange rates, cross-border travel, and retail sales. While that paper focuses specifically on the impact of cross-border shopping on retail sales, the current paper empirically examines the overall impact of real exchange movements on a broad set of firm and industry performance measures for Canadian retailers.

Finally, our focus on heterogeneous retail firms is related to empirical studies of retail such as Baldwin and Gu (2008) and Foster, Haltiwanger, and Krizen (2006, 2002) who find that the retail industry is characterized by substantial firm heterogeneity. Research by Kosova and Lafontaine (2010), Eckert and West (2008), and Holmberg and Morgan (2003) suggest that a retailer's characteristics such as age, size, whether or not the firm is a franchise, etc. all affect the growth and survival of the firm. Haskel and Sudan (2012, 2009) use micro data from U.K. retailers to examine entry and exit and the dynamics of

⁷For Drinking Places, the real exchange rate effect is only significant on average employment.

⁸Asplund, Friberg and Wilander (2007) aggregate data on retail outlets to the municipality level.

retailers' productivity. Our empirical results regarding the heterogeneous responses of retailers to real exchange rate shocks using firm-level data contributes to this literature by improving our understanding of retailers' responses to exogenous shocks more generally.

The remainder of the paper is organized as follows. Section Two describes the data used in the analysis while Section Three presents the empirical methodology and results. Section Four discusses the robustness of our results to alternative empirical specifications and Section Five summarizes our conclusions.

2 Data Description

This paper uses firm-level annual data from 1986 to 1997 from the T2LEAP database. The T2LEAP database links two underlying sources of data: corporate tax information from T2 tax forms, and the Longitudinal Employment Analysis Program (LEAP), which obtains its data from firm-specific payroll information filed with the Canada Revenue Agency. This is a longitudinal data set that provides information on every incorporated Canadian enterprise that legally hires employees and, in the same year, files a corporate income tax return.

This data set contains detailed data on firm characteristics, such as ownership (public or private), location (province and postal code), number of employees, sales, profits, assets, equity, payroll and industry affiliation (at the 3-digit SIC level).⁹ The number of employees is measured by average labor units (ALU) which is firm total payroll divided by a weighted average of workers' annual wages in the province, size class, and industry where the firm is located. We are restricted to book values of equity and assets and financial data is converted to real (1986) Canadian dollars using the Consumer Price Index.

Because the T2LEAP database includes the postal code of the retail firm, we are able to calculate a measure of distance from the firm to the border. To measure this distance, we used the postal codes of land border posts available from the Canadian Border Services Agency (CBSA) and calculated the minimum great circle distance between a firm and the closest border post using a PCCF+ program which converts postal codes to geographic coordinates. A superior measure of distance for our study would be driving distance from the retailer to the closest border post but we were unable to calculate that measure

⁹In the T2LEAP database, firm ownership is classified into Canadian-owned private corporations, other corporations, public corporations, corporations controlled by a public corporation, and other corporations. Retailers are predominately Canadian-owned private firms.

due to proprietary data restrictions.¹⁰

In the analysis, we first report results for all Canadian retail firms (labeled as Overall Retail: All Firms). Because one of our objectives is to analyze the effect of distance of a retail *store* from the border on the magnitude of responses to exchange rate movements, the unit of analysis should be a retail outlet if possible. However, since the T2LEAP data is at the *enterprise* level, a retail enterprise may be associated with multiple retail outlets and its postal code may reflect the location of the retailer's headquarters. This may not be a significant issue because according to the Statistics Canada Business Register (2010), as of July 2010, 99% of Canadian active businesses were a "simple" business with one operating entity. Nonetheless, to substantiate our distance results, we also report results from a restricted sample of privately-held Canadian retail firms which had ten typical employees or less in the initial year of our sample (labeled as Overall Retail: Small Firms). In our robustness exercises presented in Section Four, we also report results from a sample of firms with twenty typical employees or less.¹¹ These smaller firms are most likely to have either a single store or a very small number of local stores and thus their distance measure will typically measure distance from the border to an actual retail store. Approximately two-thirds of retail firms had ten employees or less and accounted for approximately 20% of industry employment.

We also report results for a set of retail industry sub-groupings which we expect to be significantly affected by exchange rate movements and which vary in their use of imported inputs and in their exposure to cross-border shopping. The three sub-groups we analyze are grocery stores and gasoline stations; apparel and general retail; and food services and accommodation.¹² We chose these sub-groups based on consumer surveys cited by Ford (1992) which indicate that the most popular goods purchased abroad by Canadian shoppers are gasoline, clothing, and groceries followed by electronics, and small and large appliances. We also expect food services and accommodation industries to be affected by cross-border travel activity as they provide services for travelers. For these sub-groups, we only report results for samples restricted to firms with ten employees or less for the reasons discussed above but results for the

¹⁰As most of the population and shopping areas in Canada are close to the southern border with the US, we only calculate distance to that border.

¹¹Approximately 20% of these firms grew to employ over ten employees during our sample period but were kept in our samples of small firms. Almost none of those firms grew beyond twenty employees.

¹²The relevant SIC classifications are 601: Grocery Stores; 633: Gasoline Service Stations; 61: Apparel and Accessory Stores; 64: General Merchandise Stores; 91: Accommodations; and 92: Food and Beverage Service. We combine industries into the groupings we use in the analysis due to confidentiality issues.

full sample of firms in each sub-group are very similar.

The comprehensive coverage of firms makes it possible to identify firm year of entry and exit using the methodology employed in Baggs (2005) and Baggs, Beaulieu, and Fung (2009) and to construct a panel of survivors and exiters using the following criteria. The initial population of firms are those firms which existed in 1986. We then remove exiters and add entrants each year. A firm is considered exiting in year t if that is the year in which the firm files its last tax return (the T2SUF measure of exit) or if year t is the last year in which the firm employs workers (the LEAP measure of exit). If a firm falls into either of these categories and never reappears, it is considered as exiting.¹³ A firm is counted as an entrant in the first year in which it both employs workers and files a tax return.

Table 1 presents means and standard deviations (in parentheses) for a subset of firm-level variables for each of the samples we consider. As seen in the table, for the full sample (column 1), the average firm age is approximately six years, the average distance of a firm from the border is 163 kilometers, and the mean number of employees per firm is nearly twenty employees. The samples consisting of small firms have similar age and distance averages with mean employment around five employees. Firm sales, profits, leverage, defined as the debt to assets ratio,¹⁴ and real sales per employee (a measure of labor productivity), are also reported in the table for each of our samples.

We also use industry-, provincial-, state- and national-level data series in our study. In particular, in our baseline specifications we use industry-specific consumer price indexes for each country and the nominal exchange rate to construct industry-specific real exchange rates. We also account for the degree of industry concentration using the four-firm concentration ratio (CR4). Summary statistics for these two industry variables are reported in Table 1.

We include Canadian sales tax rates (the sum of the relevant Provincial Sales Tax (PST) and the Federal Goods and Services Tax (GST)) and relevant US state sales tax rates as differences in tax rates are another important factor that may affect relative prices facing consumers between Canadian and US stores.¹⁵ As measures of domestic market size, we use real GDP (in chained 1997 dollars) and real

¹³In the data, some firms have missing data for some year(s) but then reappear in later years. We exclude the years of missing data from the analysis but the firms are counted as continuing firms and they are added back to our unbalanced panel when they reappear.

¹⁴Baggs and Brander (2006) and Baggs, Beaulieu and Fung (2010) compute leverage for respectively manufacturing firms and firms in other service industries using the T2LEAP database.

¹⁵The nominal exchange rate, the Canadian CPI, and provincial and national GDPs are from the CANSIM database. US state GDP is from the US Bureau of Economic Analysis and the US CPI is from the St. Louis Federal Reserve FRED

median individual income (in 2011 constant dollars) for the province in which the retailer is located and household final consumption expenditure for the relevant province and industry (in 2007 constant dollars). The CBSA information on border posts not only includes the postal code of border posts but also reports the opposite US port of entry, making it possible to identify the state adjacent to the Canadian land border post closest to the Canadian retailer. We measure the size of the relevant US market for a Canadian retailer using real GDP (in chained 2000 dollars) for the adjacent state.

To close this section, we note that the Canadian population is heavily concentrated in areas close to the Canada-US southern border, and this pattern is reflected in the geographic distribution of Canadian retailers. Table 2 summarizes the distribution of retailers by their distance from the border. The geographic distribution of the small firm sub-sample is very similar to the full-sample distribution. Approximately one-half of Canadian retailers are located within 100 kilometers from the border and close to 80 percent are within 200 kilometers.

3 Empirical Implementation and Results

In this section, we estimate relationships between real exchange rate movements and Canadian retail firm-level sales, employment, profits, probability of survival, and the number of firms operating in the relevant industries.¹⁶

3.1 Sales, Employment, and Profits

We begin by investigating adjustments to exchange rate movements on the intensive margin by examining the relationship between exchange rates and firm size, as measured by sales and by employment. For these variables, our primary regression equation is as follows:

$$\ln y_{firt} = \alpha + (\beta_1 + \beta_2 \ln d_f) \ln RER_{it} + \rho \ln Ctax_{irt} + \tau \ln Utax_{irt} + \gamma x_{ft-1} + \delta z_{irt-1} + \lambda t + \varepsilon_{firt}, \quad (1)$$

database. Canadian tax rates were generously provided by Bev Dahlby.

¹⁶The sample of firms is slightly reduced from that presented in Table 1 as we remove firms with missing and unusable data. In particular, for sales, employment, and profit regressions, we only include firms that survive to the end of a given year and exclude the surviving firms that are in the sample for less than three years. The year of entry or exit are excluded because of partial year reporting.

where f is a firm index, i is an industry index, r is a region index, t is a year index, and $\ln y_{firt}$ is the logarithm of the dependent variable of interest (sales in constant 1986 dollars or employment) of firm f located in region r operating in industry i .¹⁷ The regressions also include firm and province fixed effects.

The variable d_f is the initial distance from firm f to the nearest land border post in the first year when the firm appears in the data.¹⁸ We use initial distance to avoid endogeneity.¹⁹ Note that because we include firm fixed effects, the distance term is not included as a separate regressor. The variable $\ln RER_{it}$ is the relevant industry-specific Canada-US bilateral real exchange rate and is measured as the ratio of the industry-specific Canadian CPI to the US CPI multiplied by the nominal exchange rate. Thus, an increase in this variable reflects an increase in relative prices of the goods sold in industry i in Canada.

In our analysis, the underlying assumption is that the causal relation runs from the real exchange rate to retailer performance measures. This assumption is reasonable in this context for at least three reasons. First, individual retailers are too small to affect exchange rates. Second, collectively, the money demand created by cross-border travelers accounts for only approximately 0.04% of the foreign exchange turnover (Chandra, Head and Tappata, 2014) and imports of goods by retailers comprised only 4.4% of total imports.²⁰ Third, as a small open economy, the value of the Canadian dollar is primarily driven by exogenous factors such as foreign demand and government policies.²¹

The remaining variables in the regression specification are as follows. Sales tax terms for the relevant province and nearest state for firm f in industry i located in region r are represented by $Ctax_{irt}$ and $Utax_{irt}$ respectively. We include these terms to reflect local tax differentials that are not captured in the national CPIs.²² We also include a number of firm-, industry-, province-, state- and aggregate-level controls in our regression specifications. The term x_{ft-1} is a vector of lagged firm-level controls including firm age, leverage, and assets. Firm leverage is used to account for financial conditions and assets are used as a measure of firm size. z_{irt-1} is a vector of industry-, province-, state- and aggregate-level controls

¹⁷A region is defined by a province and state combination.

¹⁸The distance-real exchange rate interaction term used here is a simpler form of the spatial competition model in Pinkse, Slade, and Brett (2002).

¹⁹In the full sample, around 10% of firms move in any given year and approximately half of those firms move to another location with the same first three digits of the postal code of their original location (i.e. movement within a neighborhood).

²⁰The import share of retailers is based on the average between 2002 and 2007. The import share of wholesalers is 25% but a substantial portion of wholesale imports are sold to the manufacturing sector owing to the dominance of small and medium manufacturers. Data source: import registry and CANSIM.

²¹Fortin (1996), for example, suggests that the large appreciation of the Canadian dollar in late 1980s and early 1990s was primarily driven by monetary policy.

²²Sales tax rates in Canadian provinces and US states are industry specific because we account for different tax rates for grocery stores and gasoline service stations.

to account for the economic environment facing firms. Here, lagged industry sales,²³ lagged industry concentration, lagged real household final consumption expenditure by province and industry, lagged median individual real income by province, lagged provincial GDP, and a provincial dummy are used to control for industry and regional market conditions. We also account for the relevant US market size by using lagged real GDP of the state nearest to the firm and a term interacting state GDP with distance. The real interest rate and a time trend are also included to further control for macroeconomic conditions. Finally, ε_{firt} is an error term.²⁴

We first discuss the results for real sales. Table 3 presents estimation results for our main variables of interest for the full sample of retail firms, for the sample of small retailers, and for our industry sub-groups using panel regressions with firm and province fixed effects. All of the regressions included the full set of firm, industry, regional, and aggregate control variables as described above and the coefficient estimates for those control variables are reported in Appendix B.

In all specifications, the coefficient estimate for the real exchange rate is negative and significant, indicating a negative effect of a rise in relative Canadian-US prices on Canadian retailers' sales. The coefficient estimate for the exchange rate-distance interaction term is positive and significant, suggesting that the magnitude of the negative link between sales of Canadian retailers and a Canadian real appreciation diminishes with distance to the border. We also note that the estimates for the exchange rate terms are very similar between the full sample and the sample restricted to smaller firms. For tax rates, we find that higher Canadian sales tax rates are associated with lower sales for Canadian retailers. Our estimates of the effect of the US sales tax rate on Canadian retailers' sales are insignificant. These results are generally consistent with the demand-side effects associated with cross-border shopping. An increase in relative prices in Canada due to either a real appreciation or higher Canadian sales taxes is associated with a fall in Canadian retailers' sales.

Turning to our industry sub-groups, the last three columns of Table 3 present results from regressions of equation (1) with all right-hand side variables included. For all groups, the coefficient estimate for the

²³When computing industry sales, the sales of firm f are excluded.

²⁴In alternative specifications, we used year dummies to control for time specific effects. The estimated exchange rate effects are qualitatively similar. We chose to include a time trend instead of year dummies as year dummies would account for the effect of Canadian sales tax rate change, which has little variation across industries. As the introduction of Goods and Services Tax is an important change that occurred during the sample period, we chose a specification that allows us to identify its effect while controlling for changes in macroeconomic conditions by including industry, province, state, and aggregate level controls.

real exchange rate is negative and significant. In addition, the distance interaction term is positive for all groups but insignificant for Food Services and Accommodation. As with overall retail, higher Canadian sales tax rates are associated with fewer Canadian retail sales in each industry group. The estimates for US sales taxes are mixed and generally insignificant. Thus, our results for the industry groups are similar to our results for overall retail with respect to exchange rate movements: real appreciations of the Canadian dollar are associated with decreases in Canadian retailers' sales with the effects diminishing for retailers located farther from the border.

We can also use the number of employees as a measure of firm size. Our measure of the number of employees is the logarithm of the typical number of employees at firm f located in region r operating in industry i at time t . Employment is also estimated using panel regressions with firm and province fixed effects and a subset of the results are reported in Table 4 with full results presented in Appendix B.

As with the results for sales in overall retail, we see a negative and significant effect of a real currency appreciation on employment in all specifications with significantly diminishing effects as distance to the border increases. We find similar exchange rate effects for grocery stores and gasoline stations but a weaker negative link in apparel and general retail and an insignificant effect in food services and accommodation. In contrast to the sales results, a rise in Canadian taxes has an insignificant impact on employment in the overall small firm sample. However, the Canadian sales tax coefficients are consistently negative across industry groups while the US counterparts are positive.

Combining the sales and employment results for overall retail, we find a significant negative effect of a real currency appreciation on both measures of intensive margin responses, although the effect on sales is stronger. In addition, the results indicate that the strength of these effects diminishes with distance to the border. We find similar results for our sub-industries with the strongest effects in grocery stores and gasoline stations. We also note that distance is a smaller modifier for firms in food and accommodation, perhaps because travellers chose their destinations for vacation or business based primarily on location attributes unrelated to border proximity.

To assess how exchange rate movements affect firm profits, we estimate an equation similar to equation (1):

$$\ln \pi_{firt} = \alpha + (\beta_1 + \beta_2 \ln d_f) \ln RER_{it} + \beta_3 \ln d_f + \rho \ln Ctax_{irt} + \tau \ln Utax_{irt} + \gamma x_{ft-1} + \delta z_{irt-1} + \lambda t + \varepsilon_{firt}, \quad (2)$$

where π_{firt} is the logarithm of firm profits. As detailed in Baggs and Brander (2006), the profit measure in the T2LEAP data set is accounting profit (taxable profit) and when firms experience a loss, the profits are sometimes recorded as zeros. A small number of firms report negative profits but for the firms that report zero profits, we are unable to determine if profits were zero or if there was a loss. Hence, we set the zero and negative profit observations to one before taking logs. To deal with this data censoring problem, we estimate equation (2) using a correlated random-effects panel Tobit model with industry and province fixed effects (see Wooldridge (2010)).²⁵ We do not include firm fixed effects in the panel Tobit model so as to avoid an incidental parameters problem and so we include the distance of the firm from the border as a separate regressor in the profit equation. Control variables are the same as described above except we do not include firm leverage and we add a control variable for firm labor productivity to account for the positive association between firm productivity and profits as documented in the firm heterogeneity literature. We construct a firm-level labor productivity index by measuring the deviation of the logarithm of a firm’s sales to employment ratio from a reference firm in the base year (1985) where the reference firm has sales and employment at the industry mean.²⁶

Examining the results for firm profits presented in Table 5, the exchange rate effect appears similar to that for firm sales: a negative and significant association which is significantly weaker for firms located farther away from the border.²⁷ We also find that, consistent with our sales results, increases in Canadian sales taxes reduce Canadian retailers’ profits. In contrast to the findings for sales and employment, we observe the surprising result that increases in US sales taxes are associated with decreases in Canadian retailers’ profits.

To close this section, we focus on our samples of small firms to further examine the economic signif-

²⁵While a random effect Tobit model can help deal with the data censoring problem, its strict assumption that the unobserved errors cannot be correlated with covariates may be violated. Here, we adopt a *correlated* random effect (CRE) Tobit model that allows for a certain degree of correlation between covariates and the unobserved errors. It can be implemented by including time averages of time varying covariates in a standard random effects Tobit model. We have estimated the profit equation using both standard and correlated random-effects Tobit models and the Wald test rejects the null hypothesis that coefficients of time average variables are jointly insignificant. Thus, we choose to use the CRE Tobit model.

²⁶A more detailed discussion of this measure can be found in Good, Nadiri and Sickles (1997). According to Pavcnik (2002), this method is adopted to ensure that the productivity measure is transitive and insensitive to units. Our regression results on profitability are similar if we exclude this variable. The inclusion of this control in the sales and employment equations could result in an endogeneity problem, hence this variable was excluded from our earlier analysis.

²⁷The coefficient estimates for the direct distance term are negative for the full sample and negative and significant for small retailers and the food and accommodation subsample. These results suggest that some retailers located farther away from the border have lower profits than those located near the border and this effect is mitigated by higher values of the Canadian dollar. This may be due to smaller markets farther from the border and/or differential access to imported inputs for firms closer to the border. In Section 4, we will further explore the role of imported inputs.

ificance of estimated real exchange rate effects on firm-level sales, employment, and profits and the magnitude at which those effects diminish for firms located farther away from the border. Here we restrict attention to our sample of firms with ten employees or less because, as discussed previously, our distance measure is most likely to reflect distance from the border to an actual retail store. The calculations below are based on the coefficient estimates reported in columns (6)-(9) of Tables 3-5.

We first plot the estimated elasticities with respect to the real exchange rate for each of our variables of interest as a function of distance. Point estimates and 95% confidence intervals for these elasticities for small firms in overall retail, and in each of our sub-industries, are depicted in Figure 2 for sales, Figure 3 for employment, and Figure 4 for profits. Figure 2 demonstrates the negative relationship between sales and a real Canadian dollar appreciation in all of our industry groupings for firms located at the border. In addition, for all industries except food and accommodation, we see a significantly diminishing effect for firms farther from the border with the most striking decline occurring between one and fifty kilometers from the border. As depicted in Figure 3, for overall retail and grocery stores and gasoline stations, we observe similar qualitative results for employment but the magnitudes are smaller than for sales. We see a small positive impact in apparel and general retail and a negative effect in food and accommodation employment, with effects that increase slightly with distance from the border. Finally, Figure 4 shows the negative effect of a real Canadian dollar appreciation on retailers' profits in all groupings with significant rates of decline for firms located farther from the border.

To explore the economic magnitude of our results under the hypothesis that real exchange rate movements cause firm-level responses, we calculate the predicted effect on sales, employment and profits for exchange rate movements of the magnitude observed during our sample period for a "representative" small firm at different distances from the border with all other variables at their means. The entries in Table 6 are the estimated percentage change in sales, employment, and profits respectively, for representative firms at different distances from the border from 1986-1991, when the Canadian dollar *appreciated* in real terms by approximately 21% and also from 1991-1997, when it *depreciated* by 22%.

As the first two columns of that table demonstrate, for a typical small retail firm located one kilometer from the border and with other independent variables at their mean value, an increase in the real exchange rate from the 1986 level to the 1991 level leads to a reduction in sales of 11.8%, a decrease in employment of 6.5%, and a fall in profits of 87.8% over this five year period. The predicted reduction in sales,

employment, and profits caused by a higher value of the Canadian dollar is approximately 3, 4, and 37 percentage points lower, respectively, if the firm is located 200 kilometers from the border. The Canadian dollar depreciation experienced between 1991 and 1997 results in a predicted increase in sales of 15.3%, a rise in employment of 8.4%, and an increase in profits of 113.8% for firms closest to the border, while firms located 200 kilometers from the border experienced smaller increases (11.3%, 2.9%, and 65.8% respectively).

The remaining columns of Table 6 reports results for the sub-industries we study. With the exception of employment responses in the last two sub-industries in the table, we see a similar pattern in the sub-industries as in overall retail: negative effects of a Canadian real appreciation which significantly diminish with distance from the border. The changes across the two time periods for a small representative firm in food and accommodation are lower than for a representative firm in overall retail but are higher for grocery stores and gasoline stations. Focusing on grocery stores and gasoline stations, we see that a firm located one kilometer from the border faced a decrease in sales of 19.4%, a fall in employment of 12.9%, and a reduction of 108.2% in profits when the Canadian dollar appreciated from its 1986 to 1991 levels, while a firm located 200 kilometers away from the border experienced only a 11.6%, 1.1%, and a 72.0% reduction in sales, employment, and profits respectively. These results suggest that sales, employment, and profit adjustments based on exchange rate fluctuations are quite substantial and strongly influenced by proximity to the border, indicating the possibility of a significant cross-border shopping effect. The employment responses in apparel and general retail and food and accommodation are similar to the other industries for firms located one kilometer from the border but as noted in Figures 3.3-3.4, responses increase with distance from the border.

Overall, our results suggest that under the hypothesis that real exchange rate movements cause retailer responses, the effect of the historical movements in exchange rates over our period of study on the size and profitability of retail firms is substantial, is more significant for profits than for sales which, in turn, is larger than for employment. The larger adjustment in profits may suggest that firms absorb a portion of an exchange rate shock in their markups, which is an interesting result when considering models of firm-level dynamics. In addition, typically the effects of real exchange rate movements noticeably diminishes as firms locate farther from the border.

Our results also suggest that the negative effect of a currency appreciation and the positive effect

of a currency depreciation persist for long distances (with the exceptions of the employment response in apparel and general retail and in food and accommodation). The exchange rate effect of a currency appreciation on the employment of overall retailers, for example, remains negative at 200 kilometers and the sign does not reverse until 1,911 kilometers, which is outside the relevant range.²⁸ The exchange rate effect on profits and sales diminish at an even slower rate.

3.2 Number of Firms and Firm Survival

We now turn our attention to extensive margin responses by examining the impact of real exchange rates on the number of firms operating in an industry and firms' probability of survival. We begin by analyzing the effect of exchange rate movements on the number of firms operating in Canadian retail industries as it is the most direct measure of the extensive margin. For this purpose, we group retail firms by industry (at the 3-digit SIC level) and by region where a region is defined by a province and a distance category to the US border. Distance categories are as follows: 0-8km; 8-25km; 25-50km; 50-100km; six categories of fifty kilometer spans between 100km and 400km and a final category of firms which are greater than 400 kilometers from the border. The regression equation is specified as:

$$N_{jit} = \alpha + (\beta_1 + \beta_2 \ln d_{ji}) \ln RER_{it} + \beta_3 \ln d_{ji} + \rho \ln Ctax_{jt} + \tau \ln Utax_{jt} + \delta z_{jit-1} + \lambda t + \epsilon_{jit}, \quad (3)$$

where N_{jit} is the number of retail firms in group j (where group j is in industry i), d_{ji} is the initial median distance from the border of firms in group j , and the real exchange rate and tax terms are as in previous specifications. The remaining independent variables in z_{jit-1} are group, industry, and aggregate control variables including lagged group median assets, lagged group median profit to sales ratio, lagged industry sales, lagged industry concentration, lagged industry real household final expenditure, lagged relative provincial GDP, lagged real individual median income, lagged real GDP of the nearest state to the group, and the real interest rate. We also include a time trend and industry and province fixed effects. Finally, ϵ_{jit} is an error term.

Because the number of firms in a group is count data, we use Poisson regression methods and report

²⁸For simplification, suppose that the dependent variable is only affected by the exchange rate and a term interacting the exchange rate and distance, that is, $\ln y = \beta_1 \ln RER + \beta_2 \ln d * \ln RER$. Using this specification, the exchange rate effect is: $\partial \ln y / \partial \ln RER = \beta_1 + \beta_2 \ln d$. It follows that $\partial \ln y / \partial \ln RER = 0$ if $d = \exp(-\beta_1 / \beta_2)$.

results in Table 7 for our overall retail samples and for each industry sub-grouping. For the sample of overall small retailers and groceries and gasoline stations, the results suggest that a real appreciation of the Canadian dollar is associated with a small increase in the number of firms. The coefficients on the real exchange rate for all other samples and the coefficient on the distance interaction term are all insignificant. Overall, our results do not suggest a strong relationship between real exchange rate movements and the number of firms operating in an industry-region.²⁹

To analyze the effect of exchange rate movements on firm survival, we adopt a linear probability model (LPM) which can be specified as:

$$Survive_{firt} = \alpha + (\beta_1 + \beta_2 \ln d_f) \ln RER_{it} + \beta_3 \ln d_f + \rho \ln Ctax_{irt} + \tau \ln Utax_{irt} + \gamma x_{ft-1} + \delta z_{irt-1} + \lambda t + \epsilon_{firt} \quad (4)$$

where $Survive_{firt}$ is a 0-1 dummy variable that indicates firm survival at the end of year t . Independent variables are as described in previous sections and we include industry and province fixed effects here. We employ the LPM because the coefficient on the interaction between the exchange rate and distance has a straight-forward interpretation and as Angrist and Pischke (2009) show the marginal effects obtained from non-linear models (such as probit) are robustly very close to the ones from LPM.³⁰ A drawback of using the LPM approach, however, is that it may predict a probability above one or below zero. In our estimation, three percent of our observations have probability of survival predictions outside of $[0, 1]$.

For both samples of overall retailers, the results in Table 8 suggest that a real appreciation of the Canadian dollar is associated with a small increase in the probability of firm survival with insignificant interaction terms suggesting that a firm's distance from the border does not affect the relationship between the exchange rate and survival.³¹ For the industry sub-groups, the real exchange rate coefficients for firm survival are insignificant except for food services and accommodation where the estimate is positive. The distance interaction results are mixed. Overall, our survival results are not strong.

To summarize our baseline findings, we find that a real appreciation of the Canadian dollar reduces

²⁹Alternatively, we estimated equation (3) using ordinary least squares and the signs and significance of coefficient estimates are very similar (while the coefficient estimates are not directly comparable).

³⁰If a probit or logit model is adopted instead, methods proposed by Ai and Norton (2003) and Norton, Wang, and Ai (2004) can be used to obtain correct marginal effects for the term interacting the exchange rate with distance. In unreported results, we have estimated equation(4) using a probit and a logit model with correction for marginal effects and the results are qualitatively similar.

³¹We note that for both of our extensive margin results, that the coefficient estimate for the separate distance variable is generally negative and insignificant.

firm-level sales, employment, and profits in Canadian retail industries. We also find evidence that the strength of those effects diminish with a firm's distance to the border. A possible explanation for these findings is that an increase in relative prices in Canada leads to an increase in cross-border shopping by Canadians and Canadian retail responds to this fall in demand along the intensive margin through a decrease in sales, employment, and profits. Firms located closer to the border are more exposed to demand fluctuations resulting from changes in cross-border shopping patterns and therefore exhibit larger responses to real exchange rate movements. We do not find strong effects on the number of operating firms nor on the probability of firm survival indicating that firms may respond to exchange rate movements primarily along the intensive margin. We investigate the robustness of these intensive margin relationships in the next section.

4 Alternative Specifications

4.1 Demand and Supply Side Effects

In the above analysis, we estimated the overall effects of real exchange rate movements on various measures of Canadian retailers' performance. In this section, we seek to disentangle demand side effects from supply side effects on intensive margin adjustments.

In our first exercise, we use a common proxy for cross-border shopping; same-day cross-border trips by automobile by Canadian residents returning from the US and by US residents into Canada, and directly examine their effects on Canadian retailers. The equations estimated are very similar to equations (1) and (2) but with same-day trips by Canadians and Americans entering separately in place of the real exchange rate. Table 9 reports these results. Overall, our findings suggest that an increase in Canadian cross-border trips and a decrease in US cross-border trips reduce the sales, employment and profits of Canadian retailers. In addition, the magnitude of the relationships between cross-border trips and a retailer's performance measures diminishes with the distance of a retailer from the border. These results, combined with the evidence discussed in the introduction of correlation between cross-border trips and exchange rates are strongly suggestive of the presence of a demand side effect of exchange rate movements on Canadian retailers.

In our second exercise, we attempt to account for the supply side effects of exchange rate fluctuations

by examining the role of tradable inputs used by retailers. We compile the share of total expenditures on inputs attributable to tradable inputs for 1997 to 2008 based on input-output tables published by Statistics Canada. These shares are available by province for the total retail trade sector and for the food and accommodation industry group. We interact the time-series average trade share with the real exchange rate and exploit cross-province variation to examine the possibility that the exchange rate effect varies with reliance on traded intermediate inputs.³² The regression equations are as specified in equations (1) and (2) with an additional term given by $\theta \ln share_{ir} * \ln RER_{it}$. We use the share for total retail for the overall small retail, grocery stores and gasoline stations, and apparel and general retail regressions and the share for food and accommodation for regressions for that sub-industry. The results are presented in Table 10.

The main results above continue to hold and the coefficient estimates for the term interacting the real exchange rate with the share of importable inputs are positive and significant for sales, positive but insignificant for employment, and mixed for profits. We would argue that the results for overall retail and food and accommodation are the most reliable given that we do not have specific share measures for the other two sub-industries so we focus on those results. Those results suggest that the negative effect of the real exchange rate is mitigated by reliance on traded inputs. As the negative effect of the real exchange rate is decreased by both distance to the border and reliance on importable inputs, we also calculate the net exchange rate effect at 1 kilometer from the border when the share of tradable inputs is at its mean. As reported in Table 10, the net exchange rate effect is negative for all three performance measures in our focus industries.³³

To summarize our findings, our results indicate that movements in the real exchange rate have both demand- and supply-side effects on retailers. However, the negative demand-side effects of a real Canadian dollar appreciation tend to dominate the positive supply-side effects. It would be interesting to pursue this issue further, particularly with more disaggregated data on the importance of imported inputs for retailers.

³²The mean and relative standard deviation of the time-series averages of these shares across provinces equals .093 and 9.23% respectively for overall retail and .267 and 3.03% for food and accommodation.

³³In unreported results, we calculate estimated real exchange rate elasticities with the share of tradable inputs at the mean and at different distance to the border and the real exchange rate elasticity remains negative at the farthest distance we explored, 400 kilometers, for our focus industries.

4.2 General Robustness Exercises

In this section, we summarize our findings from alternative empirical specifications primarily designed to examine the robustness of our main findings that real exchange rate appreciations are associated with a decrease in Canadian retail firms' sales, employment, and profits, with diminishing effects farther from the border. We present our robustness findings in Table 11 where, in the interest of space, we report a subset of coefficient estimates for our sample of small overall retail firms for alternate empirical specifications. Full estimation results for small firms in overall retail are presented in Appendix B and estimation results for our industry sub-groupings are available upon request from the authors.³⁴

In the baseline specifications above for small firms, we used sub-samples of firms with ten or fewer employees. In the first column of Table 11, we report results from a sample with firms with twenty employees or less. These firms account for approximately 40% of employment in overall retail and between 30% and 35% of employment in the sub-groups we consider. The table indicates that the two results above are robust to this alternate cutoff point for "small" firms.

To determine if our results are sensitive to our use of industry-specific real exchange rates, we replaced industry-specific real exchange rates in our regressions with the nominal exchange rate. The results are reported in the second column of Table 11 and they are very similar to the baseline results.³⁵

In addition to the introduction of the Goods and Services Tax in 1991, there were two other policy changes in the period studied that may have affected the demand and supply conditions facing Canadian retailers: the implementation of the Canada-US Free Trade Agreement in 1989 (CUSFTA) and the relaxation of restrictions on Sunday shopping that took place in early 1990s. The implementation of the CUSFTA not only affected the cross-border flows of travelers (Ferris, 2000) but also changed the relative price of goods between the US and Canada. The prohibition of Sunday shopping in Canada is often cited as one of the factors that made US shopping attractive to Canadian residents (see, for instance, Ferris, 2000 and Di Matteo and Di Matteo, 1996). The prohibition was removed in the early 1990s with the

³⁴We have also tried the following specifications: (1) excluding firm-level control variables; (2) including year dummies, province dummies, terms interacting year dummies with industry dummies and terms interacting province dummies with industry dummies instead of exchange rate and industry/province controls; and (3) sales, employment, profits, and probability of survival regressions all with the exact same set of firm-level controls. In these specifications, the direct real exchange rate results (when included) and the distance/real exchange rate interaction estimates are qualitatively similar to the baseline results.

³⁵In addition, we have replaced industry specific real exchange rate with an aggregate real exchange rate measure using the Canadian and US consumer price indexes for all goods except energy. The (unreported) results are also robust.

exact dates of the change in the laws varying across provinces.

To examine the impact of these changes, we used a dummy indicating 1989 and after to control for the effects of the CUSFTA and changes in Sunday shopping regulations. The results are reported in the third column of Table 11. The main results above continue to hold in that specification and the coefficient estimates for the 1989 dummy are negative and significant for sales and employment for three of our four industry groupings. This result is generally consistent with the view that the implementation of the CUSFTA (perhaps along with the entry of big-box retailers into Canada in the early 1990's) made the Canadian retail sector face more severe competition, leading to a reduction in sales and employment of smaller Canadian retailers.

5 Conclusions and Extensions

This paper has empirically investigated the heterogeneous response along both the intensive and extensive margins of Canadian retail firms to a particular exogenous shock, a real exchange rate fluctuation. As discussed above, one should expect exchange rate movements to act as both demand-side and supply-side shocks for retailers. From a demand perspective, exchange rate movements influence consumer decisions to shop across the Canada-US border and this, in turn, affects the demand facing Canadian retailers. From a supply-side perspective, the exchange rate affects the cost of imported goods sold by Canadian retailers, and this cost shock may also have a significant impact on the performance of retailers.

Our empirical results suggest that there are significant negative effects of higher values of the Canadian dollar on Canadian retailers' sales, employment, and profits. The strongest effect is on profits, suggesting that firms may absorb a considerable portion of an exchange rate shock in their markups, which is a particularly interesting result when considering models of firms' dynamic responses to shocks. We also find that the strength of the relationships between real exchange rates and firms' performance measures diminishes for firms located farther away from the border. The negative association between distance to border and the strength of these relationships suggests that the exchange rate effect on retail firms is likely to be driven by consumer cross-border shopping decisions. Our findings also show that the rate at which the magnitude of these effects diminish with distance to the border depends on the dependent variable and industry of interest. For example, the relationship with employment diminishes at a strikingly faster

rate than that with sales or profits.

Finally, a surprising empirical finding is that our results suggest the possibility that a Canadian dollar appreciation may be weakly associated with a rise in the number of firms and a rise in a firm's probability of survival. However the latter part of our period of study (when the Canadian dollar experienced a large depreciation) was one in which there was significant restructuring of the Canadian retail industry (partly due to entry of large US retailers) and our results regarding extensive margin adjustments requires further investigation.

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Appendix A: Elasticities with Respect to the Exchange Rate

While the formula for the marginal effects of a change in the exchange rate is straightforward for linear models (such as the model we adopt for estimating the sales and employment equations), the formula for a panel Tobit model (adopted for estimating the profits equation) requires further elaboration. According to Bowen (2010) and Cameron and Trivedi (2005), the censored mean in a Tobit model can be specified as:

$$E(y|x) = \Phi(x'\beta/\sigma)x'\beta + \sigma\phi(x'\beta/\sigma), \quad (5)$$

where $y = \ln profit_{it}$, $\Phi()$ is the standard normal cumulative density function and $\phi()$ is the standard normal density function. In our specification, there are three variables involved in the interaction terms: distance (x_1), the exchange rate (x_2) and US GDP growth (x_3), so $x'\beta$ can be written as:

$$x'\beta = \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_{12}x_1x_2 + \beta_{13}x_1x_3 + \beta_4x_4 + \dots \quad (6)$$

Based on equations (5) and (6), the marginal effect of the exchange rate ($x_2 = \ln RER_{it}$ and $x_1 = \ln d_k$) at different distances to the border can be specified as:

$$\frac{\partial E(y|x, x_1 = \ln d_k)}{\partial x_2} = (\beta_2 + \beta_{12}x_1)\Phi(x'\beta/\sigma), \quad (7)$$

where d_k is a specific distance ($k = 1, 50, 100, 150, 200, 250, 300, 350,$ and 400km) and all other independent variables are evaluated at their means.

Appendix B: Full Estimation Results

Tables B1-B5 report the full set of estimation results for Tables 3, 4, 5, 7, and 8. Tables B6-B8 report the full estimation results for Table 9, Tables B9-B11 report full results for Table 10, and Tables B12-B14 report the full set estimation results for Table 11.

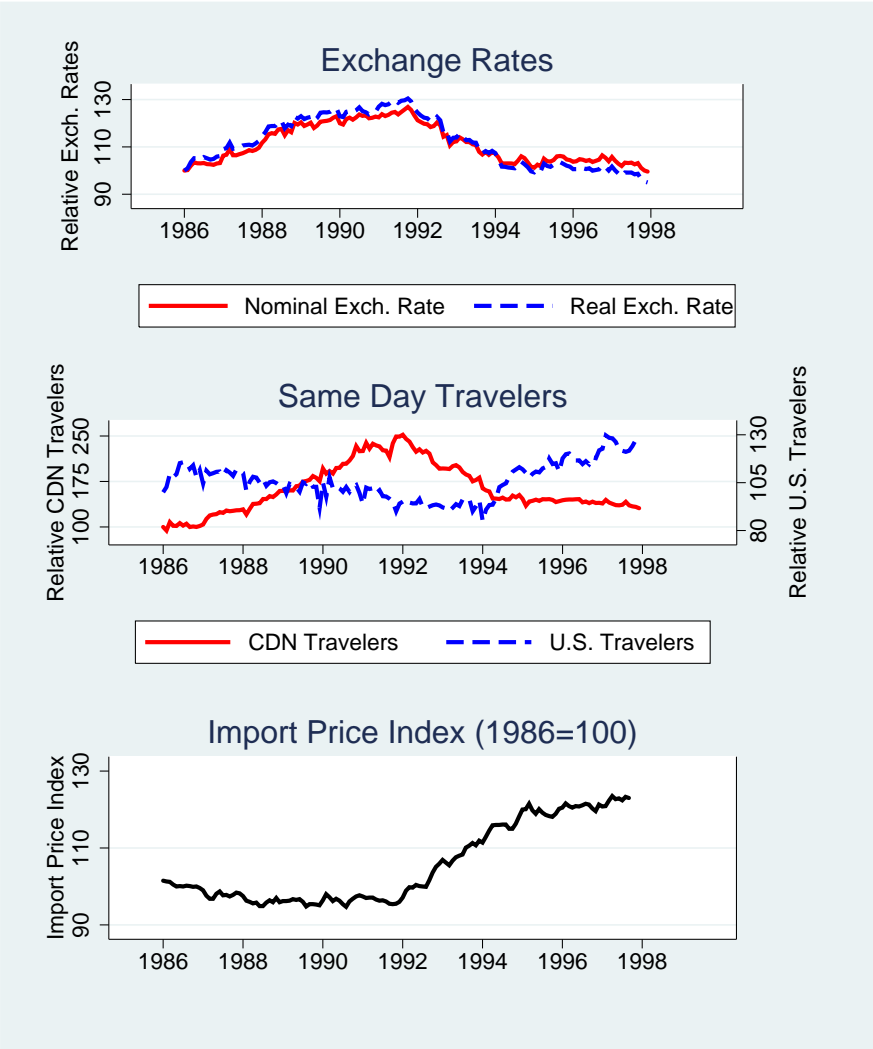


Figure 1: Exchange Rates, Same Day Cross-Border Trips, and Import Prices

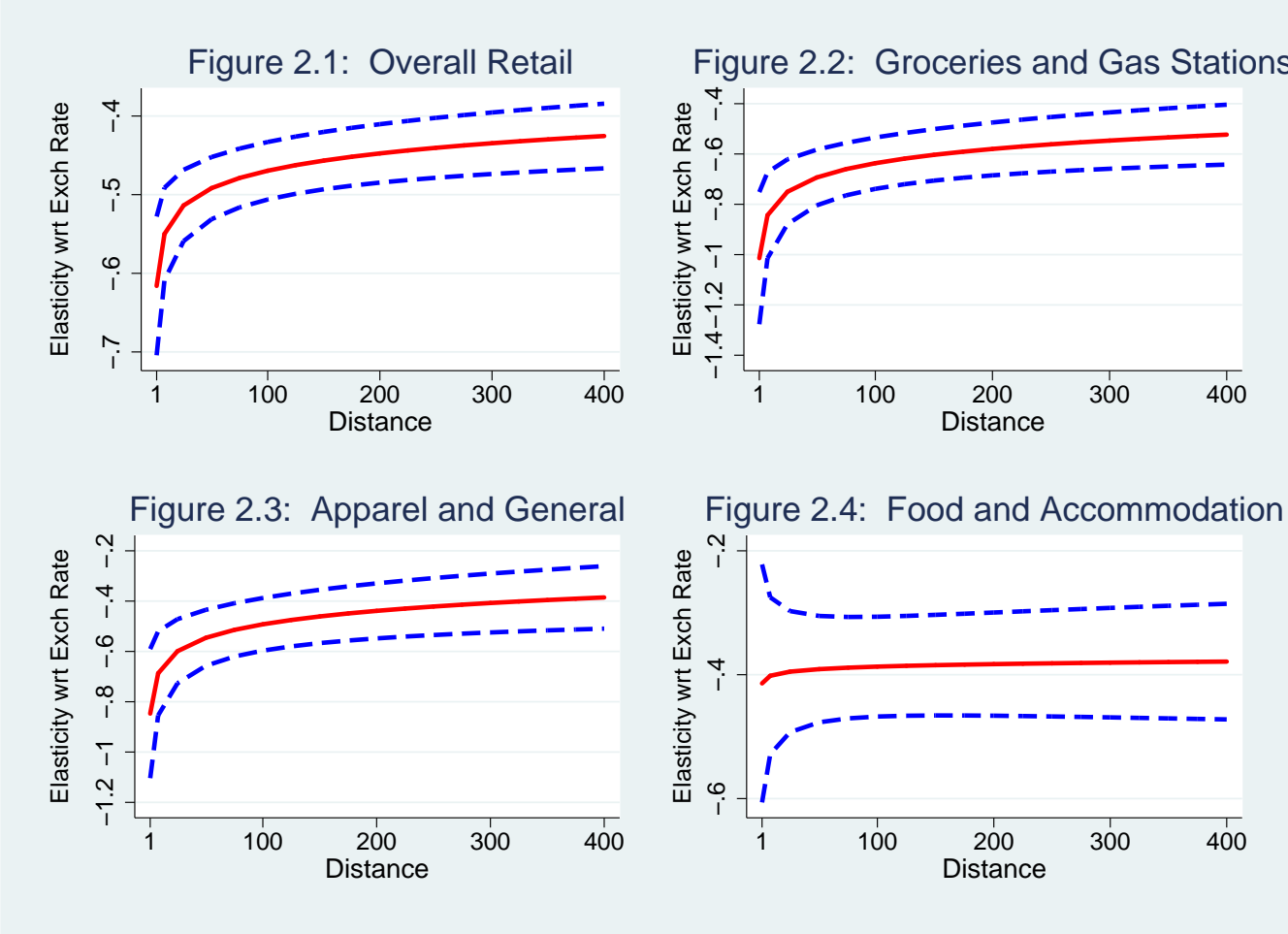


Figure 2: Estimated Sales Elasticities

Figure 3.1: Overall Retail

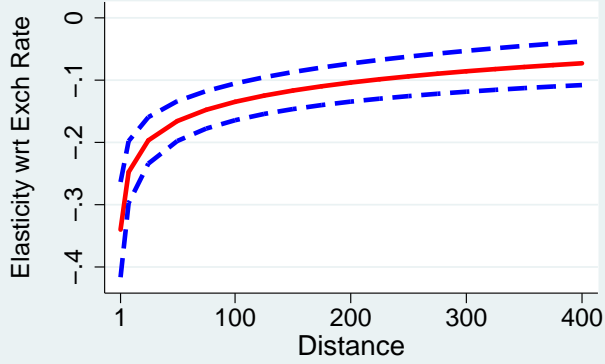


Figure 3.2: Groceries and Gas Stations

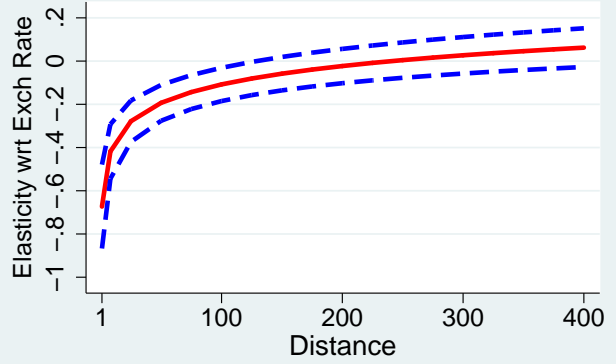


Figure 3.3: Apparel and General

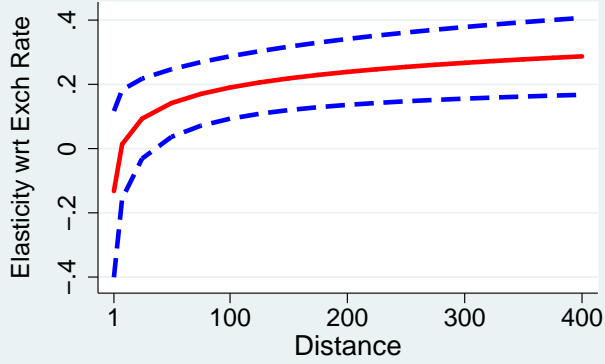


Figure 3.4: Food and Accommodation

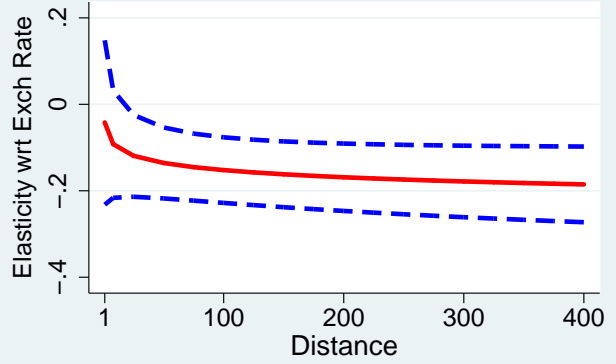


Figure 3: Estimated Employment Elasticities

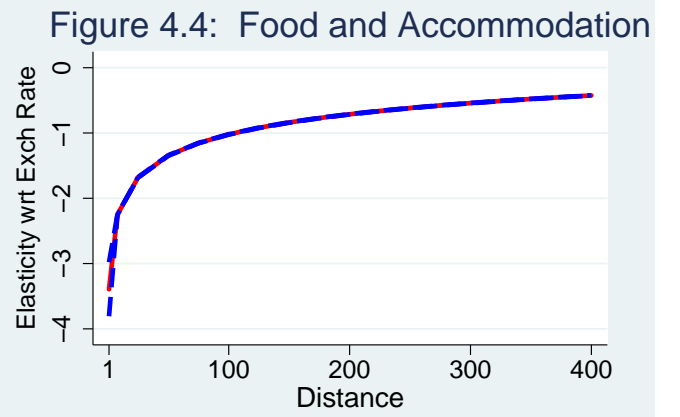
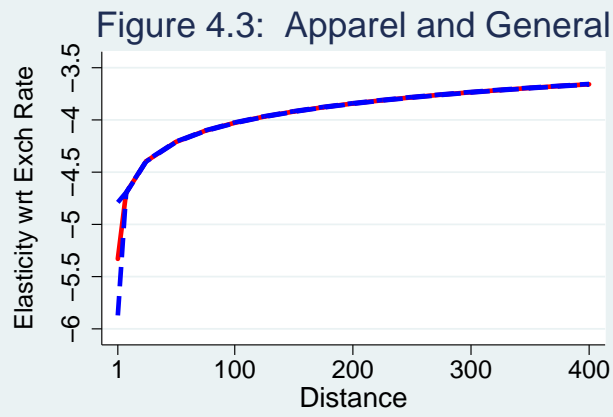
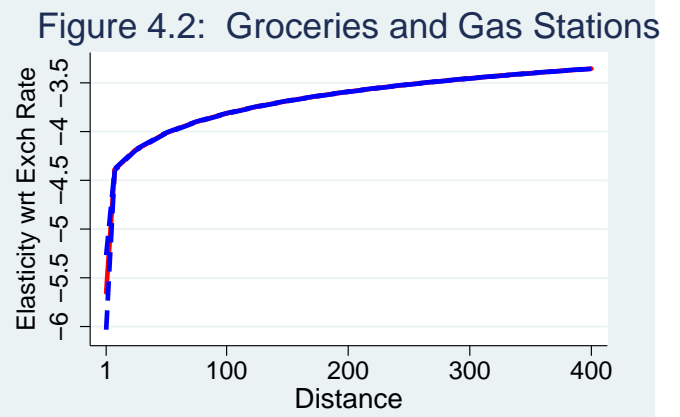
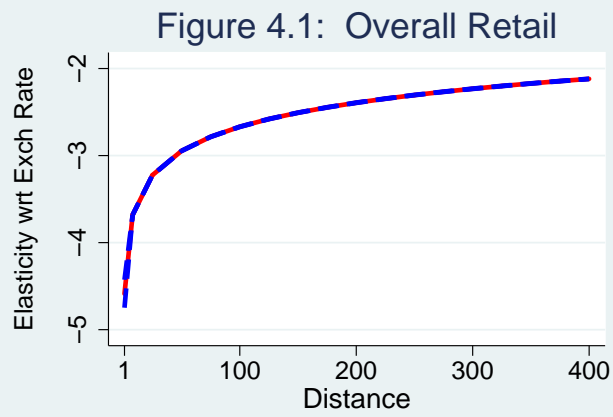


Figure 4: Estimated Profit Elasticities

Table 1: Descriptive Statistics
1986-1997

	Overall Retail: All Firms	Overall Retail: Small Firms	Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
	(1)	(2)	(3)	(4)	(5)
Mean Number of Firms	96,901.14 (8001.27)	69,717.42 (6654.95)	16,662.87 (1132.78)	6,604.99 (95.57)	14,482.43 (2467.46)
Mean Firm Sales	1744.74 (46769.94)	412.38 (1090.83)	550.83 (639.84)	331.22 (2478.48)	212.98 (403.32)
Mean Number of Employees	18.91 (423.98)	4.66 (11.29)	5.15 (4.57)	4.27 (32.07)	5.51 (6.32)
Mean Firm Profits	243.01 (6190.62)	92.31 (6250.25)	78.86 (101.70)	76.57 (106.01)	67.46 (96.48)
Mean Distance to Border (Km)	163.20 (580.36)	172.42 (643.63)	190.83 (872.24)	171.84 (817.91)	180.41 (635.31)
Mean Firm Age (Years)	6.28 (3.64)	6.05 (3.60)	5.94 (3.55)	6.03 (3.55)	5.48 (3.50)
Mean Leverage	0.99 (9.02)	1.01 (3.27)	0.96 (2.61)	1.04 (3.72)	1.27 (4.04)
Mean Sales to Employee Ratio	114.14 (1250.32)	119.08 (582.78)	134.03 (278.73)	104.50 (240.07)	53.90 (166.28)
Mean Industry Real Exchange Rate	0.79 (0.07)	0.76 (0.08)	0.72 (0.07)	0.80 (0.06)	0.78 (0.10)
Mean CR4	0.22 (0.18)	0.22 (0.19)	0.46 (0.07)	0.50 (0.16)	0.20 (0.09)
No. of Observations	1,154,532	828,635	140,611	79,243	168,420

Notes: (1) Columns (2)-(5) are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Firm age is truncated at fourteen years because we cannot observe firms before the beginning of the sample. (3) Sales, profits and labor productivity are in thousands of 1986 constant Canadian dollars.

Table 2: Distribution of Firms by Distance to the Border

Distance (kms.)	Percentage of Firms		Distance (kms.)	Percentage of Firms	
	Distribution by Group			Cumulative Distribution	
	Full Sample	Small Sample		Full Sample	Small Sample
≤ 8	3.24	3.16	≤ 8	3.24	3.16
8-25	4.98	5.01	≤ 25	8.23	8.17
25-50	13.06	12.87	≤ 50	21.29	21.04
50-100	28.42	28.34	≤ 100	49.71	49.38
100-150	18.23	18.41	≤ 150	67.94	67.79
150-200	10.35	10.55	≤ 200	78.29	78.34
200-250	3.76	3.85	≤ 250	82.05	82.19
250-300	2.75	2.67	≤ 300	84.80	84.86
300-350	2.91	2.18	≤ 350	87.71	87.04
350-400	1.19	1.22	≤ 400	88.90	88.26
Above 400	11.10	11.74	All	100.00	100.00

Table 3: Firm Sales

Model: Panel Regression with Fixed Effects

	Overall Retail: All Firms			Overall Retail: Small Firms			Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RER	-0.605** (0.013)	-0.753** (0.036)	-0.613** (0.038)	-0.593** (0.015)	-0.788** (0.043)	-0.616** (0.045)	-1.014** (0.134)	-0.847** (0.131)	-0.414** (0.098)
RER*Dist		0.032** (0.007)	0.025** (0.007)		0.042** (0.009)	0.032** (0.009)	0.082** (0.026)	0.077** (0.026)	0.006 (0.019)
Cdn Tax			-0.811** (0.048)			-0.963** (0.057)	-1.458** (0.205)	-1.685** (0.176)	-1.217** (0.120)
Us Tax			0.179 (0.311)			0.813* (0.358)	6.712+ (3.567)	-0.987 (0.986)	-1.796* (0.760)
Includes Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	915,170	915,170	915,170	618,931	618,931	618,931	109,023	57,512	122,389

Notes: (1) Columns (4)-(9) are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and + at the 10% level. (4) Control variables include firm assets, firm leverage, firm age, industry concentration, industry sales, provincial real GDP, provincial median individual real income, provincial-industry real household final consumption expenditure, real GDP of the US adjacent state, a term interacting state GDP with distance, and the real interest rate. All control variables except firm age and the real interest rate are lagged. Firm and province fixed effects are also included. (5) Full results are reported in Appendix B.

Table 4: Firm Employment

Model: Panel Regression with Fixed Effects

	Overall Retail: All Firms			Overall Retail: Small Firms			Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RER	-0.163** (0.010)	-0.351** (0.031)	-0.337** (0.032)	-0.110** (0.013)	-0.332** (0.038)	-0.340** (0.039)	-0.673** (0.099)	-0.132 (0.137)	-0.042 (0.097)
RER*Dist		0.040** (0.006)	0.037** (0.006)		0.048** (0.008)	0.045** (0.008)	0.123** (0.019)	0.070* (0.027)	-0.024 (0.019)
Cdn Tax			-0.101* (0.040)			0.032 (0.049)	-0.626** (0.132)	-0.828** (0.165)	-0.216+ (0.111)
Us Tax			2.156** (0.210)			2.996** (0.252)	5.458* (2.507)	0.995 (0.808)	0.037 (0.521)
Include Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	915,795	915,795	915,795	619,237	619,237	619,237	109,062	57,545	122,439
R-squared	0.091	0.091	0.091	0.084	0.084	0.085	0.075	0.117	0.063

Notes: (1) Columns (4)-(9) are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and + at the 10% level. (4) Control variables include firm assets, firm leverage, firm age, industry concentration, industry sales, provincial real GDP, provincial median individual real income, province-industry real household final consumption expenditure, real GDP of the US adjacent state, a term interacting state GDP with distance, and the real interest rate. All control variables except firm age and the real interest rate are lagged. Firm and province fixed effects are also included. (5) Full results are reported in Appendix B.

Table 5: Firm Profits

Model: Panel Tobit with Correlated Random Effects

	Overall Retail: All Firms			Overall Retail: Small Firms			Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RER	-2.877** (0.026)	-4.814** (0.072)	-4.492** (0.074)	-3.000** (0.029)	-4.808** (0.080)	-4.587** (0.082)	-5.650** (0.195)	-5.330** (0.276)	-3.393** (0.211)
RER*Dist		0.417** (0.014)	0.412** (0.014)		0.389** (0.016)	0.386** (0.016)	0.377** (0.036)	0.270** (0.054)	0.474** (0.041)
Distance	-0.030 (0.040)	-0.036 (0.043)	-0.062 (0.043)	-0.100* (0.044)	-0.095* (0.048)	-0.114* (0.048)	0.167+ (0.100)	0.113 (0.127)	-0.448** (0.128)
Cdn Tax			-1.926** (0.098)			-1.340** (0.108)	-2.073** (0.337)	-0.653+ (0.334)	-4.723** (0.302)
Us Tax			-7.988** (0.437)			-5.719** (0.485)	7.214+ (4.000)	-6.229** (1.396)	-10.216** (1.209)
Include Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	918,615	918,615	918,615	621,327	621,327	621,327	109,522	57,711	123,018
Log-Likelihood	-1.593e+06	-1.593e+06	-1.592e+06	-1.013e+06	-1.013e+06	-1.013e+06	-176566	-90142	-197378

Notes: (1) Columns (4)-(9) are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and + at the 10% level. (4) Control variables include firm assets, firm age, firm productivity index, industry concentration, industry sales, provincial real GDP, provincial median individual real income, province-industry real household final consumption expenditure, real GDP of the US adjacent state, a term interacting state GDP with distance, and the real interest rate. All control variables except firm age and the real interest rate are lagged. Industry and province fixed effects are also included. (5) Full results are reported in Appendix B.

Table 6: Predicted Exchange Rate Effects (Percentage Change)

Distance from the Border	Overall Retail: Small Firms		Grocery Stores and Gasoline Stations		Apparel and General Retail		Food and Accommodation	
	1986-1991	1991-1997	1986-1991	1991-1997	1986-1991	1991-1997	1986-1991	1991-1997
Sales								
1km	-11.8	15.3	-19.4	25.2	-16.2	21.0	-7.9	10.3
8km	-10.5	13.6	-16.2	20.9	-13.2	17.0	-7.7	10.0
25km	-9.8	12.7	-14.4	18.6	-11.5	14.9	-7.6	9.8
50km	-9.4	12.2	-13.3	17.2	-10.4	13.5	-7.5	9.7
100km	-9.0	11.7	-12.2	15.8	-9.4	12.2	-7.4	9.6
200km	-8.7	11.3	-11.6	15.0	-8.8	11.4	-7.4	9.5
Employment								
1km	-6.5	8.4	-12.9	16.7	-2.5	3.3	-0.8	1.1
8km	-4.7	6.1	-8.0	10.4	0.3	-0.3	-1.8	2.3
25km	-3.8	4.9	-5.3	6.9	1.8	-2.3	-2.3	3.0
50km	-3.2	4.1	-3.7	4.8	2.7	-3.5	-2.6	3.4
100km	-2.6	3.3	-2.1	2.7	3.6	-4.7	-2.9	3.8
200km	-2.2	2.9	-1.1	1.4	4.2	-5.4	-3.1	4.0
Profits								
1km	-87.8	113.8	-108.2	140.2	-102.1	132.2	-65.0	84.2
8km	-72.5	93.9	-93.2	120.7	-91.3	118.3	-46.1	59.7
25km	-64.0	83.0	-85.0	110.1	-85.4	110.6	-35.7	46.3
50km	-58.9	76.3	-80.0	103.6	-81.8	106.0	-29.4	38.2
100km	-53.8	69.7	-75.0	97.1	-78.2	101.3	-23.2	30.0
200km	-50.8	65.8	-72.0	93.3	-76.1	98.6	-19.5	25.2

Table 7: Number of Firms

Model: Poisson Regression

	Overall Retail: All Firms			Overall Retail: Small Firms			Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RER	0.277*	0.754	0.714	0.338**	0.806+	0.847+	1.368*	0.900	1.307
	(0.107)	(0.542)	(0.554)	(0.123)	(0.485)	(0.497)	(0.643)	(0.760)	(0.811)
RER*Dist		-0.104	-0.104		-0.102	-0.103	-0.050	-0.178	-0.137
		(0.116)	(0.115)		(0.103)	(0.103)	(0.103)	(0.150)	(0.174)
Distance	-0.027	-0.055	-0.055	-0.025	-0.053	-0.053	-0.017	-0.078	-0.056
	(0.027)	(0.047)	(0.047)	(0.027)	(0.043)	(0.043)	(0.063)	(0.056)	(0.094)
Cdn Tax			0.413			0.012	-2.692	2.336**	1.994+
			(1.123)			(1.233)	(4.465)	(0.899)	(1.181)
US Tax			-0.392			-1.738	2.119	19.275*	31.389+
			(3.813)			(3.805)	(14.082)	(8.946)	(16.830)
Include Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	20,492	20,492	20,492	20,492	20,492	20,492	2,064	5,197	3,754
Log Likelihood	-931437	-931224	-931190	-701407	-701264	-701104	-92502	-65554	-142895

Notes: (1) Columns (4)-(9) are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Significance indicated by ** at the 1% level; * at the 5% level; and + at the 10% level. (3) Control variables include group median assets, group median profit-sales ratio, industry sales, industry concentration, industry real household final consumption expenditure, provincial real GDP, real median individual income, real GDP of US adjacent states, and the real interest rate. All variables are lagged except the real interest rate. Province and industry fixed effects (at the two-digit SIC level) and a time trend are also included. (4) Full results are reported in Appendix B.

Table 8: Firm Survival
Model: Linear Probability Model

	Overall Retail: All Firms			Overall Retail: Small Firms			Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RER	0.006+ (0.004)	0.018* (0.009)	0.008 (0.009)	0.030** (0.005)	0.033** (0.011)	0.025* (0.011)	0.001 (0.033)	0.058 (0.053)	0.054** (0.020)
RER*Dist		-0.003 (0.002)	-0.002 (0.002)		-0.001 (0.002)	-0.000 (0.002)	0.015* (0.006)	-0.015 (0.010)	-0.006 (0.004)
Distance	-0.003 (0.002)	-0.003+ (0.002)	-0.002 (0.002)	-0.000 (0.003)	-0.001 (0.003)	0.000 (0.003)	-0.000 (0.007)	0.005 (0.009)	0.002 (0.006)
Cdn Tax			0.068** (0.012)			0.056** (0.015)	0.054 (0.048)	0.016 (0.063)	0.250** (0.040)
Us Tax			0.042* (0.019)			0.035 (0.025)	0.226** (0.073)	0.249* (0.102)	-0.072 (0.067)
Include Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,042,655	1,042,655	1,042,655	718,935	718,935	718,935	127,960	68,112	149,838
R-squared	0.021	0.021	0.021	0.021	0.021	0.021	0.020	0.032	0.018

Notes: (1) Columns (4)-(9) are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and + at the 10% level. (4) Control variables include firm assets, firm labor productivity, firm leverage, firm age, industry concentration, industry sales, industry real household final consumption expenditure, provincial real GDP, real median individual income, real GDP of US adjacent states and a term interacting state GDP with distance, and the real interest rate. All control variables except firm age and the real interest rate are lagged. Province and industry-level fixed effects (at the 3-digit SIC level) and a time trend are also included. (5) Full results are reported in Appendix B.

Table 9: Effects of Same-Day Cross-Border Trips on Small Firms

	Overall Retail: Small Firms	Grocery Stores and Gasoline Stations	Apparel and General Retail	Food and Accommodation
	(1)	(2)	(3)	(4)
Sales				
Cnd Same-day Trips	-0.138** (0.011)	-0.161** (0.029)	-0.132** (0.029)	-0.147** (0.027)
× Dist	0.013** (0.002)	0.021** (0.006)	0.008 (0.006)	0.018** (0.006)
Us Same-day Trips	0.165** (0.015)	0.179** (0.037)	0.103* (0.040)	0.203** (0.036)
× Dist	-0.023** (0.003)	-0.027** (0.007)	-0.013 (0.009)	-0.032** (0.007)
Observations	618,931	109,023	57,512	122,389
R-squared	0.107	0.100	0.165	0.075
Employment				
Cnd Same-day Trips	-0.042** (0.010)	-0.160** (0.021)	-0.059* (0.030)	0.005 (0.023)
× Dist	0.007** (0.002)	0.025** (0.004)	0.009 (0.006)	-0.002 (0.005)
Us Same-day Trips	0.099** (0.012)	0.159** (0.027)	0.054 (0.041)	0.066* (0.029)
× Dist	-0.015** (0.003)	-0.025** (0.005)	-0.004 (0.008)	-0.010+ (0.006)
Observations	619,237	109,062	57,545	122,439
R-squared	0.084	0.075	0.116	0.063
Profits				
Cnd Same-day Trips	-0.783** (0.019)	-0.715** (0.042)	-0.710** (0.055)	-0.815** (0.048)
× Dist	0.091** (0.004)	0.096** (0.009)	0.059** (0.011)	0.111** (0.010)
Us Same-day Trips	0.733** (0.023)	0.760** (0.051)	0.408** (0.069)	0.686** (0.058)
× Dist	-0.109** (0.005)	-0.126** (0.010)	-0.039** (0.014)	-0.105** (0.012)
Distance	-0.092* (0.047)	0.018 (0.095)	0.108 (0.118)	-0.334** (0.128)
Observations	621,327	109,522	57,711	123,018
Log Likelihood	-1.016e+06	-177363	-90810	-197615

Notes: (1) Results are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and + at the 10% level. (4) Common control variables for all regressions include firm assets, firm age, industry concentration, industry sales, industry-province real household final consumption expenditure, province real GDP, province median individual real income, real GDP of the US adjacent state, a term interacting state GDP with distance, and the real interest rate. Sales and employment regressions also include firm leverage and firm and province fixed effects. Profit regressions also include a direct distance term, a firm productivity index, and industry and province fixed effects. All variables except firm age and the real interest rate are lagged and all regressions include a time trend. (5) Full results are reported in Appendix B.

Table 10: Tradable Input Shares

	Overall Retail: Small Firms	Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
Sales				
	(1)	(2)	(3)	(4)
RER	-0.683** (0.049)	-1.475** (0.424)	-1.718** (0.516)	-3.346** (0.990)
RER*Dist	0.031** (0.009)	0.072** (0.026)	0.062* (0.026)	0.013 (0.019)
RER*Share	0.005** (0.001)	0.056 (0.047)	0.105 ⁺ (0.0659)	0.108** (0.036)
Net RER Effect	-0.623** (0.045)	-0.971** (0.135)	-0.787** (0.133)	-0.434** (0.099)
Cdn Tax	-0.932** (0.057)	-1.454** (0.206)	-1.634** (0.178)	-1.289** (0.120)
US Tax	0.840* (0.358)	6.873 ⁺ (3.575)	-1.044 (0.989)	-1.553* (0.753)
Include Controls	YES	YES	YES	YES
Observations	618,931	109,023	57,512	122,389
R-Squared	0.111	0.103	0.171	0.079
Employment				
	(1)	(2)	(3)	(4)
RER	-0.364** (0.044)	-2.471** (0.346)	-4.127** (0.479)	-0.230 (0.979)
RER*Dist	0.044** (0.008)	0.089** (0.020)	0.000 (0.028)	-0.023 (0.019)
RER*Share	0.002 (0.001)	0.215 (0.039)	0.478 (0.055)	0.007 (0.035)
Net RER Effect	-0.343** (0.039)	0.225 (0.189)	0.123 (0.141)	-0.044 (0.098)
Cdn Tax	0.043 (0.048)	-0.524** (0.133)	-0.601** (0.165)	-0.217 ⁺ (0.112)
US Tax	3.005** (0.252)	5.316* (2.508)	0.601 (0.818)	0.063 (0.542)
Include Controls	YES	YES	YES	YES
Observations	619,237	109,062	57,545	122,439
R-Squared	0.085	0.076	0.120	0.063
Profits				
	(1)	(2)	(3)	(4)
RER	-5.458** (0.089)	-2.154** (0.606)	-4.343** (0.930)	-33.771** (2.199)
RER*Dist	0.377** (0.016)	0.447** (0.037)	0.291** (0.056)	0.555** (0.041)
RER*Share	0.064** (0.003)	-0.423** (0.069)	-0.423 (0.069)	1.113** (0.080)
Net RER Effect	-4.654** (0.082)	-7.456** (0.349)	-7.456** (0.349)	-3.718** (0.212)
Distance	-0.133* (0.048)	0.252* (0.103)	0.252* (0.103)	-0.489** (0.129)
Cdn Tax	-1.023** (0.109)	-2.206** (0.338)	-0.630 ⁺ (0.338)	-5.340** (0.307)
US Tax	-5.372** (0.485)	7.932* (3.989)	-5.989** (1.400)	-8.711** (1.211)
Include Controls	YES	YES	YES	YES
Observations	621,327	109,522	57,711	123,018
Log Likelihood	-1.012e+06	-0.176e+06	-90117	-0.197e+06

Notes: (1) Results are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and ⁺ at the 10% level. (4) The Net RER Effect is the estimated exchange rate effect when the share of traded inputs is at its mean and distance is held at 1 kilometer. (5) Common control variables for all regressions include firm assets, firm age, industry concentration, industry sales, industry-province real household final consumption expenditure, province real GDP, province median individual real income, real GDP of the US adjacent state, a term interacting state GDP with distance, and the real interest rate. Sales and employment regressions also include firm leverage and firm and province fixed effects. Profit regressions also include a direct distance term, a firm productivity index, and industry and province fixed effects. All variables except firm size and the real interest rate are lagged and all regressions include a time trend. (6) Full results are reported in Appendix B.

Table 11: Alternate Specifications for Overall Retail: Small Firms

	≤ 20 Employees	Nominal ER	Year 1989
	(1)	(2)	(3)
Sales			
RER	-0.596** (0.040)		-0.571** (0.046)
RER*Dist	0.025** (0.008)		0.032** (0.009)
NER		-0.901** (0.052)	
NER*Dist		0.049** (0.010)	
1989 Dummy			-0.029** (0.003)
Observations	771,695	618,931	618,931
R-squared	0.114	0.111	0.111
Employment			
RER	-0.317** (0.035)		-0.308** (0.040)
RER*Dist	0.037** (0.007)		0.045** (0.008)
NER		-0.388** (0.046)	
NER*Dist		0.055** (0.009)	
1989 Dummy			-0.021** (0.003)
Observations	772,150	619,237	619,237
R-squared	0.087	0.085	0.085
Profits			
RER	-4.624** (0.075)		-4.712** (0.083)
RER*Dist	0.404** (0.015)		0.388** (0.016)
NER		-6.500** (0.104)	
NER*Dist		0.472** (0.020)	
1989 Dummy			0.073** (0.009)
Distance	-0.127** (0.044)	0.095 ⁺ (0.054)	-0.127** (0.048)
Observations	774,538	621,327	621,327
Log Likelihood	-1.292e+06	-1.011e+06	-1.012e+06

Notes: (1) Results are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and ⁺ at the 10% level. (4) Control variables for sales and employment regressions include firm assets, firm age, firm productivity index, industry concentration, industry sales, industry-province real household final consumption expenditure, province real GDP, province median individual real income, real GDP of the US adjacent state, a term interacting state GDP with distance, and the real interest rate. Control variables for profit regressions include firm assets, firm age, firm productivity index, industry concentration, industry sales, provincial real GDP, provincial median individual real income, industry-province real household final consumption expenditure, real GDP of the US adjacent state, a term interacting state GDP with distance, and the real interest rate. All control variables except firm age and the real interest rate are lagged. Sales and employment regressions include firm and province fixed effects; profit regressions include industry and province fixed effects; all regressions include a time trend. (5) Full results are reported in Appendix B.

Table B1: Firm Sales: Full Results

Model: Panel Regression with Fixed Effects

	Overall Retail: All Firms			Overall Retail: Small Firms			Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RER	-0.605** (0.013)	-0.753** (0.036)	-0.613** (0.038)	-0.593** (0.015)	-0.788** (0.043)	-0.616** (0.045)	-1.014** (0.134)	-0.847** (0.131)	-0.414** (0.098)
RER*Dist		0.032** (0.007)	0.025** (0.007)		0.042** (0.009)	0.032** (0.009)	0.082** (0.026)	0.077** (0.026)	0.006 (0.019)
Cdn Tax			-0.811** (0.048)			-0.963** (0.057)	-1.458** (0.205)	-1.685** (0.176)	-1.217** (0.120)
Us Tax			0.179 (0.311)			0.813* (0.358)	6.712+ (3.567)	-0.987 (0.986)	-1.796* (0.760)
Assets	0.276** (0.003)	0.276** (0.003)	0.276** (0.003)	0.262** (0.004)	0.262** (0.004)	0.262** (0.004)	0.261** (0.009)	0.271** (0.015)	0.185** (0.006)
Age	0.052** (0.003)	0.052** (0.003)	0.050** (0.003)	0.065** (0.004)	0.065** (0.004)	0.062** (0.004)	0.065** (0.011)	0.083** (0.014)	0.057** (0.008)
Leverage	0.087** (0.003)	0.086** (0.003)	0.086** (0.003)	0.071** (0.004)	0.070** (0.004)	0.069** (0.004)	0.106** (0.011)	0.061** (0.013)	0.048** (0.007)
Industry Concentration	-0.627** (0.025)	-0.628** (0.025)	-0.534** (0.026)	-0.564** (0.030)	-0.566** (0.030)	-0.467** (0.031)	-0.454** (0.109)	0.310** (0.063)	-0.732** (0.102)
Industry Sales	0.279** (0.011)	0.280** (0.011)	0.233** (0.012)	0.265** (0.013)	0.265** (0.013)	0.215** (0.014)	0.145** (0.043)	-0.097** (0.030)	0.318** (0.055)
Real Expenditure by Province & Industry	0.021 (0.028)	0.016 (0.028)	0.055+ (0.029)	0.057 (0.036)	0.051 (0.036)	0.097* (0.038)	-0.045 (0.067)	0.340** (0.081)	-0.092 (0.060)
Real Provincial GDP	0.565** (0.049)	0.576** (0.050)	0.527** (0.051)	0.673** (0.068)	0.688** (0.069)	0.643** (0.071)	0.946** (0.117)	0.766** (0.159)	0.536** (0.168)
Median Real Individual Income by Province	0.216** (0.034)	0.219** (0.035)	0.058 (0.036)	0.208** (0.043)	0.211** (0.043)	0.024 (0.044)	0.213* (0.090)	-0.256* (0.121)	-0.075 (0.103)
Real GDP of Adjacent US State	0.004 (0.026)	-0.009 (0.026)	-0.009 (0.026)	0.006 (0.034)	-0.014 (0.034)	-0.017 (0.034)	-0.062 (0.121)	-0.191* (0.088)	0.014 (0.060)
Real US GDP*Distance	0.001 (0.006)	0.004 (0.006)	0.005 (0.006)	0.003 (0.007)	0.007 (0.007)	0.008 (0.007)	0.015 (0.027)	0.041* (0.017)	0.003 (0.013)
Real Interest Rate	-0.010** (0.001)	-0.010** (0.001)	-0.007** (0.001)	-0.009** (0.001)	-0.009** (0.001)	-0.006** (0.001)	-0.002 (0.003)	0.003 (0.002)	0.002 (0.002)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time Trend	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	915,170	915,170	915,170	618,931	618,931	618,931	109,023	57,512	122,389
R-squared	0.114	0.114	0.115	0.109	0.110	0.111	0.103	0.171	0.079

Notes: (1) Columns (4)-(9) are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and + at the 10% level.

Table B2: Firm Employment: Full Results

Model: Panel Regression with Fixed Effects

	Overall Retail: All Firms			Overall Retail: Small Firms			Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RER	-0.163** (0.010)	-0.351** (0.031)	-0.337** (0.032)	-0.110** (0.013)	-0.332** (0.038)	-0.340** (0.039)	-0.673** (0.099)	-0.132 (0.137)	-0.042 (0.097)
RER*Dist		0.040** (0.006)	0.037** (0.006)		0.048** (0.008)	0.045** (0.008)	0.123** (0.019)	0.070* (0.027)	-0.024 (0.019)
Cdn Tax			-0.101* (0.040)			0.032 (0.049)	-0.626** (0.132)	-0.828** (0.165)	-0.216+ (0.111)
Us Tax			2.156** (0.210)			2.996** (0.252)	5.458* (2.507)	0.995 (0.808)	0.037 (0.521)
Assets	0.241** (0.002)	0.241** (0.002)	0.241** (0.002)	0.234** (0.003)	0.234** (0.003)	0.234** (0.003)	0.205** (0.006)	0.266** (0.013)	0.175** (0.005)
Age	0.091** (0.003)	0.091** (0.003)	0.091** (0.003)	0.106** (0.004)	0.106** (0.004)	0.107** (0.004)	0.096** (0.009)	0.102** (0.014)	0.102** (0.008)
Leverage	-0.020** (0.002)	-0.020** (0.002)	-0.020** (0.002)	-0.039** (0.003)	-0.039** (0.003)	-0.040** (0.003)	-0.035** (0.006)	-0.051** (0.009)	-0.042** (0.006)
Industry Concentration	-0.212** (0.021)	-0.213** (0.021)	-0.213** (0.022)	-0.207** (0.026)	-0.209** (0.026)	-0.228** (0.026)	0.248** (0.076)	-0.003 (0.058)	-0.473** (0.097)
Industry Sales	0.087** (0.010)	0.087** (0.010)	0.088** (0.010)	0.099** (0.011)	0.100** (0.011)	0.110** (0.012)	-0.156** (0.030)	-0.175** (0.029)	0.292** (0.053)
Real Expenditure	0.011 (0.015)	0.004 (0.015)	0.013 (0.015)	0.016 (0.019)	0.008 (0.019)	0.015 (0.019)	0.017 (0.033)	0.037 (0.073)	-0.446** (0.052)
Real Provincial GDP by Province & Industry	-0.049* (0.024)	-0.035 (0.024)	0.013 (0.025)	-0.091** (0.031)	-0.074* (0.031)	0.006 (0.031)	0.667** (0.086)	0.283* (0.129)	0.437** (0.084)
Median Individual Real Income by Province	0.009 (0.023)	0.013 (0.023)	0.029 (0.025)	-0.013 (0.028)	-0.008 (0.028)	0.048 (0.030)	-0.026 (0.068)	0.228* (0.096)	0.090 (0.079)
Real GDP of Adjacent US state	0.043+ (0.020)	0.026 (0.020)	0.022 (0.020)	0.028 (0.024)	0.005 (0.025)	-0.000 (0.025)	0.090 (0.063)	-0.049 (0.082)	-0.010 (0.050)
Real US GDP*Distance	-0.007 (0.004)	-0.003 (0.004)	-0.003 (0.004)	-0.004 (0.005)	0.001 (0.005)	-0.000 (0.005)	-0.010 (0.014)	-0.000 (0.017)	0.005 (0.011)
Real Interest Rate	-0.011** (0.000)	-0.011** (0.000)	-0.011** (0.000)	-0.013** (0.001)	-0.013** (0.001)	-0.014** (0.001)	0.005* (0.002)	-0.025** (0.002)	-0.020** (0.002)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time Trend	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	915,795	915,795	915,795	619,237	619,237	619,237	109,062	57,545	122,439
R-squared	0.091	0.091	0.091	0.084	0.084	0.085	0.075	0.117	0.063

Notes: (1) Columns (4)-(9) are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and + at the 10% level.

Table B3: Firm Profits: Full Results

Model: Panel Tobit with Correlated Random Effects

	Overall Retail: All Firms			Overall Retail: Small Firms			Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RER	-2.877** (0.026)	-4.814** (0.072)	-4.492** (0.074)	-3.000** (0.029)	-4.808** (0.080)	-4.587** (0.082)	-5.650** (0.195)	-5.330** (0.276)	-3.393** (0.211)
RER*Dist		0.417** (0.014)	0.412** (0.014)		0.389** (0.016)	0.386** (0.016)	0.377** (0.036)	0.270** (0.054)	0.474** (0.041)
Distance	-0.030 (0.040)	-0.036 (0.043)	-0.062 (0.043)	-0.100* (0.044)	-0.095* (0.048)	-0.114* (0.048)	0.167+ (0.100)	0.113 (0.127)	-0.448** (0.128)
Cdn Tax			-1.926** (0.098)			-1.340** (0.108)	-2.073** (0.334)	-0.653+ (1.396)	-4.723** (0.302)
Us Tax			-7.988** (0.437)			-5.719** (0.485)	7.214+ (4.000)	-6.229** (1.396)	-10.216** (1.209)
Assets	0.200** (0.004)	0.200** (0.004)	0.200** (0.004)	0.199** (0.004)	0.199** (0.004)	0.200** (0.004)	0.153** (0.009)	0.186** (0.013)	0.132** (0.010)
Age	0.094** (0.007)	0.094** (0.007)	0.114** (0.007)	0.098** (0.008)	0.098** (0.008)	0.118** (0.008)	0.117** (0.017)	0.113** (0.025)	0.117** (0.019)
Labor Productivity	0.247** (0.004)	0.246** (0.004)	0.244** (0.004)	0.211** (0.004)	0.211** (0.004)	0.208** (0.004)	0.298** (0.009)	0.175** (0.012)	0.185** (0.011)
Industry Concentration	0.081+ (0.047)	0.067 (0.047)	0.314** (0.049)	0.247** (0.051)	0.233** (0.051)	0.394** (0.052)	2.083** (0.231)	0.864** (0.103)	3.181** (0.242)
Industry Sales	-0.345** (0.019)	-0.340** (0.019)	-0.469** (0.020)	-0.447** (0.021)	-0.442** (0.021)	-0.526** (0.022)	-1.060** (0.083)	-0.633** (0.053)	-1.500** (0.130)
Real Expenditure by Province & Industry	0.186** (0.029)	0.122** (0.029)	0.189** (0.030)	0.301** (0.034)	0.242** (0.034)	0.278** (0.034)	0.143* (0.063)	-0.228+ (0.125)	-1.302** (0.120)
Real Provincial GDP	0.591** (0.051)	0.722** (0.051)	0.523** (0.052)	0.498** (0.058)	0.628** (0.059)	0.516** (0.060)	0.656** (0.127)	1.017** (0.201)	2.450** (0.177)
Median Real Individual Income by Province	0.752** (0.062)	0.800** (0.062)	0.160* (0.066)	1.089** (0.070)	1.125** (0.070)	0.639** (0.074)	1.862** (0.161)	2.173** (0.221)	-0.877** (0.210)
Real GDP of Adjacent US State	0.278** (0.036)	0.103** (0.037)	0.123** (0.037)	0.264** (0.043)	0.086* (0.044)	0.103* (0.044)	-0.162 (0.101)	0.124 (0.128)	0.107 (0.113)
Real US GDP*Distance	-0.050** (0.008)	-0.011 (0.008)	-0.008 (0.008)	-0.046** (0.009)	-0.006 (0.009)	-0.004 (0.009)	0.038+ (0.022)	-0.004 (0.027)	-0.002 (0.024)
Real Interest Rate	-0.025** (0.002)	-0.025** (0.002)	-0.015** (0.002)	-0.020** (0.002)	-0.020** (0.002)	-0.012** (0.002)	-0.014* (0.006)	-0.023** (0.006)	-0.008 (0.006)
Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time Trend	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	918,615	918,615	918,615	621,327	621,327	621,327	109,522	57,711	123,018
Log Likelihood	-1.593e+06	-1.593e+06	-1.592e+06	-1.013e+06	-1.013e+06	-1.013e+06	-176566	-90142	-197378

Notes: (1) Columns (4)-(9) are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors are in parentheses. (3) Industry Fixed Effects are at the three-digit SIC level. (4) Significance indicated by ** at the 1% level; * at the 5% level; and + at the 10% level.

Table B4: Number of Firms: Full Results

Model: Poisson Regression

	Overall Retail: All Firms			Overall Retail: Small Firms			Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RER	0.277*	0.754	0.714	0.338**	0.806 ⁺	0.847 ⁺	1.368*	0.900	1.307
	(0.107)	(0.542)	(0.554)	(0.123)	(0.485)	(0.497)	(0.643)	(0.760)	(0.811)
RER*Dist		-0.104	-0.104		-0.102	-0.103	-0.050	-0.178	-0.137
		(0.116)	(0.115)		(0.103)	(0.102)	(0.103)	(0.150)	(0.174)
Distance	-0.027	-0.055	-0.055	-0.025	-0.053	-0.053	-0.017	-0.078	-0.056
	(0.027)	(0.047)	(0.047)	(0.027)	(0.043)	(0.043)	(0.063)	(0.056)	(0.094)
Cdn Tax			0.413			0.012	-2.692	2.336**	-1.994 ⁺
			(0.123)			(1.233)	(4.465)	(0.899)	(1.181)
Us Tax			-0.392			-1.738	2.119	19.275*	31.389 ⁺
			(3.813)			(3.805)	(14.082)	(8.946)	(16.830)
Median Assets	-0.372**	-0.372**	-0.372**	-0.428**	-0.428**	-0.426**	-0.784**	-0.066	-0.114
	(0.043)	(0.043)	(0.043)	(0.040)	(0.040)	(0.041)	(0.128)	(0.056)	(0.107)
Median Profit	0.596*	0.605*	0.609*	0.921**	0.929**	0.943**	2.559*	1.852**	-0.691 ⁺
-Sales Ratio	(0.291)	(0.288)	(0.289)	(0.289)	(0.286)	(0.286)	(1.201)	(0.405)	(0.358)
Industry	-0.792*	-0.790*	-0.773*	-0.476	-0.474	-0.597	1.908	0.041	-0.440*
Concentration	(0.384)	(0.384)	(0.373)	(0.380)	(0.380)	(0.378)	(1.992)	(0.906)	(0.219)
Industry Sales	0.561**	0.561**	0.561**	0.483**	0.483**	0.481**	-0.142	0.525**	0.579**
	(0.045)	(0.045)	(0.046)	(0.042)	(0.042)	(0.044)	(0.758)	(0.114)	(0.102)
Real Expenditure	0.026	0.026	0.030	0.062	0.062	0.059	-0.088	-0.932**	0.429
by Province & Industry	(0.068)	(0.068)	(0.064)	(0.069)	(0.069)	(0.065)	(0.128)	(0.156)	(0.789)
Real Provincial GDP	1.386**	1.386**	1.385**	1.434**	1.434**	1.426**	1.991**	1.995**	1.234*
	(0.144)	(0.143)	(0.145)	(0.155)	(0.154)	(0.154)	(0.173)	(0.182)	(0.618)
Median Real Individual	-1.308**	-1.301**	-1.222*	-1.219**	-1.213**	-2.304**	-0.601	0.964	-2.387*
Income by Province	(0.475)	(0.473)	(0.591)	(0.448)	(0.447)	(0.570)	(0.821)	(0.630)	(0.979)
Real GDP of	0.628	0.625	0.621	0.628	0.626	0.643	-1.300**	0.710	0.278
Adjacent US State	(0.538)	(0.538)	(0.537)	(0.481)	(0.481)	(0.482)	(0.367)	(0.729)	(0.735)
Real Interest Rate	0.013*	0.013*	0.011	0.011*	0.011*	0.012	-0.025 ⁺	-0.027*	0.004
	(0.005)	(0.005)	(0.008)	(0.005)	(0.005)	(0.008)	(0.014)	(0.011)	(0.016)
Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time Trend	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	20,492	20,492	20,492	20,294	20,492	20,492	2,064	5,197	3,745
Log Likelihood	-931439	-931224	-931190	-701407	-701264	-701104	-92502	-65554	-142895

Notes: (1) Columns (4)-(9) are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Industry fixed effects are at the two-digit SIC level. (3) Significance indicated by ** at the 1% level; * at the 5% level; and ⁺ at the 10% level.

Table B5: Firm Survival: Full Results

Model: Linear Probability Model

	Overall Retail: All Firms			Overall Retail: Small Firms			Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RER	0.006 ⁺ (0.004)	0.018* (0.009)	0.008 (0.009)	0.030** (0.005)	0.033** (0.011)	0.025* (0.011)	0.001 (0.033)	0.058 (0.053)	0.054** (0.020)
RER*Dist		-0.003 (0.002)	-0.002 (0.002)		-0.001 (0.002)	-0.000 (0.002)	0.015* (0.006)	-0.015 (0.010)	-0.006 (0.004)
Distance	-0.003 (0.002)	-0.003 ⁺ (0.002)	-0.002 (0.002)	-0.000 (0.003)	-0.001 (0.003)	0.000 (0.003)	-0.000 (0.007)	0.005 (0.009)	0.002 (0.006)
Cdn Tax			0.068** (0.012)			0.056** (0.015)	0.054 (0.048)	0.016 (0.063)	0.250** (0.040)
Us Tax			0.042* (0.019)			0.035 (0.025)	0.226** (0.073)	0.249* (0.102)	-0.072 (0.067)
Assets	0.015** (0.000)	0.015** (0.000)	0.015** (0.000)	0.017** (0.000)	0.017** (0.000)	0.017** (0.000)	0.025** (0.001)	0.027** (0.001)	0.013** (0.001)
Age	-0.013** (0.000)	-0.013** (0.000)	-0.013** (0.000)	-0.013** (0.000)	-0.013** (0.000)	-0.013** (0.000)	-0.017** (0.001)	-0.020** (0.002)	-0.018** (0.001)
Leverage	-0.027** (0.000)	-0.027** (0.000)	-0.027** (0.000)	-0.027** (0.000)	-0.027** (0.000)	-0.027** (0.000)	-0.023** (0.001)	-0.037** (0.002)	-0.027** (0.001)
Labor	0.010** (0.000)	0.010** (0.000)	0.010** (0.000)	0.010** (0.001)	0.010** (0.001)	0.010** (0.001)	0.006** (0.001)	0.020** (0.002)	0.016** (0.001)
Productivity	0.047** (0.007)	0.047** (0.007)	0.040** (0.007)	0.055** (0.008)	0.055** (0.008)	0.049** (0.008)	-0.033 (0.043)	0.021 (0.020)	0.052 ⁺ (0.028)
Industry Concentration	-0.013** (0.003)	-0.013** (0.003)	-0.010** (0.003)	-0.010** (0.003)	-0.010** (0.003)	-0.007* (0.003)	0.037* (0.015)	-0.003 (0.010)	-0.012 (0.014)
Industry Sales	-0.003** (0.001)	-0.003** (0.001)	-0.002* (0.001)	-0.004** (0.001)	-0.004** (0.001)	-0.003** (0.001)	-0.002 (0.002)	-0.012* (0.005)	0.021** (0.008)
Real Expenditure by Province & Industry	-0.008** (0.002)	-0.008** (0.002)	-0.009** (0.002)	-0.009** (0.002)	-0.009** (0.002)	-0.010** (0.002)	-0.013** (0.005)	-0.010 (0.008)	-0.032** (0.007)
Real Provincial GDP	0.031** (0.008)	0.031** (0.008)	0.040** (0.008)	0.040** (0.010)	0.040** (0.010)	0.048** (0.010)	0.066** (0.024)	-0.012 (0.040)	0.136** (0.025)
Median Real Individual Income by Province	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.007** (0.003)	0.001 (0.003)	0.000 (0.002)
Real GDP of Adjacent US State	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Real US GDP*Distance	0.002** (0.000)	0.002** (0.000)	0.002** (0.000)	0.002** (0.000)	0.002** (0.000)	0.002** (0.000)	0.000 (0.001)	0.002 (0.001)	0.003** (0.001)
Real Interest Rate	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time Trend	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,042,655	1,042,655	1,042,655	718,935	718,935	718,935	127,960	68,112	149,838
R-squared	0.021	0.021	0.021	0.021	0.021	0.021	0.020	0.032	0.018

Notes: (1) Columns (4)-(9) are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Industry Fixed Effects are at the three-digit SIC level. (4) Significance indicated by ** at the 1% level; * at the 5% level; and ⁺ at the 10% level.

Table B6: Effect of Same-Day Cross-Border Trips on Sales

	Overall Retail (1)	Grocery Stores and Gasoline Stations (2)	Apparel and General Retail (3)	Food Services and Accommodation (4)
Cdn Same-day Trips	-0.138** (0.011)	-0.161** (0.029)	-0.132** (0.029)	-0.147** (0.027)
× Dist	0.013** (0.002)	0.021** (0.006)	0.008 (0.006)	0.018** (0.006)
Us Same-day Trips	0.165** (0.015)	0.179** (0.037)	0.103* (0.040)	0.203** (0.036)
× Dist	-0.023** (0.003)	-0.027** (0.007)	-0.013 (0.009)	-0.032** (0.007)
Assets	0.263** (0.004)	0.259** (0.009)	0.273** (0.015)	0.186** (0.006)
Age	0.051** (0.004)	0.061** (0.011)	0.068** (0.014)	0.049** (0.008)
Leverage	0.070** (0.004)	0.107** (0.011)	0.063** (0.013)	0.048** (0.007)
Industry Concentration	-0.466** (0.029)	-1.420** (0.133)	0.103 ⁺ (0.060)	-0.544** (0.089)
Industry Sales	0.233** (0.013)	0.383** (0.049)	-0.048 ⁺ (0.029)	0.226** (0.050)
Real Expenditure by Province & Industry	0.173** (0.036)	-0.030 (0.066)	0.454** (0.085)	0.208** (0.046)
Real Provincial GDP	0.453** (0.065)	0.733** (0.115)	0.551** (0.144)	0.358* (0.159)
Median Real Individual by Province	-0.191** (0.042)	-0.049 (0.085)	-0.308** (0.112)	-0.200* (0.101)
Real GDP of Adjacent US State	-0.022 (0.035)	0.021 (0.114)	-0.166 ⁺ (0.091)	-0.016 (0.062)
Real US GDP*Distance	0.008 (0.007)	-0.003 (0.026)	0.035* (0.018)	0.006 (0.014)
Real Interest Rate	-0.007** (0.001)	0.011** (0.002)	0.001 (0.002)	-0.004* (0.002)
Firm Fixed Effects	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES
Time Trend	YES	YES	YES	YES
Observations	618,931	109,023	57,512	122,389
R-squared	0.107	0.100	0.165	0.075

Notes: (1) Results are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and ⁺ at the 10% level.

Table B7: Effect of Same-Day Cross-Border Trips on Employment

	Overall Retail	Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
	(1)	(2)	(3)	(4)
Cdn Same-day Trips	-0.042** (0.010)	-0.160** (0.021)	-0.059* (0.030)	0.005 (0.023)
× Dist	0.007** (0.002)	0.025** (0.004)	0.009 (0.006)	-0.002 (0.005)
Us Same-day Trips	0.099** (0.012)	0.159** (0.027)	0.054 (0.041)	0.066* (0.029)
× Dist	-0.015** (0.003)	-0.025** (0.005)	-0.004 (0.008)	-0.010+ (0.006)
Assets	0.234** (0.003)	0.204** (0.006)	0.266** (0.013)	0.175** (0.005)
Age	0.104** (0.004)	0.099** (0.008)	0.111** (0.014)	0.098** (0.008)
Leverage	-0.039** (0.003)	-0.035** (0.006)	-0.050** (0.009)	-0.041** (0.006)
Industry Concentration	-0.192** (0.025)	-0.004 (0.090)	-0.051 (0.054)	-0.350** (0.078)
Industry Sales	0.095** (0.011)	-0.043 (0.035)	-0.152** (0.028)	0.231** (0.045)
Real Expenditure by Province & Industry	0.029 (0.018)	0.004 (0.033)	-0.060 (0.076)	-0.326** (0.044)
Real Provincial GDP	-0.147** (0.032)	0.521** (0.080)	0.291* (0.120)	0.360** (0.073)
Median Real Individual by Province	-0.081** (0.027)	0.086 (0.063)	0.615** (0.089)	-0.054 (0.072)
Real GDP of Adjacent US State	0.006 (0.025)	0.202** (0.064)	-0.023 (0.086)	-0.041 (0.052)
Real US GDP*Distance	-0.000 (0.005)	-0.035* (0.014)	-0.006 (0.018)	0.011 (0.012)
Real Interest Rate	-0.013** (0.001)	0.007** (0.002)	-0.026** (0.002)	-0.023** (0.002)
Firm Fixed Effects	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES
Time Trend	YES	YES	YES	YES
Observations	619,237	109,062	57,545	122,439
R-squared	0.084	0.075	0.116	0.063

Notes: (1) Results are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and + at the 10% level.

Table B8: Effect of Same-Day Cross-Border Trips on Profits

	Overall Retail	Grocery Stores and Gasoline Stations	Apparel and General Retail	Food Services and Accommodation
	(1)	(2)	(3)	(4)
Cdn Same-day Trips	-0.783** (0.019)	-0.715** (0.042)	-0.710** (0.055)	-0.815** (0.048)
× Dist	0.091** (0.004)	0.096** (0.009)	0.059** (0.011)	0.111** (0.010)
US Same-day Trips	0.733** (0.023)	0.760** (0.051)	0.408** (0.069)	0.686** (0.058)
× Dist	-0.109** (0.005)	-0.126** (0.010)	-0.039** (0.014)	-0.105** (0.012)
Distance	-0.092* (0.047)	0.018 (0.095)	0.108 (0.118)	-0.334** (0.128)
Assets	0.205** (0.004)	0.140** (0.009)	0.194** (0.013)	0.136** (0.010)
Age	0.026** (0.008)	0.038* (0.017)	-0.047 ⁺ (0.024)	0.093** (0.019)
Labor Productivity	0.212** (0.004)	0.319** (0.009)	0.178** (0.013)	0.182** (0.011)
Industry Concentration	0.693** (0.051)	-0.937** (0.181)	0.389** (0.099)	3.591** (0.205)
Industry Sales	-0.620** (0.021)	-0.710** (0.068)	-0.547** (0.053)	-1.679** (0.112)
Real Expenditure by Province & Industry	0.824** (0.033)	0.368** (0.062)	0.694** (0.125)	-0.432** (0.100)
Real Provincial GDP	-0.386** (0.059)	-0.497** (0.127)	-0.881** (0.190)	1.849** (0.173)
Median Real Individual by Province	-1.082** (0.062)	-0.349** (0.135)	-0.477* (0.187)	-0.660** (0.188)
Real GDP of Adjacent US State	0.205** (0.044)	0.164 ⁺ (0.099)	0.128 (0.132)	0.223* (0.114)
Real US GDP*Distance	-0.034** (0.010)	-0.041 ⁺ (0.022)	-0.011 (0.028)	-0.040 ⁺ (0.024)
Real Interest Rate	-0.012** (0.002)	0.065** (0.006)	-0.013* (0.006)	-0.027** (0.006)
Industry Fixed Effects	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES
Time Trend	YES	YES	YES	YES
Observations	621,327	109,522	57,711	123,018
Log Likelihood	-1.016e+06	-177363	-90810	-197615

Notes: (1) Results are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors are in parentheses. (3) Industry fixed effects are at the three-digit SIC level. (4) Significance indicated by ** at the 1% level; * at the 5% level; and ⁺ at the 10% level.

Table B9: Sales with Tradable Input Shares

	Overall Retail (1)	Grocery Stores and Gasoline Stations (2)	Apparel and General Retail (3)	Food Services and Accommodation (4)
RER	-0.683** (0.049)	-1.475** (0.424)	-1.718** (0.516)	-3.346** (0.990)
RER*Dist	0.031** (0.009)	0.072** (0.026)	0.062* (0.026)	0.013 (0.019)
RER*Share	0.005** (0.001)	0.056 (0.047)	0.105 ⁺ (0.0659)	0.108** (0.036)
Share	-0.071 (0.074)	-0.494 (0.391)	0.241 (0.496)	-0.108 (0.356)
Net RER Effect	-0.623** (0.045)	-0.971** (0.135)	-0.787** (0.133)	-0.434** (0.099)
Cdn Tax	-0.932** (0.057)	-1.454** (0.206)	-1.634** (0.178)	-1.289** (0.120)
US Tax	0.840* (0.358)	6.873 ⁺ (3.575)	-1.044 (0.989)	-1.553* (0.753)
Assets	0.262** (0.004)	0.261** (0.009)	0.271** (0.015)	0.185** (0.006)
Age	0.063** (0.004)	0.064** (0.011)	0.083** (0.014)	0.056** (0.008)
Leverage	0.069** (0.004)	0.106** (0.011)	0.061** (0.013)	0.048** (0.007)
Industry Concentration	-0.469** (0.031)	-0.459** (0.108)	0.312** (0.064)	-0.726** (0.099)
Industry Sales	0.221** (0.014)	0.145** (0.043)	-0.098** (0.030)	0.319** (0.053)
Real Expenditure by Province & Industry	0.096* (0.037)	-0.047 (0.066)	0.334** (0.083)	0.085 (0.062)
Real Provincial GDP	0.643** (0.071)	0.912** (0.124)	0.825** (0.160)	0.546** (0.112)
Median Real Individual by Province	0.041 (0.044)	0.242 (0.091)	-0.260* (0.119)	-0.105 (0.089)
Real GDP of Adjacent US State	-0.017 (0.034)	-0.059 (0.121)	-0.196* (0.090)	0.009 (0.060)
Real US GDP*Distance	0.008 (0.007)	0.015 (0.027)	0.043* (0.018)	0.003 (0.013)
Real Interest Rate	-0.006** (0.001)	-0.002 (0.003)	0.003 (0.002)	0.003 (0.002)
Firm Fixed Effects	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES
Time Trend	YES	YES	YES	YES
Observations	618,931	109,023	57,512	122,389
R-squared	0.111	0.103	0.171	0.079

Notes: (1) Results are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and ⁺ at the 10% level. (4) The Net RER Effect is the estimated exchange rate effect when the share of traded inputs is at its mean and distance is held at 1 kilometer.

Table B10: Employment with Tradable Input Shares

	Overall Retail (1)	Grocery Stores and Gasoline Stations (2)	Apparel and General Retail (3)	Food Services and Accommodation (4)
RER	-0.364** (0.044)	-2.471** (0.346)	-4.143** (0.478)	-0.230 (0.979)
RER*Dist	0.044** (0.008)	0.089** (0.020)	0.000 (0.028)	-0.023 (0.019)
RER*Share	0.002 (0.001)	0.215 (0.039)	0.480 (0.055)	0.007 (0.035)
Share	-0.071 (0.074)	-0.494 (0.391)	0.065 (0.180)	-0.108 (0.356)
Net RER Effect	-0.343** (0.039)	0.225 (0.189)	-0.415 (0.140)	-0.044 (0.098)
Cdn Tax	0.043 (0.048)	-0.524** (0.133)	-0.600** (0.165)	-0.217 ⁺ (0.112)
US Tax	3.005** (0.252)	5.316* (2.508)	0.611 (0.817)	0.063 (0.542)
Assets	0.234** (0.002)	0.205** (0.006)	0.267** (0.013)	0.175** (0.005)
Age	0.107** (0.004)	0.096** (0.008)	0.103** (0.014)	0.102** (0.008)
Leverage	-0.040** (0.003)	-0.036** (0.006)	-0.052** (0.009)	-0.042** (0.006)
Industry Concentration	-0.229** (0.026)	0.241** (0.076)	-0.004 (0.058)	-0.469** (0.098)
Industry Sales	0.112** (0.012)	-0.147** (0.030)	-0.170** (0.029)	0.291** (0.053)
Real Expenditure by Province & Industry	0.015 (0.019)	0.017 (0.034)	-0.026 (0.075)	-0.446** (0.052)
Real Provincial GDP	0.006 (0.031)	0.831** (0.099)	0.513** (0.138)	0.455** (0.100)
Median Real Individual by Province	0.054 (0.030)	-0.048 (0.071)	0.256** (0.096)	-0.110 (0.050)
Real GDP of Adjacent US State	-0.001 (0.025)	0.092 (0.063)	-0.039 (0.382)	-0.010 (0.050)
Real US GDP*Distance	0.000 (0.005)	-0.009 (0.014)	0.001 (0.017)	0.005 (0.011)
Real Interest Rate	-0.006** (0.001)	0.005* (0.002)	-0.026** (0.002)	-0.020** (0.002)
Firm Fixed Effects	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES
Time Trend	YES	YES	YES	YES
Observations	618,931	109,062	57,545	122,389
R-squared	0.111	0.076	0.120	0.063

Notes: (1) Results are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and ⁺ at the 10% level. (4) The Net RER Effect is the estimated exchange rate effect when the share of traded inputs is at its mean and distance is held at 1 kilometer.

Table B11: Profits with Tradable Input Shares

	Overall Retail (1)	Grocery Stores and Gasoline Stations (2)	Apparel and General Retail (3)	Food Services and Accommodation (4)
RER	-5.458** (0.089)	-2.154** (0.606)	-4.343** (0.930)	-33.771** (2.199)
RER*Dist	0.377** (0.016)	0.447** (0.037)	0.291** (0.056)	0.555** (0.041)
RER*Share	0.064** (0.003)	-0.423** (0.069)	-0.423 (0.069)	1.113** (0.080)
Net RER Effect	-4.654** (0.082)	-7.456** (0.349)	-7.456** (0.349)	-3.718** (0.212)
Distance	-0.133* (0.048)	0.252* (0.103)	0.252* (0.103)	-0.489** (0.129)
Share	0.089** (0.010)	-0.538** (0.092)	0.017 (0.134)	-0.200 ⁺ (0.111)
Cdn Tax	-1.023** (0.109)	-2.206** (0.338)	-0.630 ⁺ (0.338)	-5.340** (0.307)
US Tax	-5.372** (0.485)	7.932* (3.989)	-5.989** (1.400)	-8.711** (1.211)
Assets	0.197** (0.004)	0.153** (0.009)	0.185** (0.013)	0.130** (0.010)
Age	0.133** (0.008)	0.122** (0.017)	0.119** (0.025)	0.113** (0.019)
Labor	0.208** (0.004)	0.294** (0.009)	0.173** (0.012)	0.184** (0.011)
Productivity				
Industry Concentration	0.388** (0.052)	2.069** (0.230)	0.867** (0.103)	3.157** (0.241)
Industry Sales	-0.436** (0.021)	-1.065** (0.083)	-0.635** (0.053)	-1.459** (0.130)
Real Expenditure	0.225** (0.034)	0.138* (0.063)	-0.230 ⁺ (0.125)	-1.278** (0.121)
by Province & Industry				
Real Provincial GDP	0.611** (0.060)	0.361** (0.135)	1.041** (0.206)	2.138** (0.187)
Median Real Individual	0.791 (0.075)	1.900** (0.161)	2.157** (0.221)	-0.875** (0.210)
by Province				
Real GDP of	0.103* (0.043)	-0.168 ⁺ (0.101)	0.125 (0.128)	0.009 (0.112)
Adjacent US State				
Real US GDP*Distance	-0.004 (0.009)	0.036 (0.022)	-0.005 (0.027)	-0.006 (0.024)
Real Interest Rate	-0.014** (0.002)	-0.014* (0.006)	-0.024** (0.006)	-0.009 (0.006)
Industry Fixed Effects	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES
Time Trend	YES	YES	YES	YES
Observations	621,327	109,522	57,711	123,018
R-squared	-1.012e+6	-0.176e+6	-90117	-0.197e+6

Notes: (1) Results are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and ⁺ at the 10% level. (4) The Net RER Effect is the estimated exchange rate effect when the share of traded inputs is at its mean and distance is held at 1 kilometer.

Table B12: Alternate Specifications for Firm Sales for Overall Retail

Model: Panel Regression with Fixed Effects			
	≤ 20 Employees (1)	Nominal ER (2)	1989 Dummy (3)
RER	-0.596** (0.040)		-0.571** (0.046)
RER*Dist	0.025** (0.008)		0.032** (0.009)
NER		-0.901** (0.052)	
NER*Dist		0.049** (0.010)	
1989 Dummy			-0.029** (0.003)
Cdn Tax	-0.863** (0.051)	-0.996** (0.053)	-0.968** (0.057)
Us Tax	0.714* (0.322)	0.614+ (0.357)	0.842* (0.358)
Assets	0.268** (0.003)	0.262** (0.004)	0.262** (0.004)
Age	0.056** (0.004)	0.063** (0.004)	0.062** (0.004)
Leverage	0.077** (0.004)	0.068** (0.004)	0.069** (0.004)
Industry Concentration	-0.525** (0.028)	-0.463** (0.031)	-0.456** (0.031)
Industry Sales	0.242** (0.012)	0.258** (0.014)	0.214** (0.014)
Real Expenditure by Province & Industry	0.088** (0.031)	0.147** (0.037)	0.099** (0.038)
Real Provincial GDP	0.552** (0.058)	0.592** (0.069)	0.638** (0.071)
Real Median Individual Income by Province	0.032 (0.038)	0.164** (0.043)	0.092* (0.044)
Real GDP of Adjacent US State	-0.003 (0.031)	-0.018 (0.034)	-0.018 (0.034)
Real US GDP*Distance	0.003 (0.007)	0.008 (0.007)	0.008 (0.007)
Real Interest Rate	-0.007** (0.001)	-0.004** (0.001)	-0.004** (0.001)
Firm Fixed Effects	YES	YES	YES
Province Fixed Effects	YES	YES	YES
Time Trend	YES	YES	YES
Observations	771,695	618,931	618,931
R-squared	0.114	0.111	0.111

Notes: (1) Results in Columns 2-3 are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and + at the 10% level.

Table B13: Alternate Specifications for Firm Employment for Overall Retail

Model: Panel Regression with Fixed Effects			
	≤ 20 Employees	Nominal ER	1989 Dummy
	(1)	(2)	(3)
RER	-0.317** (0.035)		-0.308** (0.040)
RER*Dist	0.037** (0.007)		0.045** (0.008)
NER		-0.388** (0.046)	
NER*Dist		0.055** (0.009)	
1989 Dummy			-0.021** (0.003)
Cdn Tax	-0.006 (0.043)	-0.036 (0.047)	0.029 (0.049)
Us Tax	2.926** (0.227)	2.941** (0.252)	3.016** (0.252)
Assets	0.237** (0.002)	0.234** (0.003)	0.234** (0.003)
Age	0.097** (0.003)	0.105** (0.004)	0.107** (0.004)
Leverage	-0.032** (0.002)	-0.040** (0.003)	-0.040** (0.003)
Industry Concentration	-0.249** (0.024)	-0.215** (0.026)	-0.220** (0.027)
Industry Sales	0.118** (0.011)	0.112** (0.012)	0.109** (0.012)
Real Expenditure by Province & Industry	0.016 (0.016)	0.040* (0.019)	0.017 (0.019)
Real Provincial GDP	0.012 (0.027)	-0.014 (0.031)	0.002 (0.031)
Real Median Individual by Province	0.010 (0.027)	0.022 (0.030)	0.096** (0.031)
Real GDP of Adjacent US State	0.005 (0.023)	0.007 (0.024)	-0.001 (0.025)
Real US GDP*Distance	-0.000 (0.005)	-0.002 (0.005)	-0.000 (0.005)
Real Interest Rate	-0.014** (0.001)	-0.013** (0.001)	-0.012** (0.001)
Firm Fixed Effects	YES	YES	YES
Province Fixed Effects	YES	YES	YES
Time Trend	YES	YES	YES
Observations	772,150	619,237	619,237
R-squared	0.087	0.085	0.085

Notes: (1) Results in Columns 2-3 are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors (corrected for clustering at the firm level) are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and + at the 10% level.

Table B14: Alternate Specifications for Firm Profits for Overall Retail

Model: Panel Tobit with Correlated Random Effects			
	≤ 20 Employees	Nominal ER	1989 Dummy
	(1)	(2)	(3)
RER	-4.624** (0.075)		-4.712** (0.083)
RER*Dist	0.404** (0.015)		0.388** (0.016)
NER		-6.500** (0.104)	
NER*Dist		0.472** (0.020)	
1989 Dummy			0.073** (0.009)
Distance	-0.127** (0.044)	0.095+ (0.054)	-0.127** (0.048)
Cdn Tax	-1.427** (0.100)	-1.385** (0.104)	-1.306** (0.108)
Us Tax	-6.405** (0.447)	-6.738** (0.483)	-5.802** (0.485)
Assets	0.201** (0.004)	0.206** (0.004)	0.200** (0.004)
Age	0.115** (0.007)	0.139** (0.008)	0.118** (0.008)
Labor Productivity	0.222** (0.004)	0.200** (0.004)	0.207** (0.004)
Industry Concentration	0.289** (0.049)	0.328** (0.052)	0.364** (0.053)
Industry Sales	-0.452** (0.020)	-0.229** (0.022)	-0.523** (0.022)
Real Expenditure by Province & Industry	0.218** (0.031)	0.480** (0.033)	0.269** (0.034)
Real Provincial GDP	0.518** (0.054)	0.337** (0.060)	0.540** (0.060)
Real Median Individual by Province	0.422** (0.068)	1.761** (0.076)	0.471** (0.077)
Real GDP of Adjacent US State	0.146** (0.040)	0.161** (0.043)	0.106* (0.044)
Real US GDP*Distance	-0.013 (0.009)	-0.016+ (0.009)	-0.005 (0.009)
Real Interest Rate	-0.015** (0.002)	0.001 (0.002)	-0.018** (0.002)
Industry Fixed Effects	YES	YES	YES
Province Fixed Effects	YES	YES	YES
Time Trend	YES	YES	YES
Observations	774,538	621,327	621,327
Log Likelihood	-1.292e+06	-1.011e+06	-1.012e+06

Notes: (1) Results in Columns 2-3 are based on samples of Canadian privately-owned firms with ten typical employees or less. (2) Robust standard errors are in parentheses. (3) Significance indicated by ** at the 1% level; * at the 5% level; and + at the 10% level. (4) Industry Fixed Effects are at the three-digit SIC level.